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Taxonomy and systematics of New Zealand Faronitae (Coleoptera: Staphylinidae: Pselaphinae)

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TAXONOMY AND SYSTEMATICS OF NEW ZEALAND FARONITAE
(COLEOPTERA: STAPHYLINIDAE: PSELAPHINAE)

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Entomology

by
Jong-Seok Park
B.S., Chungnam National University, 2004
M.S., Chungnam National University, 2006
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헌정

꿈만 같았던 시간이었습니다. 무료하게 지내던 학부생 시절 안기정교수님을 뵙고 새로운 세상에 대해 알게 되었습니다. 그때부터 곤충학자의 꿈을 그려왔습니다. 그 당시에는 내가 석사학위, 유학 그리고 박사학위를 무사히 마칠 수 있을까? 내가 잘 해낼 수 있을까? 그냥 막막한 두려움과 함께 곤충학자로서의 삶을 생각하는 것만으로도 마음이 설레었습니다. 학창시절 공부에 소질도 없었고 열정도 없었던 내가 학자로서의 꿈을 그린다는 것이 왠지 말이 안 된다 싶기도 했습니다. 하지만 곤충과 함께 시간을 보낼 때면 이 모든 두려움과 걱정이 잊을 수 있었습니다. 비록 처음에는 곤충학 원서와 영어논문을 읽어 낼 영어실력도 전문지식도 없었지만 미래의 꿈만 생각만 하면 어디서 나오는지 모르는 용기와 힘이 생겼습니다. 석사진학과 졸업, 박사유학, 그리고 코스웍을 하나씩 끝내고 종합시험을 치루고 단추가 제 구멍에 하나하나 맞춰 질 때마다 그 기쁨은 이루 말할 수가 없었습니다. 지금까지 일련의 과정을 마치며 물론 이 길에 대한 회의가 들어본 적도 있었지만 지금까지 한 번도 곤충에 대한 열정이 식어 본적은 없었습니다. 10년이 넘는 시간을 곤충을 위해 살아왔지만 한 번도 이 길을 포기하려 하거나 후회 해본 적은 없었습니다. 이제 곤충학자로서의 길을 걷기위한 걸음마를 배웠습니다. 그리고 앞으로도 이 길을 걸을 것이며 곤충에 대한 열정과 사랑이 변지 않을 거라는 것을 확신합니다.

이 꿈만 같았던 시간들과 곤충학자로서의 걸음마를 배우는 데에는 제 스스로의 힘으로 만들 수 있는 것이 아닙니다. 좋은 스승님들과 선후배들, 그리고 가족의 응원과 힘이 없었더라면 여기까지 무사히 올 수 없었을 것입니다. 가장 먼저 저에게 새로운 세상을 보여주시고 인도해 주신 안기정 교수님께 감사를 드립니다. 이 모든 일들의 시작을 만들어 주신 만큼 항상 감사드리고 훌륭한 곤충학계의 선학으로 그리고 스승으로써 존경합니다. 그리고 제 걸음마를 완성시켜주신 크리스 칼튼교수님께도 감사드립니다. 안면 한번 없었던 외국인 학생을 선뜻 제자로 받아주시고 제가 스스로 성취할 수 있도록 끊임없이 기다려주셨습니다. 아낌없는 격려와 때론 친구와 같은 친근함으로 항상 제 곁에서 돌보아 주셨습니다. 진심으로 감사드립니다. 초심을 잃지 않는 사람이 되겠습니다. 그리고 부모님께도 감사를 드립니다. 끝까지 믿어 주시고 물신양면으로 격려해주신 덕분에 이렇게 성공적으로 학위를 받을 수 있었습니다. 앞으로도 더욱 열심히 하여 그 동안의 은혜를 보답을 하겠습니다. 마지막으로 항상 곁에 있었던 아내 초은, 항상 제가 선택한 길을 격려해주었습니다. 쉽지 않은 타지생활, 부모 형제들과 오랜 시간 떨어져

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
ABSTRACT.....	xiv
CHAPTER	
1 INTRODUCTION.....	1
2 MATERIALS AND METHODS.....	4
2.1 SPECIMENS.....	4
2.2 PERMANENT SLIDE PREPARATIONS.....	4
2.3 TERMINOLOGY AND MAPS.....	4
2.4 GENUS AND SPECIES BOUNDARY.....	4
2.5 MORPHOLOGICAL PHYLOGENETIC ANALYSIS.....	6
2.6 MOLECULAR PHYLOGENETIC ANALYSIS.....	7
3 REVISION OF THE NEW ZEALAND FARONITAE.....	12
3.1 REVISION OF THE GENUS <i>EXEIRARTHRA</i> BROUN.....	12
3.2 REVISION OF THE GENUS <i>STENOSAGOLA</i> BROUN.....	30
3.3 REVISION OF THE GENUS <i>SAGOLA</i> SHARP.....	68
3.4 NEW GENERA OF NEW ZEALAND FARONITAE REITTER.....	287
4 PHYLOGENETIC RESULTS.....	341
5 SUMMARY AND CONCLUSIONS.....	349
REFERENCES (FOR ALL CHAPTERS AND APPENDIX A).....	351
APPENDIX A: DATA MATRIX FOR MORPHOLOGICAL PHYLOGENY.....	364
APPENDIX B: WORLD CATALOGUE OF THE SUPERTRIBE FARONITAE REITTER...365	
APPENDIX C: WRITTEN PERMISSION TO USE PUBLISHED MATERIAL IN THE DISSERTATION (FOR CHAPTER 3.1).....	418
APPENDIX D: WRITTEN PERMISSION TO USE PUBLISHED MATERIAL IN THE DISSERTATION (FOR CHAPTER 3.2).....	419
THE VITA.....	420

LIST OF TABLES

Table 1. Faronitae taxa used in morphological phylogeny.....	8
Table 2. Faronitae taxa used in molecular phylogeny.....	9
Table 3. Primers used in this study.....	11
Table 4. Numbers of specimens and phenotype proportions of <i>Stenosagola</i> species.....	67

LIST OF FIGURES

Figure 1. Morphological diversity of Pselaphinae.....	2
Figure 2. Phylogenetic tree of Pselaphinae supertribes (<i>sensu</i> Newton and Thayer, 1995).....	3
Figure 3. Diagnostic characters of New Zealand faronite used in this study.....	5
Figure 4. Habitus of <i>Exeirarthra</i>	23
Figure 5. Diagnostic characters of <i>Exeirarthra enigma</i>	24
Figure 6. Diagnostic characters of <i>Exeirarthra longiceps</i> , <i>E. maclellanensis</i> , <i>E. maclellanensis</i>	25
Figure 7. Diagnostic characters of <i>Exeirarthra nunni</i> , <i>E. parviceps</i>	26
Figure 8. Locations where <i>Exeirarthra enigma</i> specimens have been collected.....	27
Figure 9. Locations where <i>Exeirarthra longiceps</i> , <i>E. maclellanensis</i> , and <i>E. mccollae</i> specimens have been collected.....	28
Figure 10. Locations where <i>Exeirarthra nunni</i> and <i>E. parviceps</i> specimens have been collected.....	29
Figure 11. Habitus of <i>Stenosagola gracilis</i> , <i>S. pseudogracilis</i> , <i>S. clarkei</i> , <i>S. ramsayi</i> , <i>S. domettensis</i> , <i>S. eylesi</i> , <i>S. stewartensis</i>	41
Figure 12. Diagnostic characters of <i>Stenosagola gracilis</i>	42
Figure 13. Locations where <i>Stenosagola gracilis</i> , <i>S. pseudogracilis</i> specimens have been collected.....	43
Figure 14. Diagnostic characters of <i>Stenosagola pseudogracilis</i> , <i>S. clarkei</i> , <i>S. egmontensis</i> , <i>S. ramsayi</i> , <i>S. domettensis</i> , <i>S. eylesi</i> , <i>S. stewartensis</i>	44
Figure 15. Locations where <i>Stenosagola clarkei</i> , <i>S. egmontensis</i> , <i>S. ramsayi</i> , <i>S. domettensis</i> , <i>S. eylesi</i> , <i>S. stewartensis</i> specimens have been collected.....	45
Figure 16. Habitus of <i>Stenosagola connata</i> , <i>S. huiaensis</i> , <i>S. northlandensis</i> , <i>S. thayerae</i> , <i>S. dugdalei</i>	58
Figure 17. Habitus of <i>Stenosagola tararuaensis</i> , <i>S. haunuiensis</i> , <i>S. pseudoconnata</i> , <i>S. chandleri</i> , <i>S. nunni</i> , <i>S. newtoni</i> , <i>S. butcheri</i> , <i>S. fiordlandensis</i>	59
Figure 18. Diagnostic characters of <i>Stenosagola connata</i>	60
Figure 19. Locations where <i>Stenosagola connata</i> , <i>S. huiaensis</i> , <i>S. northlandensis</i> specimens have been collected.....	61

Figure 20. Diagnostic characters of <i>Stenosagola huiaensis</i> , <i>S. northlandensis</i> , <i>S. thayerae</i> , <i>S. dugdalei</i> , <i>S. tararuaensis</i> , <i>S. haunuiensis</i>	62
Figure 21. Locations where <i>Stenosagola thayerae</i> , <i>S. dugdalei</i> , <i>S. tararuaensis</i> , <i>S. haunuiensis</i> specimens have been collected.....	63
Figure 22. Diagnostic characters of <i>Stenosagola pseudoconnata</i> , <i>S. chandleri</i> , <i>S. nunni</i> , <i>S. newtoni</i> , <i>S. butcheri</i> , <i>S. fiordlandensis</i>	64
Figure 23. Locations where <i>Stenosagola pseudoconnata</i> , <i>S. chandleri</i> specimens have been collected.....	65
Figure 24. Locations where <i>Stenosagola nunni</i> , <i>S. newtoni</i> , <i>S. butcheri</i> , <i>S. fiordlandensis</i> specimens have been collected.....	66
Figure 25. Example of Broun's description with modern photograph of type for comparison.....	68
Figure 26. Habitus of group 1 species of genus <i>Sagola</i>	83
Figure 27. Diagnostic characters of group 1 species of genus <i>Sagola</i>	84
Figure 28. Locations where <i>Sagola hirtalis</i> , <i>S. terricola</i> , <i>S. convexa</i> , <i>S. sp. nov. 2-1</i> , <i>S. sp. nov. 2-2</i> , <i>S. sp. nov. 2-3</i> specimens have been collected.....	85
Figure 29. Locations where <i>Sagola sp. nov. 2-4</i> , <i>S. sp. nov. 2-5</i> , <i>S. sp. nov. 2-6</i> , <i>S. sp. nov. 2-7</i> , <i>S. sp. nov. 3</i> , <i>S. sp. nov. 3-1</i> specimens have been collected.....	86
Figure 30. Locations where <i>Sagola sp. nov. 24</i> , <i>S. sp. nov. 26-1</i> , <i>S. sp. nov. 27-2</i> , <i>S. sp. nov. 51-2</i> specimens have been collected.....	87
Figure 31. Habitus and diagnostic characters of group 2 species of <i>Sagola</i>	92
Figure 32. Locations where <i>Sagola rugifrons</i> specimens have been collected.....	93
Figure 33. Locations where <i>Sagola sp. nov. 4</i> , <i>S. sp. nov. 4-1</i> , <i>S. sp. nov. 4-2</i> specimens have been collected.....	94
Figure 34. Habitus of group 3 species of <i>Sagola</i>	102
Figure 35. Diagnostic characters of group 3 species of <i>Sagola</i>	103
Figure 36. Locations where <i>Sagola bifida</i> , <i>S. latistriata</i> , <i>S. sp. nov. 5</i> , <i>S. sp. nov. 5-2</i> , <i>S. sp. nov. 5-3</i> , <i>S. sp. nov. 5-4</i> specimens have been collected.....	104
Figure 37. Locations where <i>Sagola sp. nov. 5-7</i> , <i>S. sp. nov. 5-8</i> , <i>S. sp. nov. 5-9</i> , <i>S. sp. nov. 5-10</i> and <i>S. sp. nov. 5-11</i> specimens have been collected.....	105
Figure 38. Habitus of group 4 species of <i>Sagola</i>	112
Figure 39. Diagnostic characters of group 4 species of <i>Sagola</i>	113

Figure 40. Locations where <i>Sagola</i> sp. nov. 7, <i>S.</i> sp. nov. 8, <i>S.</i> sp. nov. 27, <i>S.</i> sp. nov. 27-1 specimens have been collected.....	114
Figure 41. Locations where <i>Sagola</i> sp. nov. 27-3, <i>S.</i> sp. nov. 27-4, <i>S.</i> sp. nov. 27-5 specimens have been collected.....	115
Figure 42. Habitus and diagnostic characters of group 5 species of <i>Sagola</i>	119
Figure 43. Locations where <i>Sagola pulchra</i> , <i>S.</i> sp. nov. 25-1, <i>S.</i> sp. nov. 25-2, <i>S.</i> sp. nov. 25-3 specimens have been collected.....	120
Figure 44. Habitus and diagnostic characters of group 6 species of <i>Sagola</i>	125
Figure 45. Locations where <i>Sagola parva</i> and <i>S. denticollis</i> specimens have been collected....	126
Figure 46. Habitus and diagnostic characters of group 7 species of <i>Sagola</i>	129
Figure 47. Locations where <i>Sagola valida</i> specimens have been collected.....	130
Figure 48. Habitus and diagnostic characters of group 8 species of <i>Sagola</i>	133
Figure 49. Locations where <i>Sagola incisa</i> , <i>S. deformipes</i> and <i>S.</i> sp. nov. 69-1 specimens have been collected.....	134
Figure 50. Habitus and diagnostic characters of group 9 species of <i>Sagola</i>	137
Figure 51. Locations where <i>Sagola flavipes</i> and <i>S. sulcator</i> specimens have been collected.....	138
Figure 52. Habitus and diagnostic characters of group 10 species of <i>Sagola</i>	141
Figure 53. Locations where <i>Sagola</i> sp. nov. 11, <i>S.</i> sp. nov. 12 specimens have been collected.....	142
Figure 54. Habitus and diagnostic characters of group 11 species of <i>Sagola</i>	147
Figure 55. Locations where <i>Sagola rustica</i> , <i>S. duplicata</i> , <i>S.</i> sp. nov. 31-2, <i>S.</i> sp. nov. 51 specimens have been collected.....	148
Figure 56. Habitus and aedeagus of group 12 species of <i>Sagola</i>	149
Figure 57. Habitus and diagnostic characters of group 13 species of <i>Sagola</i>	150
Figure 58. Habitus and diagnostic characters of group 14 species of <i>Sagola</i>	154
Figure 59. Locations where <i>Sagola</i> sp. nov. 17, <i>S.</i> sp. nov. 18-5, <i>S. sharpi</i> specimens have been collected.....	155
Figure 60. Habitus of group 15 species of <i>Sagola</i>	162
Figure 61. Diagnostic characters of group 15 species of <i>Sagola</i>	163

Figure 62. Locations where <i>Sagola auripila</i> , <i>S. spiniventris</i> and <i>S. sp. nov.</i> 29-2 specimens have been collected.....	164
Figure 63. Locations where <i>Sagola sp. nov.</i> 65, <i>S. sp. nov.</i> 31-1, <i>S. sp. nov.</i> 29-3, <i>S. sp. nov.</i> 71, <i>S. sp. nov.</i> 71-1 specimens have been collected.....	165
Figure 64. Habitus and diagnostic characters of group 16 species of <i>Sagola</i>	169
Figure 65. Locations where <i>Sagola arboricola</i> and <i>S. tenebrica</i> specimens have been collected.....	170
Figure 66. Habitus and diagnostic characters of group 17 species of <i>Sagola</i>	175
Figure 67. Locations where <i>Sagola strialis</i> specimens have been collected.....	176
Figure 68. Habitus and diagnostic characters of group 18 species of <i>Sagola</i>	182
Figure 69. Locations where <i>Sagola anisarthra</i> , <i>S. planipennis</i> , <i>S. sp. nov.</i> 17-1, <i>S. sp. nov.</i> 35-5, <i>S. sp. nov.</i> 47 specimens have been collected.....	183
Figure 70. Habitus and diagnostic characters of group 19 species of <i>Sagola</i>	188
Figure 71. Locations where <i>Sagola socia</i> , <i>S. sp. nov.</i> 36, <i>S. sp. nov.</i> 40, <i>S. sp. nov.</i> 30-3, <i>S. sp. nov.</i> 30-4 specimens have been collected.....	189
Figure 72. Habitus and diagnostic characters of group 20 species of <i>Sagola</i>	191
Figure 73. Habitus and diagnostic characters of group 21 species of <i>Sagola</i>	192
Figure 74. Locations where <i>Sagola sp. nov.</i> 51-1, <i>S. sp. nov.</i> 51-3, <i>S. sp. nov.</i> 72 specimens have been collected.....	193
Figure 75. Habitus and diagnostic characters of group 22 species of <i>Sagola</i>	199
Figure 76. Locations where <i>Sagola furcata</i> , <i>S. punctulata</i> , <i>S. sp. nov.</i> 34-3, <i>S. sp. nov.</i> 34-4, <i>S. ignota</i> and <i>S. sp. nov.</i> 35-1 specimens have been collected.....	200
Figure 77. Habitus and diagnostic characters of group 23 species of <i>Sagola</i>	204
Figure 78. Locations where <i>Sagola excavata</i> and <i>S. sp. nov.</i> 56 specimens have been collected.....	205
Figure 79. Habitus and diagnostic characters of group 24 species of <i>Sagola</i>	211
Figure 80. Locations where <i>Sagola notabilis</i> , <i>S. monstrosa</i> and <i>S. sp. nov.</i> 59 specimens have been collected.....	212
Figure 81. Habitus of group 25 species of <i>Sagola</i>	227
Figure 82. Diagnostic characters of group 25 species of <i>Sagola</i>	228

Figure 83. Locations where <i>Sagola misella</i> , <i>S. bituberata</i> specimens have been collected.....	229
Figure 84. Locations where <i>Sagola prisca</i> , <i>S. sp. nov.</i> 42-1 specimens have been collected.....	230
Figure 85. Locations where <i>Sagola sp. nov.</i> 50, <i>S. sp. nov.</i> 50-1, <i>S. sp. nov.</i> 50-2, <i>S. sp. nov.</i> 52 specimens have been collected.....	231
Figure 86. Locations where <i>Sagola sp. nov.</i> 64-2, <i>S. sp. nov.</i> 64-3, <i>S. sp. nov.</i> 64-4, <i>S. sp. nov.</i> 64-5, <i>S. sp. nov.</i> 64-6 specimens have been collected.....	232
Figure 87. Habitus and diagnostic characters of group 26 species of <i>Sagola</i>	235
Figure 88. Locations where <i>Sagola sp. nov.</i> 11-1, <i>S. sp. nov.</i> 11-2 specimens have been collected.....	236
Figure 89. Habitus and diagnostic characters of group 27 species of <i>Sagola</i>	243
Figure 90. Locations where <i>Sagola major</i> , <i>S. triregia</i> , <i>S. sp. nov.</i> 67-1, <i>S. sp. nov.</i> 78, <i>S. sp. nov.</i> 78-1, <i>S. sp. nov.</i> 91-2 specimens have been collected.....	244
Figure 91. Habitus of members of group 28 species of <i>Sagola</i>	271
Figure 92. Ventral surface of male head of members of group 28 species of <i>Sagola</i>	272
Figure 93. Diagnostic characters of group 28 species of <i>Sagola</i>	273
Figure 94. Locations where <i>Sagola insignis</i> , <i>S. hectorii</i> , <i>S. bipunctata</i> , <i>S. angulifera</i> , <i>S. eminens</i> , <i>S. robustula</i> specimens have been collected.....	274
Figure 95. Locations where <i>Sagola pertinax</i> , <i>S. monticola</i> , <i>S. laticeps</i> , <i>S. castanea</i> , <i>S. sp. nov.</i> 74, <i>S. sp. nov.</i> 75 specimens have been collected.....	275
Figure 96. Locations where <i>S. sp. nov.</i> 76, <i>S. sp. nov.</i> 76-1, <i>S. sp. nov.</i> 80, <i>S. sp. nov.</i> 80-1, <i>S. sp. nov.</i> 82, <i>S. sp. nov.</i> 83 specimens have been collected.....	276
Figure 97. Locations where <i>S. sp. nov.</i> 84, <i>S. sp. nov.</i> 84-1, <i>S. sp. nov.</i> 84-2, <i>S. sp. nov.</i> 84-3, <i>S. sp. nov.</i> 9, <i>S. sp. nov.</i> 91-1 specimens have been collected.....	277
Figure 98. Habitus and diagnostic characters of group 29 species of <i>Sagola</i>	282
Figure 99. Habitus and diagnostic characters of group 30 species of <i>Sagola</i>	285
Figure 100. Locations where <i>S. genalis</i> , <i>S. sp. nov.</i> 101, <i>S. sp. nov.</i> 102 specimens have been collected.....	286
Figure 101. Habitus of members of new genus “ <i>Brounea</i> ”.....	297
Figure 102. Diagnostic characters of members of new genus “ <i>Brounea</i> ”.....	298

Figure 103. Locations where " <i>Brounea</i> " <i>setiventris</i> , <i>B. tenuis</i> , <i>B. sp. nov.</i> 13, <i>B. sp. nov.</i> 13-1, <i>B. sp. nov.</i> 13-2 specimens have been collected.....	299
Figure 104. Locations where " <i>Brounea</i> " <i>sp. nov.</i> 14, <i>B. sp. nov.</i> 15, <i>B. sp. nov.</i> 18-1, <i>B. sp. nov.</i> 18-2, <i>B. sp. nov.</i> 18-4, <i>B. sp. nov.</i> 20-1 specimens have been collected.....	300
Figure 105. Habitus and diagnostic characters of member of new genus " <i>Aucklandea</i> ".....	302
Figure 106. Locations where " <i>Aucklandea</i> " <i>sp. nov.</i> 22 specimens have been collected.....	303
Figure 107. Habitus and diagnostic characters of member of new genus " <i>Chandlerea</i> ".....	305
Figure 108. Locations where " <i>Chandlerea</i> " <i>sp. nov.</i> 45 specimens have been collected.....	306
Figure 109. Habitus and diagnostic characters of members of new genus " <i>Nunnea</i> ".....	309
Figure 110. Locations where " <i>Nunnea</i> " <i>sp. nov.</i> 39, <i>N. sp. nov.</i> 39-1 specimens have been collected.....	310
Figure 111. Habitus and diagnostic characters of member of new genus " <i>Leschenea</i> ".....	312
Figure 112. Locations where " <i>Leschenea</i> " <i>sp. nov.</i> 48 specimens have been collected.....	313
Figure 113. Habitus and diagnostic characters of members of new genus " <i>Ahnea</i> ".....	318
Figure 114. Locations where " <i>Ahnea</i> " <i>ventralis</i> , <i>A. lineata</i> , <i>A. sp. nov.</i> 60 specimens have been collected.....	319
Figure 115. Habitus of members of new genus " <i>Pseudoexeirarthra</i> ".....	330
Figure 116. Diagnostic characters of members of new genus " <i>Pseudoexeirarthra</i> ".....	331
Figure 117. Locations where " <i>Pseudoexeirarthra</i> " <i>spinifer</i> , <i>P. colorata</i> , <i>P. puncticollis</i> specimens have been collected.....	332
Figure 118. Locations where " <i>Pseudoexeirarthra</i> " <i>sp. nov.</i> 93-1, <i>P. sp. nov.</i> 93-2, <i>P. sp. nov.</i> 94, <i>P. sp. nov.</i> 94-2, <i>P. sp. nov.</i> 94-4 specimens have been collected.....	333
Figure 119. Locations where " <i>Pseudoexeirarthra</i> " <i>sp. nov.</i> 94-7, <i>P. sp. nov.</i> 94-8 specimens have been collected.....	334
Figure 120. Habitus of members of new genus " <i>Pseudostenosagola</i> ".....	337
Figure 121. Dorsal head and aedeagus of members of new genus " <i>Pseudostenosagola</i> ".....	338
Figure 122. Diagnostic characters of members of new genus " <i>Pseudostenosagola</i> ".....	339
Figure 123. Locations where " <i>Pseudostenosagola</i> " <i>sp. nov.</i> 98-1, <i>P. sp. nov.</i> 98, <i>P. sp. nov.</i> 99 specimens have been collected.....	340
Figure 124. Strict consensus tree of maximum parsimony analysis of morphological data.....	343

Figure 125. Most parsimonious tree based on molecular data.....	344
Figure 126. Best tree from maximum likelihood analysis based on molecular data.....	345
Figure 127. Best tree from Bayesian inference based on molecular data.....	346
Figure 128. Comparison of three molecular inferences (MP, ML and Bayesian).....	347
Figure 129. Comparison of morphology and molecular inferences.....	348
Figure 130. Locations where New Zealand faronite specimens have been collected.....	350

ABSTRACT

The New Zealand Faronitae was revised at the species level, and a phylogenetic study was performed based on morphological and molecular data. Eight new genera and 143 new species were discovered. Three new genera, “*Brounea*”, “*Ahnea*” and “*Pseudoexeirarthra*” were designated based on the species originally described in the genus *Sagola*. Five new genera, “*Aucklandea*”, “*Chandlereia*”, “*Nunnea*”, “*Leschenea*” and “*Pseudostenosagola*” were designated by new species. Three known genera, *Exeirarthra*, *Stenosagola* and *Sagola* were also revised at species level. Eighty four names were synonymized, two in *Exeirarthra*, four in *Stenosagola* and 78 in *Sagola*. Lectotypes of seven species, *Sagola terricola* Broun, *S. rugifrons* Broun, *S. valida* Broun, *S. arboricola* Broun, *S. notabilis* Broun, *S. eminens* Broun, and *S. robustula* Broun, were designated. These revisional results bring the numbers of New Zealand Faronitae from 145 species within 3 genera to 203 species in 11 genera. The largest faronite genus *Sagola* includes 143 species, 48 redescriptions and 95 new descriptions and is divided into 30 species groups based on diagnostic characters. Phylogenetic studies were performed based on morphological and molecular data. A morphological parsimony tree was reconstructed based on 49 taxa and 42 adult morphological data. Two most parsimonious trees resulted, and those do not support the genus *Sagola* as a monophyletic group. The “*Brounea*” and “*Aucklandea*” clades are placed within the *Sagola* clade. Three molecular trees, parsimony, maximum likelihood and Bayesian, were inferred using 32 taxa and *ca.* 4200 base pairs within 4 genes (COI, 18S, 28S and *wg*), and these indicated that the genus *Sagola* is paraphyletic. All molecular trees have a genus “*Ahnea*” within the *Sagola* clades, and two genera, “*Brounea*” and “*Pseudoexeirarthra*” are excluded. Except for the three genera, “*Brounea*,” “*Aucklandea*,” and “*Ahnea*,” all trees supported the monophyly of the genus *Sagola*. One Australian *Sagola* species, *Sagola rugicornis* was excluded from the New Zealand *Sagola* clade in both morphology and molecular trees. Two groups of *Stenosagola* are paraphyletic in all analyses.

CHAPTER 1. INTRODUCTION

The subfamily Pselaphinae Latreille, the second largest group of the family Staphylinidae, includes over 1103 genera and 8415 species and is distributed worldwide (Herman 2001). Members of the Pselaphinae are mainly found in leaf litter and decayed wood but some inhabit wetlands, grasslands, deserts, beaches, caves, mosses and social insect colonies (Newton and Chandler 1989). Although the biologies of most pselaphine taxa are barely known, they play an important role in terrestrial ecosystems judging from their high species richness and abundance in certain microhabitats (Chandler 1987). They have great potential for use in ecological, biogeographic, and environmental studies (Chandler 1987). Pselaphines are morphologically diverse (Figure 1), but can be easily distinguished from other staphylinid beetles by their unique characters: compact body form, brown color, small size (usually 1–3 mm), antennae with distinct club, except Faronitae, distinctive foveae on prosternum and elytra, tarsal formula 3-3-3 or apparently 2-2-2, and larvae with a pair of eversible organs on their frons that function as prey capture organs, except Faronitae (Chandler 2001b; Newton and Thayer 1995). Because of their distinctive characteristics this group has long been treated as an independent family, the Pselaphidae. However, many specialists such as Raffray (1908), Park (1942), Jeannel (1950), Naomi (1985), and Thayer (1987), questioned the taxonomic rank of pselaphines because some of the main characters, such as short elytra, are shared with other staphylinids (Newton and Chandler 1989) and the unique character suite of body foveae are autapomorphic for the group. Newton and Thayer (1995) formally reduced the group to subfamily rank within the family Staphylinidae by phylogenetic analysis based on morphological characters. In their revised nomenclature, the six former subfamilies of pselaphine beetles were decreased to supertribe rank: Faronitae, Euplectitae, Batrisitae, Goniaceritae, Pselaphitae, and Clavigeritae. The former subfamily Faroninae was separated into two supertribes, Faronitae and Bythinoplectitae by Newton and Thayer (1995). Subsequently, the new supertribe Bythinoplectitae was transferred into the supertribe Euplectitae (Chandler 2001b).

A great number of pselaphine species have been described during the *ca.* 220 years since *Claviger testaceus* Preyssler was described in 1790. However, the diversity in most groups is still poorly known and the ecology, immature stages, and phylogeny are likewise barely known (Newton and Chandler 1989). One of the most poorly known groups is the supertribe Faronitae Reitter which contains 291 species within 20 genera. The species are restricted mainly to temperate regions, with a few species from high elevations of tropical mountains (Chandler 2001a). Members of the supertribe Faronitae have been considered the basal group within the subfamily Pselaphinae because of the following characteristics: antenna lacking a distinct club; greater number of foveae in prosternum and elytra; similarity of appearance and overall body plan to other staphylinid subfamilies; tarsi with first two tarsomeres short and subequal in length and third tarsomere much longer; contiguous metacoxae; and eversible vesicles absent from larvae (Chandler 2001b). Newton and Thayer's phylogeny (1995) using adult morphology also supported this group as basal to other pselaphines (Figure 2). However, an internal phylogenetic analysis of the Faronitae has not been attempted. Most faronite species were described prior to 1970 using external characters such as habitus, size, and color, and without descriptions of genitalia or other detailed characteristics that are more reliable for species-level identification. Moreover, some genera and species are suspected to be junior synonyms based on their morphological similarities (Chandler 2001a). As a result species-level identification and often generic-level identification is nearly impossible.

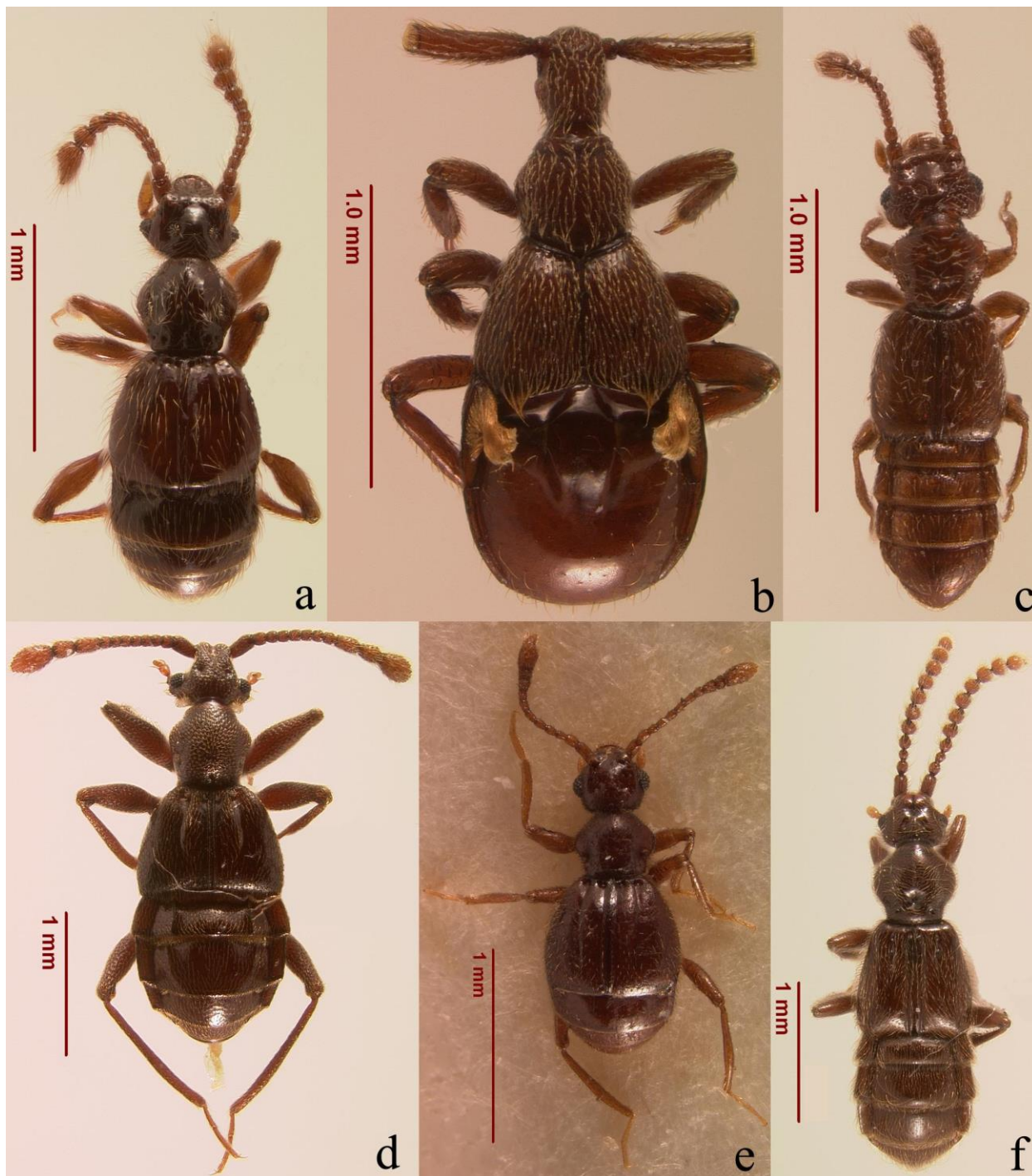


Figure 1. Morphological diversity of Pselaphinae. a) Batrisitae, *Batrisodes* sp.; b) Clavigeritae, *Adranes lecontei*; c) Euplectitae, *Euplectus druryi*; d) Pselaphitae, *Tmesiphorus* sp.; e) Goniaceritae, *Bunoderus* sp.; f) Faronitae, *Sagola misella*.

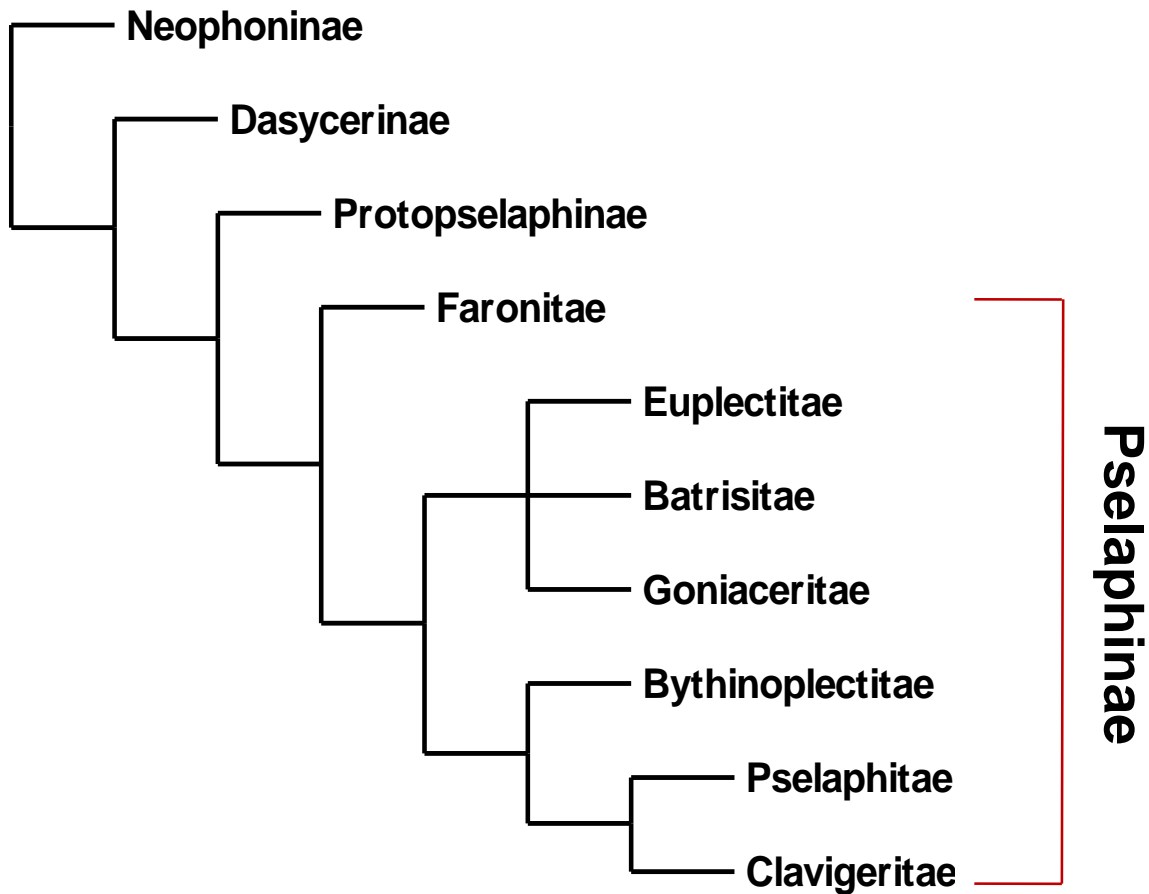


Figure 2. Phylogenetic tree of Pselaphinae supertribes (*sensu* Newton and Thayer, 1995).

Faronite species are commonly found in temperate forests in decayed wood and leaf litter that have high arthropod diversity (Kuschel 1990) so that they are regarded as ecologically important macro-organisms. They also are considered to have high potential for addressing questions of biogeographical patterns because of their low dispersal capabilities and tendency to local endemism (Newton and Chandler 1989). No useful classification of the Faronitae exists in spite of this importance. A complete revision of all faronite species is the obvious solution but a revision of New Zealand genera to resolve the largest and most problematic group must be performed first. This study addresses all valid species of the supertribe Faronitae (catalogue), provides a species-level revision of all New Zealand genera *Exeirarthra*, *Stenosagola* and *Sagola* and includes phylogenetic analyses of the supertribe Faronitae and the genus *Sagola* using morphological and molecular data. It will be the scientific basis of the future study of the supertribe Faronitae and will provide the fundamental information necessary for ecological, environmental and evolutionary studies.

CHAPTER 2. MATERIALS AND METHODS

2.1 SPECIMENS

Approximately 5000 dried specimens, including types, and 1000+ wet specimens were examined from the following institutional and private collections: Field Museum of Natural History (FMNH), Chicago, IL, USA; Louisiana State Arthropod Museum (LSAM), Baton Rouge, LA, USA; Natural History Museum (BMNH), London, United Kingdom; Lincoln University (LUNZ), Lincoln, New Zealand; New Zealand Arthropod Collection (NZAC), Auckland, New Zealand; Auckland Museum, Auckland, New Zealand (AMNZ); personal collection of Donald S. Chandler (DSC), Durham, NH, USA; personal collection of John T. Nunn (JTN), Dunedin, New Zealand. Holotypes of species described will be deposited in the New Zealand Arthropod Collection (NZAC), Auckland. Paratype depositions are indicated parenthetically.

2.2 PERMANENT SLIDE PREPARATIONS

Two hundred twenty one specimens were mounted on permanent slides to aid in observation of internal characters and fine external characters not apparent using a dissecting microscope. Permanent microscopic slides were prepared based on the techniques described by Hanley and Ashe (2003). Specimens are relaxed and washed in 70% ethanol, and they are cleared in 10% potassium hydroxide (KOH). If the specimens are too dark to observe adequately, they bleached in 3% hydrogen peroxide (H₂O₂), and they are washed and dehydrated in 95% ethanol. Finally, the specimens are put on a microscope slide with mounting medium such as Euparal and dissected using minuten pins under a dissecting scope. The slides are dried on a slide warmer for 2-3 days. Additional mounting medium is dropped on the slide, and a cover slip is placed on top. The finished slides are dried on a slide warmer for 4-6 weeks, and after this the characters may be observed on a light microscope.

2.3 TERMINOLOGY AND MAPS

Morphological terminology follows Chandler (2001a), particularly details of the foveal system and enumeration of abdominal sclerites, with replacement of the meso-meta sternites and abdominal sternites with ventrites (Figure 3). I note that tergite IV in the descriptions is the second apparent tergite, with the first apparent tergite (true tergites I-III apparently fused) visible as a narrow band partially concealed by the elytra in most specimens.

New Zealand maps were produced by modifying the map of Crosby *et al.* (1976). The area codes of the New Zealand subregion follow the system of Crosby *et al.* (1998). Multiple specimens from the same locality are indicated by a single symbol.

2.4 GENUS AND SPECIES BOUNDARIES

The original idea was to define genera and species based on results of the phylogenetic analyses based on morphology and molecular data. However, in order to choose taxa and characters appropriately for phylogenetic analyses, fundamental taxonomic treatments such as sorting, grouping, and placement into diagnosis-based hierarchies were required, especially for large numbers of species within these taxonomically poorly known groups. For these reasons, I revised genera and species based on concepts outlined below, and tested the newly defined hypothesis using the phylogenetic analyses.

Generic boundaries, newly defined in this study, were based largely on the thoracic foveal system (Figure 3). This system was proposed by Grigarick and Schuster (1980) for

characterizing genera and higher categories. Chandler (2001a) developed and established these foveal patterns for Australian pselaphine fauna, effectively doubling the generic number (163 genera including 81 new). Species boundaries were defined based mainly on detailed structures of the male genitalia, particularly the configuration of parameres and terminal components of the median lobe.

The new genera, new species, new synonyms and lectotypes designated herein are not intended to satisfy rules of zoological nomenclature. The newly designated generic names were indicated in double quotation marks and specific epithets of new species were written as numbers except for previously published names (chapters 3.1 and 3.2: see APPENDIX C and D) to prevent confusion when this dissertation is quoted in public. These results will be published in proper scientific journals soon.

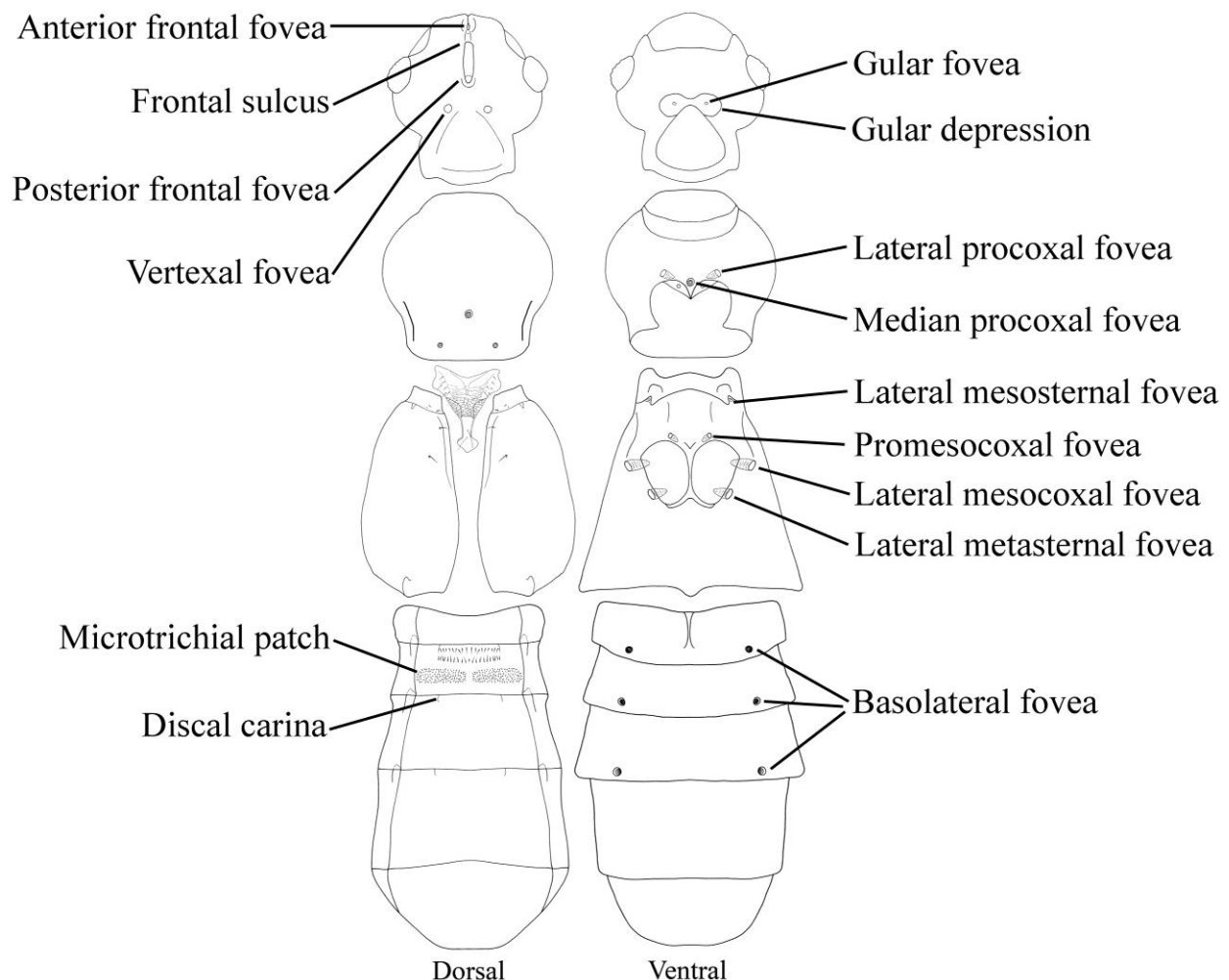


Figure 3. Diagnostic characters of New Zealand faronite used in this study

2.5 MORPHOLOGICAL PHYLOGENETIC ANALYSIS

Choice of taxa. In total 49 taxa were used for this study (Table 1). Forty two in-groups hold 30 exemplars from each *Sagola* groups and one or two exemplars from the other 10 New Zealand genera including eight New Zealand genera newly described here. Out-groups included seven taxa from seven genera (Table 1) and covered continents where faronite species are recorded except Madagascar and South Africa. Taxon names followed the results from the revisional studies (chapters 3–6).

Selection of characters. Forty two morphological characters were used for this study from adult specimens. Larval characters were not used because most faronite species are unknown and specimens are not available. Following characters were scored and inapplicable characters were coded as “-”.

1. *Surface of antennomere 1.* (0) dull and punctured; (1) glossy and smooth.
2. *Head shape.* (0) rectangular or round; (1) triangular.
3. *Setal number of lacinia of maxilla.* (0) 2–3 thick setae; (1) more than 4 thick setae.
4. *Labial palpomere 1.* (0) rectangular, three times longer than wide; (1) subquadrate, as long as wide.
5. *Shape of mentum.* (0) transverse; (1) longer than wide.
6. *Size of incisor tooth.* (0) small; (1) large.
7. *Anterior frontal fovea.* (0) present; (1) absent.
8. *Shape of anterior frontal fovea.* (0) round or oval; (1) elongate.
9. *Posterior frontal fovea.* (0) present; (1) absent.
10. *Shape of posterior frontal fovea.* (0) round or oval; (1) elongate.
11. *Number of anterior frontal fovea.* (0) single; (2) a pair.
12. *Membranous cuticle covering posterior frontal fovea.* (0) present; (1) absent.
13. *Frontal sulcus.* (0) present; (1) absent.
14. *Shape of frontal sulcus.* (0) lobes continuous from tip to at least one-third length of sulcus; (1) lobes not continuous.
15. *Vertexal sulcus.* (0) present; (1) absent.
16. *Male ventral temple 1.* (0) depressed; (1) simple.
17. *Male ventral temple 2.* (0) projected, exceeding than eye; (1) not exceeding than eye.
18. *Anterior tip of male ventral neck.* (0) present; (1) absent.
19. *Lateral procoxal fovea (lpcf).* (0) present; (1) absent.
20. *Median mesosternal fovea (mmsf).* (0) present; (1) absent.
21. *Promesocoxal fovea (pmcf).* (0) present; (1) absent.
22. *Lateral mesosternal fovea (lmsf).* (0) present; (1) absent.
23. *Size of lateral mesocoxal fovea (lmsf).* (0) as large as promesocoxal fovea; (1) smaller, less than one-half of promesocoxal fovea.
24. *Size of lateral mesocoxal fovea (lmcf) and lateral metasternal fovea (lmtf).* (0) same or slightly different; (1) lmcf larger than twice of lmtf.
25. *Lateral metasternal fovea (lmtf).* (0) present; (1) absent.
26. *Median metasternal fovea (mmtf).* (0) present; (1) absent.
27. *Male fore femora.* (0) semi-circular depression; (1) simple.
28. *Male mid femora.* (0) semi-circular depression; (1) simple.

29. *Male mid tibia*. (0) bent; (1) straight.
30. *Second tarsomere of male mid and hind claw*. (0) enlarged; (1) simple.
31. *Discal carina (dc) of abdominal tergites*. (0) present on abdominal tergites IV–VI; (1) absent.
32. *Basolateral fovea (blf) of abdominal ventrite IV*. (0) distinctive; (1) obscure (very small or absent).
33. *Basolateral fovea (blf) of abdominal ventrite V–VI*. (0) distinctive; (1) obscure (very small or absent).
34. *Size of abdominal tergite and ventrite VI*. (0) at least 1.5 times larger than V and VII; (1) simple.
35. *A pair of processes on antero-lateral surface of ventral tergite IV–VII*. (0) present; (1) absent.
36. *Paramere 1*. (0) distinctly asymmetrical; (1) symmetrical or slightly different of size.
37. *Paramere 2*. (0) with thick setae; (1) without thick setae.
38. *Paramere 3*. (0) one setae at tip; (1) at least more than 3 setae at tip.
39. *Size of aedeagus*. (0) larger than 0.3 mm; (1) smaller than 0.3 mm.
40. *Phallobase of genitalia*. (0) symmetrical; (1) asymmetrical.
41. *Shape of Phallobase of genitalia*. (0) round; (1) rectangular.
42. *Dorsal process of genitalia*. (0) present; (1) absent.

Phylogenetic analysis. A data matrix (see Appendix A) was built and coded using Mesquite (Maddison and Maddison 2001). The analysis was performed using NONA 2.0 (Goloboff 1998) plugged into WinClada (Beta) 0.99 (Nixon, 1999). A heuristic search was performed by multiple TBR + TBR (hold: 10000; mult*N: 1000; hold/: 100). Bootstrap support (Felsenstein 1985) values were calculated to estimate clade (replications: 1000; mult*N: 10; hold/: 10) using WinClada (Beta) 0.99 (Nixon, 1999). All characters were unweighted and multistates treated as unordered.

2.6 MOLECULAR PHYLOGENETIC ANALYSIS

Choice of taxa. I used as many specimens as were available in an appropriate state of preservation. In total 32 taxa were used for molecular analysis (Table 2). Thirty in-groups covered six genera and two countries, New Zealand and Australia (Table 2). Two out-groups, *Sonoma* sp. and *Prosagola* sp., were used from USA and Chile, respectively (Table 2). Taxa names followed the results of the revisional studies (chapters 3–6).

Selection of genes. Four genes (*ca.* 4200 base pairs), one mitochondrial and three nuclear genes, were used for this study, cytochrome *c* oxidase I (COI, *ca.* 650 base pairs), 18S ribosomal DNA (18S, *ca.* 1900 base pairs), 28S ribosomal DNA (28S, *ca.* 1000 base pairs), and *wingless* (*wg*, *ca.* 650 base pairs) sequences. Mitochondrial DNA and nuclear ribosomal DNA are traditionally the most commonly examined sequence data in insect systematics (Caterino et al. 2000). Cytochrome *c* oxidase I (COI) is usually used for genus- and species-level phylogenies, and 18S rDNA is the most commonly used nuclear rDNA for tribe or subfamily level study (Caterino et al., 2000 & 2005). The 28S and *wg* genes were also selected based on evaluations of nuclear genes by Wild and Maddison (2008).

Table 1. Faronite taxa used in morphological phylogeny.

	Species	Locality	Remark
In-group	<i>Sagola hirtalis</i> Broun	New Zealand	group 1
In-group	<i>Sagola rugifrons</i> Broun	New Zealand	group 2
In-group	<i>Sagola</i> sp. 5	New Zealand	group 3
In-group	<i>Sagola</i> sp. 9	New Zealand	group 4
In-group	<i>Sagola pulchra</i> Broun	New Zealand	group 5
In-group	<i>Sagola parva</i> Sharp	New Zealand	group 6
In-group	<i>Sagola valida</i> Broun	New Zealand	group 7
In-group	<i>Sagola incisa</i> Théry and Leschen	New Zealand	group 8
In-group	<i>Sagola flavipes</i> Broun	New Zealand	group 9
In-group	<i>Sagola</i> sp. 11	New Zealand	group 10
In-group	<i>Sagola rustica</i> Broun	New Zealand	group 11
In-group	<i>Sagola</i> sp. 17	New Zealand	group 12
In-group	<i>Sagola</i> sp. 18-5	New Zealand	group 13
In-group	<i>Sagola sharpi</i> Raffray	New Zealand	group 14
In-group	<i>Sagola auripila</i> Broun	New Zealand	group 15
In-group	<i>Sagola arboricola</i> Broun	New Zealand	group 16
In-group	<i>Sagola strialis</i> Broun	New Zealand	group 17
In-group	<i>Sagola anisarthra</i> Broun	New Zealand	group 18
In-group	<i>Sagola socia</i> Broun	New Zealand	group 19
In-group	<i>Sagola</i> sp. 51-1	New Zealand	group 20
In-group	<i>Sagola</i> sp. 72	New Zealand	group 21
In-group	<i>Sagola punctulata</i> Raffray	New Zealand	group 22
In-group	<i>Sagola excavata</i> Broun	New Zealand	group 23
In-group	<i>Sagola monstrosa</i> Reitter	New Zealand	group 24
In-group	<i>Sagola misella</i> Sharp	New Zealand	group 25
In-group	<i>Sagola</i> sp. 11-1	New Zealand	group 26
In-group	<i>Sagola major</i> Sharp	New Zealand	group 27
In-group	<i>Sagola bipunctata</i> Broun	New Zealand	group 28
In-group	<i>Sagola genalis</i> Broun	New Zealand	group 29
In-group	<i>Sagola</i> sp. 102	New Zealand	group 30
In-group	<i>Sagola rugicornis</i> Oke	Australia	
In-group	<i>Exeirarthra enigma</i> Broun	New Zealand	
In-group	<i>Stenosagola gracilis</i> (Broun)	New Zealand	<i>gracilis</i> group
In-group	<i>Stenosagola connata</i> (Broun)	New Zealand	<i>connata</i> group
In-group	“ <i>Brounea</i> ” <i>setiventris</i> (Broun)	New Zealand	
In-group	“ <i>Aucklandea</i> ” sp. 22	New Zealand	
In-group	“ <i>Chandlereia</i> ” sp. 40-2	New Zealand	
In-group	“ <i>Nunnea</i> ” sp. 39	New Zealand	
In-group	“ <i>Leschenea</i> ” sp. 48	New Zealand	
In-group	“ <i>Ahnea</i> ” <i>ventralis</i> (Broun)	New Zealand	
In-group	“ <i>Pseudoexeirarthra</i> ” <i>spinifer</i> (Broun)	New Zealand	
In-group	“ <i>Pseudostenosagola</i> ” sp. 98-1	New Zealand	
Out-group	<i>Faronus stolzi</i> W. Balttny & Blatttny	Europe	

(Table 1. continued)

Out-group	<i>Megarafonus ventralis</i> Casey	USA
Out-group	<i>Sonoma totulae</i> (LeConte)	USA
Out-group	<i>Prosagola</i> sp.	Chile
Out-group	<i>Golasidius heteromorphus</i> Jeannel	Chile
Out-group	<i>Golasina</i> sp.	Chile
Out-group	<i>Golasa</i> sp.	Chile

Table 2. Faronite taxa used in molecular phylogeny.

	Species	Locality	Remark	Voucher #
In-group	<i>Sagola</i> sp. 2-7	New Zealand	group 1	P1314
In-group	<i>Sagola latistriata</i> Broun	New Zealand	group 3	P1319
In-group	<i>Sagola</i> sp. 8	New Zealand	group 4	P1305
In-group	<i>Sagola pulchra</i> Broun	New Zealand	group 5	P1230
In-group	<i>Sagola parva</i> Sharp	New Zealand	group 6	P1316
In-group	<i>Sagola valida</i> Broun	New Zealand	group 7	P1315
In-group	<i>Sagola deformipes</i> Broun	New Zealand	group 8	P1310
In-group	<i>Sagola flavipes</i> Broun	New Zealand	group 9	P1225
In-group	<i>Sagola</i> sp. 11	New Zealand	group 10	P1308
In-group	<i>Sagola rustica</i> Broun	New Zealand	group 11	P1312
In-group	<i>Sagola sharpi</i> Raffray	New Zealand	group 14	P1302
In-group	<i>Sagola spiniventris</i> Broun	New Zealand	group 15	P1304
In-group	<i>Sagola</i> sp. 31-1	New Zealand	group 15	P1307
In-group	<i>Sagola strialis</i> Broun	New Zealand	group 17	P1223
In-group	<i>Sagola socia</i> Broun	New Zealand	group 19	P1303
In-group	<i>Sagola</i> sp. 34-4	New Zealand	group 22	P1313
In-group	<i>Sagola excavata</i> Broun	New Zealand	group 23	P1306
In-group	<i>Sagola monstrosa</i> Reitter	New Zealand	group 24	P1222
In-group	<i>Sagola prisca</i> Sharp	New Zealand	group 25	P1318
In-group	<i>Sagola</i> sp. 42-1	New Zealand	group 25	P1229
In-group	<i>Sagola triregia</i> Théry and Leschen	New Zealand	group 27	P1309
In-group	<i>Sagola insignis</i> Broun	New Zealand	group 28	P1224
In-group	<i>Sagola genalis</i> Broun	New Zealand	group 29	P1226
In-group	<i>Sagola rugicornis</i> Oke	Australia		P1231
In-group	“ <i>Brounea</i> ” sp. 14	New Zealand		P1301
In-group	“ <i>Ahnea</i> ” sp. 60	New Zealand		P1311
In-group	“ <i>Pseudoexeirarthra</i> ” <i>colorata</i> (Broun)	New Zealand		P1227
In-group	<i>Exeirarthra enigma</i> Broun	New Zealand		P1203
In-group	<i>Stenosagola gracilis</i> (Broun)	New Zealand	<i>gracilis</i> group	P1204
In-group	<i>Stenosagola chandleri</i> Park and Carlton	New Zealand	<i>connata</i> group	P1228
Out-group	<i>Sonoma</i> sp.	USA		P1101
Out-group	<i>Prosagola</i> sp.	Chile		P1233

Extraction, amplification, sequencing and alignment. All specimens were washed in 100% ethanol and abdomens were removed. I only used the heads and prosterna because to prevent amplification of non-target organisms contained in abdomens. Extraction was performed using the Qiagen Blood & Tissue Kit (Qiagen, Hilden, Germany) based on the manufacturer's instructions. Approximately 640–870 base pairs of COI, *ca.* 1900 base pairs of 18S, *ca.* 970 base pairs of 28S, and *ca.* 520 base pairs of *wg* were amplified using the following primers (Table 3). Polymerase chain reactions (PCRs) were performed using AccuPower PCR Premix (Bioneer, Daejeon, Korea), consisting of 1 Unit of Taq DNA polymerase, 250 μ M of dNTP, 10 mM of Tris-HCl (pH 9.0), 30 mM of KCl, 1.5 mM of MgCl₂, and premixed stabilizer and tracking dye. For each reaction, 1 μ l of template DNA, 1 μ l of each primer, and 18 μ l of distilled water were added into each premixed 0.2 ml tube, resulting in a final concentration of 5 pmole. The default amplification procedure was 5 minutes of activation at 95 °C, 35 cycles of 1 minute of denaturing at 95 °C, 1 minute of annealing at 50 °C, 1 minute and 30 seconds of extension at 72 °C, and 5 minutes for final elongation at 72 °C. The temperature and time were variable depending on taxa. PCR products were then visualized using gel electrophoresis techniques. Successfully amplified products were purified using MEGAquick-spin™ Total Fragment DNA Purification Kit (iNtRON Biotechnology, Sungnam-city, Korea). Amplified and purified samples were sent to Eurofins MWG Operon (Huntsville, Alabama, USA) for sequencing. The raw sequence data were read and edited using Chromas Lite 2.1.1 (Technelysium Pty Ltd, Australia) and BioEdit (Hall 1999). Alignments of sequences were performed using ClustalX 2.1 (Larkin *et al.* 2007), and confirmed manually.

Phylogenetic analysis. Three kinds of methodologies, maximum parsimony, maximum likelihood and Bayesian inference, were used for molecular analysis.

Maximum parsimony analysis was performed using NONA 2.0 (Goloboff 1998) plugged into WinClada (Beta) 0.99 (Nixon, 1999). A heuristic search was performed by multiple TBR + TBR (hold: 10000; mult*N: 1000; hold/: 100). Bootstrap support (Felsenstein 1985) values were calculated to estimate clade (replications: 1000; mult*N: 10; hold/ 10) using WinClada (Beta) 0.99 (Nixon, 1999).

Models of nucleotide evolution were chosen with jModeltest 2 (Posada, 2008), and GTR+I+G was selected by the Akaike Information Criterion (AIC, Akaike, 1974).

Maximum likelihood analysis was performed using RAxML version 7.0.4 (Stamatas's, 2006). Four genes (COI, 18S, 28S and *wg*) used in this study were combined into single matrix, and run by “ML + rapid bootstrap” and 1000 replicates.

Bayesian inference was performed using Beast version 1.7.5 (Drummond 2012). The single matrix same as above was formatted using Beauty version 1.7.2 (Drummond 2012) by the values of random starting tree, GTR model and one million generations. The formatted file was loaded and run by BEAST v1.7.5 (Drummond 2012). The sampled trees were combined at 50% majority rule.

Table 3. Primers used in this study.

Primers	Names	Sequences (5'-3')	References
COI			
	C1J12441	CCAACAGGAGGAATTAATAATTTTATG ATGATTAGC	Jeon et al. 2012
	TL2N3020	GGAGCTTAAATCCAATACTATTCT GCC	Dobler & Muller 1999
	Jerry_F Pat_R	CAACATTTATTTTGATTTTTTGG ATCCATTACATATAATCTGCCATA	Simon et al. 1994 Simon et al. 1994
18S			
	5'18s	GACAACCTGGTTGATCCTGCCAGT	Maddison et al. 1999
	519R	CACCGCGAGCGATGAACCRGCGGCGC	Jeon et al. 2012
	519R-1	CGGCGCGGGACACAYGTTCTGACTACG AGC	modified
	515F	GTGCCAGCMGCCGCGG	Maddison et al. 1999
	18sbi	GAGTCTCGTTCGTTATCGGA	Maddison et al. 1999
	500F	GCCGCGGTAATTCCAGCTCCAATGGC GTA	modified
	1060R	TWAACCAGACARATCRCTCCACCAAC TAA	modified
	1055F	GGTGGTGCATGGCCG	Maddison et al. 1999
	18L 18L-1	CACCTACGGAAACCTTGTTACGACTT ACCTTGTTACGACTTTTACTTCCTCT	Maddison et al. 1999 modified
28S			
	NLF184-21	ACCCGCTGAAYTTAAGCATAT	Van der Auwera et al. 1994
	LS1041R	TACGGACRTCCATCAGGGTTTCCCCTG ACTTC	Wild and Maddison 2008
	LS58F LS988R	GGGAGGAAAAGAACTAAC GCATAGTTCACCATCTTTC	Ober 2002 Ober 2002
Wg			
	Wg550F	ATGCGTCAGGARTGYAARTGYCAYGG YATGTC	Wild and Maddison 2008
	WgAbrZ	CACTTNACYTCRCARCACCARTG	Wild and Maddison 2008

CHAPTER 3. REVISION OF THE NEW ZEALAND FARONITAE

Key to genera of the New Zealand Faronitae

1. Second tarsomere of male fore leg enlarged, at least twice larger than first tarsomere (Figure 5i).....*Exeirarthra*
- 1'. Second tarsomere of male fore leg normal.....2
- 2(1). Metaventricle without lateral metasternal fovea (lmtf) (Figures 105d, 111e).....3
- 2'. Metaventricle with lateral metasternal fovea (lmtf).....4
- 3 (2). Antenna darker than head; anterior frontal fovea with two pair of round fovea; posterior frontal fovea covered by membranous cuticle; ventral prosternum without lateral procoxal fovea (lpcf) (Figure 105).....“*Aucklandea*”
- 3'. Antenna paler than head; anterior frontal fovea absent; posterior frontal fovea exposed; ventral prosternum with lateral procoxal fovea (lpcf) (Figure 107).....”*Leschenea*”
- 4 (2). Abdominal tergite VI enlarged, longer than VII (Figures 5j–k, 12p–q, 18k–l, 107f, 109e, 122g)5
- 4'. Abdominal tergite VI normal, shorter than VII.....9
- 5 (4). Male antennomere 7 enlarged with small round puncture (Figure 107a).....”*Chandlereia*”
- 5'. Male antennomere 7 normal.....6
- 6 (5). Mesoventrite without promesocoxal fovea (pmcf) (Figure 12m).*Stenosagola gracilis*-group
- 6'. Mesoventrite with promesocoxal fovea (pmcf).....7
- 7 (6). Head approximately twice longer than wide (Figures 121a–c).....“*Pseudostenosagola*”
- 7'. Head as long as wide.....8
- 8 (7). Frontal rostrum connected (Figures 18d–f).....*Stenosagola connata*-group
- 8'. Frontal rostrum meet each other with linear frontal sulcus (Figure 113g).....“*Nunnea*”
- 9 (4). Prosternum without lateral procoxal fovea (lpcf) (Figures 102n, 113h).....10
- 9'. Prosternum with lateral procoxal fovea (lpcf).....11
- 10 (9). Head rectangular; posterior frontal fovea covered by membranous cuticle (Figure 113g).....“*Ahnea*”
- 10'. Head round; posterior frontal fovea exposed (Figures 102l–m).....“*Brounea*”
- 11 (9). Head neither of anterior and posterior frontal fovea (Figure 116k); mesoventrite without promesocoxal fovea (pmcf) (Figure 116m).....”*Pseudoexeirarthra*”
- 11'. Head with at least one of anterior and posterior of frontal fovea (Figure 82o); mesoventrite with promesocoxal fovea (pmcf) (Figure 82q).....“*Sagola*”

3.1 REVISION OF THE GENUS *EXEIRARTHRA* BROUN*

The New Zealand endemic genus *Exeirarthra* Broun, 1893 includes five previously described species (Nomura and Leschen 2006). It was described with two species, *E. enigma* Broun and *E. pallida* Broun, in separate parts of Broun's “Manual of the New Zealand Coleoptera” that were combined and published the same year (Broun 1893a, 1893b). Three additional species were subsequently described by the same author (Broun 1917, 1921a).

* This chapter 3.1 previously appeared as Park & Carlton, Revision of the New Zealand genus *Exeirarthra* (Coleoptera: Staphylinidae: Pselaphinae: Faronitae), 2011. It is reprinted by permission of Alan Kahan (See Appendix C).

Members of *Exeirarthra* are found in leaf litter and decayed wood habitats that have high arthropod diversity (Kuschel 1990). The genus is a member of the supertribe Faronitae Reitter, which has been regarded as containing the most plesiotypic members of the subfamily Pselaphinae (Newton and Thayer 1995). The group has great potential for use in ecological, phylogenetic, and biogeographic studies (Chandler 1987). Members of *Exeirarthra* are similar to the largest faronite genus *Sagola* Sharp. Until this study, no single diagnostic character or combination of characters have been proposed that morphologically link all species within the genus to the exclusion of other genera within the supertribe (Nomura and Leschen 2006). No revisional study of *Exeirarthra* has been conducted since the original isolated descriptions.

Genus *Exeirarthra* Broun

Exeirarthra Broun 1893a: 1054; Raffray 1904: 492; Raffray 1908: 15; Raffray 1911: 4; Hudson 1923: 366; Hudson 1934: 184; Newton & Chandler 1989: 18; Kuschel 1990: 48; Nomura & Leschen 2006: 240.

Type species. *Exeirarthra enigma* Broun 1893a; fixed by monotypy.

Diagnosis. The members of *Exeirarthra* are similar to the largest faronite genus *Sagola* Sharp. All species may be separated from other faronite genera by the following combination of characters: head with narrow or linear form of frontal sulcus, frontal fovea absent (Figures 5c, 6c, 6h, 6m, 7c, 7h); eyes medium-sized to large (Figures 5c, 6c, 6h, 6m, 7c, 7h); labrum with 23 long setae, and two pairs of short setae (Figures 5d, 6d, 6i, 6n, 7d, 7i); mentum subquadrate, two pairs of setae present on anterior area (Figure 5e); prosternum with median procoxal fovea (Figure 5g: small arrow) and lateral procoxal fovea (Figure 5g: large arrow); scutellum inverted-triangular, two setae present on posterior area (Figure 5f); meso- and metasternum without promesocoxal fovea (Figure 5h), and median metasternal fovea (Figure 5h) bearing long setae from posteromesal margins of metacoxal cavities (Figure 5h: small arrow) and short setae on metasternum (Figure 5h: large arrow), mesosternum with reticulate microsculpture (Figure 5h); male protarsomere 2 enlarged (Figure 5i); abdominal tergites without discal striae (Figure 5j), tergite and sternite VI distinctly larger than V and VII (Figure 5j); abdominal sternites IV–VI with distinct basolateral fovea (Figure 5k: arrow). The form of the frontal sulcus, presence of reticulate microsculpture on the mesosternum, and form of protarsomere 2 will distinguish species of *Exeirarthra* from New Zealand *Sagola* species.

Comments. Shapes of the mouthparts (mandible, maxilla, and labium) are uniform in members of the genus *Exeirarthra*. Labral morphology is also similar, with equal numbers of setae. However, the setal arrangements vary (Figures 5d, 6d, 6i, 6n, 7d, 7i), and the conspecific arrangements are consistent. Multiple specimens from widely scattered localities for each species were examined in detail to check for potential individual variation.

Key to Species of the Genus *Exeirarthra*

1. Eyes larger, as long as temple (Figures 5c, 7c, 7h); elytra approximately distinctly longer than wide (Figures 4a, 4e–f); hind wings present; abdominal tergite IV with pair of transverse patches of microtrichia of microtrichia (Figure 5j).....2
- 1'. Eyes smaller, one-half length of temple (Figures 6c, 6h, 6m); elytra approximately as long as wide or slightly longer (Figures 4b–d); hind wings absent; abdominal tergite IV without a pair of transverse patches of microtrichia of microtrichia.....4

- 2 (1). Frontal rostral lobes contiguous (Figure 5c: small arrow), antennomeres 4–7 elongate (Figures 5a–b)..... *E. enigma* Broun
 2'. Frontal rostral lobes separated by frontal sulcus (Figures 7c, 7h: small arrow), antennomeres 4–7 subquadrate or slightly longer than wide (Figures 7a–b, 7f–g).....3
 3 (2). Male genitalia as in Figure 6e; recorded from southern South Island (CO, DN, SL: Figure 10).....*E. nunni* n. sp.
 3'. Male genitalia as in Figure 7j; recorded from northwest South Island (NN: Figure 10).....*E. parviceps* Broun
 4 (1). Frontal rostral lobes contiguous (Figure 6m: small arrow), median lobe with long flagellum (Figure 6o), paramere as wide as median lobe (Figure 6o).....*E. mccollae* n. sp.
 4'. Frontal rostral lobes separated by frontal sulcus (Figures 6c, 6h: small arrow), median lobe without long flagellum (Figures 6e, 6j), paramere narrower than median lobe (Figure 6e, 6j).....5
 5 (4). Posterior frontal sulcus ring-shaped (Figure 6c); median lobe and parameres not extremely narrow (Figure 6e); recorded from mid-western South Island (WD, FD, OL: Figure 9).....*E. longiceps* Broun
 5'. Posterior frontal sulcus linear (Figure 6h); median lobe and parameres extremely narrow (Figure 6j); only recorded from southern South Island (FD, SL: Figure 9).....*E. maclellanensis* n. sp.

***Exeirarthra enigma* Broun 1893**

Exeirarthra enigma Broun 1893a: 1054. Raffray 1904: 495; 1908: 15; 1911: 4. Hudson 1923: 366. Raffray 1924: 231. Hudson 1934: 184. Kuschel 1990: 48. Nomura and Leschen 2006: 241.

Exeirarthra angustula Broun 1917: 374. Hudson 1923: 366; 1934: 184. Nomura and Leschen 2006: 241. **New synonym.**

Exeirarthra pallida Broun 1893b: 1424. Raffray 1904: 495; 1908: 15; 1911: 4. Hudson 1923: 366. Raffray 1924: 231. Hudson 1934: 184. Nomura and Leschen 2006: 241. **New synonym.**

Type material examined. Holotype: New Zealand: Auckland (AK): ♂ (prosternum and head missing), “Type” [red label, printed]; “1885.” [white label, handwritten]; “Howick” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Exeirarthra enigma*” [white label, handwritten]; “♂, but lacking an aedeagus!! '87 D S Chandler” [white label, handwritten]. **Syntypes of *Exeirarthra angustula*: New Zealand: Nelson (NN):** 1♂, “Type” [red label, printed]; “3824.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 10.12.1914” [white label, handwritten]; “*Exeirarthra angustula*. ♂” [white label, handwritten]. 1♀, “3824.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 10.12.1914.” [white label, handwritten]; “*Exeirarthra angustula*. ♀” [white label, handwritten]. **Holotype of *Exeirarthra pallida*: New Zealand: Auckland (AK):** 1♂, “Type” [red label, printed]; “2474” [white label, handwritten]; “Hunua, Maketua” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Exeirarthra pallida*.” [white label, handwritten]. Deposited BMNH.

Additional material (n=311). New Zealand: Northland (ND): 1♂1♀, Waipoua State Forest, 0.9km e Forest Hqtrs. 120m, 26 XI–4 XII 1984, hdwd,-podocarp forest, A. Newton, M. Thayer 686, leaf & log litter, forest floor; 1♂1♀, Waipoua State Forest, 0.9km e Forest Hqtrs. 120m, 26 XI–4 XII 1984, hdwd,-podocarp forest, A. Newton, M. Thayer 686, flight intercept

(window) trap; 1♂, Waipoua State Forest, vic. Wairau Summit, 460m, 27 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 683, carrion trap (squid); 1♂, Waipoua State Forest, Kauri Ricker Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 684, flight intercept (window) trap; 2♂ (1♂ slide-mounted), Waipoua State Forest, vic. Wairau Summit, 460m, 27 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 688, flight intercept (window) trap; 1♂, Waipoua State Forest, 0.8km nw Wairau Summit, 350m, 27 XI 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 689, berl. leaf & log litter, forest floor; 1♀, Waipoua State Forest, 0.8km s Waikohatu Stream bridge, 270m, 28 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 692, flight intercept (window) trap; 1♂6♀, Waipoua Forest, Waipoua Stream, 70m, 16–21 II 1978, berl. litter, kauri forest, S & J Peck; 1♂1♀, Waipoua State Forest, 3–5 I 1975, J. C. Watt, pit trap in mixed Griselinia; 1♀, Omahuta State Forest, Kauri Sanct. 18 III 1978, S & J Peck, 300m, Rangiahua, Berlese, forest litter; 1♂, Radar Bush, Te Pahi, 15 XI 1994, J. Nunn; **Auckland (AK)**: 2♂3♀ (1♀ slide-mounted), Hunua Range, Vining Reserve, Mangatangi Track, 240m, 37°07.747'S, 175°13.024'E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc, FMHD#2005-005, flight intercept trap, A. Newton & M. Thayer, et al., ANMT site 1141; 3♀, Warkworth, Dome State Forest, 330m, 15 III 1978, S & J Peck, berl., forest litter, 1♀, Bethells, Matuku Res, 11 VI–18 VII 1984, M.F. Tocker, Pit traps 7–11; 1♀, Riverhead State Forest Reserve, 11 XI 1980, P.A. Maddison; 1♀, Matakana nr Warkworth, 25 XI 1995, in litter from bush remnant, J. Nunn; 2♂, Symonds St. Cemetery, Auckland, 40m, 2–6 IV 2010, L. Masner, yellow pan traps; 2♂, Symonds St. Cemetery, Auckland, 40m, 23 IV 2010, D. S. Chandler, sift leaf litter in ravine; 1♂, Murphys Bush, 39m, 5km NE Manukau, 19 III 2010, D. S. Chandler & K.P. Puliafico, sift litter in dry ravine; 1♂, Waharau Regional Rk., nr. Waihihi Stream, 1.5km W park entrance, 56m, 13 III 2010, D. S. Chandler, sift rotten log; 2♀, Waharau Regional Rk., nr. Waihihi Stream, 1.5km W park entrance, 56m, 13 III 2010, D. S. Chandler, sift leaf litter along stream; 1♀, Clevedon Scenic Reser., 0.5km N Clevedon, 20m, 19 III 2010, D. S. Chandler, sift forest litter by stream; 2♀, Mt. Auckland, Atuanui Scenic Reserve, 250m, 2.5km NE Glorit, 2 II 2010, D. S. Chandler, sift kauri litter; **Coromandel (CL)**: 1♂2♀, Cuvier I, Northwest Ridge, 25 II–2 III 1982, G. Hall, Malaise trap in native bush; 1♀, Gt Barrier I, Mt Hobson, Upper Kauri Dam, 11 IV 1982, J. C. Watt, litter 82/50; **Waikato (WO)**: 1♀, Pirongia Forest Park, Mahaukura Track (above end Grey Rd.), 270m, 37°58.281'S, 175°06.523'E, 18 XI–27 XII 2005, mixed broadleaf forest, FMHD#2005-009, flight intercept trap, A. Newton & M. Thayer, et al., ANMT site 1142; 1♀, Mahoenui, Gribbons Rd, 26 VI 1977, G.W. Ramsay, litter 77/81; 1♀, Mahoenui, Gribbons Rd, 26 VI 1977, J.C. Muricer, sifted litter 77/79; 1♀, Mahoenui, Gribbons Road, 26 I 1977, N.H. Mancer, sifted litter 77/78; **Bay of Plenty (BP)**: 8♂11♀, Tapapa Tukorehe Res., 300m, 25 III 1978, S & J Peck, berl., litter; 1♂3♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit road, 450m, 37°31.429'S, 175°44.005'E, 19 XI 2005, mixed broadleaf forest w/many tree ferns, nikau plams, FMHD#2005-016, flight intercept trap, A. Newton & M. Thayer, ANMT site 1144; 6♂7♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha, upper end Tui Mine Track, nr. summit road, 775m, 37°31.685'S, 175°44.684'E, 19 XI–26 XII 2005, low *Nothofagus menziesii* forest w/*Astelia* ground layer, FMHD#2005-019, flight intercept trap, A. Newton & M. Thayer, ANMT site 1145; 3♂2♀, Lake Okataina, 9 X 1995, M.C. Lariviere & A. Larochelle, litter 95/12; 1♂2♀, Lottin Pt Rd, Waenga Bush, 27 I 1993, J.I. Townsend, sifted litter 93/7; 1♂, Lottin Pt Rd, Waenga Bush, 16 IX 1992, R. C. Henderson, Sifted litter 92/51; 1♂, Lottin Pt Rd, Waenga Bush, 27 IV 1993, G. Hall, litter 93/99; 1♂, Orete Forest, Te Puia Hut, 25 I 1993, J. S. Dugdale, litter 93/3; 1♂, Papatea, 5 XI 1993, R. C. Henderson, litter 93/117; 1♂, Papatea, 5 XI 1993, R. C. Henderson,

litter 93/115; 1♂, Lake Rotoiti, Ratoehu Rd N of Motowhara Bluff, 29 XII 1977, J. S. Dugdale, ex logs and dead branches in forest; 1♀, Waiaroho, 26 I–10 III 1993, J. S. Dugdale, Malaise trap; 1♀, Te Koau, 243m, 24 X–1 XII 1992, G. Hall, Malaise trap; 1♀, Okere Falls Scenic Reserve, 21 X 1979, J. S. Dugdale, Liverworts 79/99; 1♀, Fitzgerald Glade, Tapapa, 19 IX 1995, M.C. Lariviere & A. Larochelle, litter 95/9 Broadleaf forest; 1♀, Te Koau, Hovells Watching Dog Tk, 500m, 24 IX 1992, J. S. Dugdale; 1♀, Papatea, 24 IX–19 X 1992, J. S. Dugdale, Malaise trap; 1♀, Papatea, 30 X–23 XI 1992, G. Hall, Malaise trap; 1♂, Kaimai, 31 I 1928, A. E. Brookes collection; 1♀, Mt. Te Aroha, 3km E Te Aroha, Dog Kennel Flat Track, 850m, 15 II 2010, D. S. Chandler; 3♀, Mt. Te Aroha, 2.5km SE te Aroha, 390m, Tui Road at Tui Creek, Mt. Domain Track, 15 II 2010, D. S. Chandler, sift forest leaf litter; **Gisborne (GB):** 9♂9♀, Urewera N.P., Maungapohatu Rd., 32km E Taupeupe Saddle, 1110m, 38°36.975'S, 177°02.753'E, 22 XI 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-027, berl., leaf & log litter, A. Newton & M. Thayer, ANMT site 1148; 3♂1♀, Urewera N.P., Waikaremoana Rd., S end Matanunui Ridge, 720m, 38°44.404'S, 177°05.806'E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-118, berl., leaf & log litter, M. Thayer & A. Solodovnikov, ANMT site 1149; 1♂, Mt Hikurangi, 1372m, 14 I 1979, A. K. Walker & R. A. Galbreath litter 79/1; 1♂, Urewera N.P., Black Beech Tr. at Lake Waikaremoana, rotten wood, berlese, 17 III 2000, C. Carlton & A. Weir, #048; 1♀ (slide-mounted), Urewera N.P., Waikaremoana Rd., S end Matanunui Ridge, 720m, 38°44.404'S, 177°05.806'E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, flight intercept trap, M. Thayer & A. Solodovnikov, ANMT site 1149; **Taupo (TO):** 4♂4♀, 34km SSE Taupo, Kaimanawa For. Pk., 850m, 11–26 III 1978, S & J Peck, berl., litter *Nothofagus* forest; 4♂4♀, Whirinaki Forest Park, Arohaki Lagoon Track, 500m, 38°40.82'S, 176°40.032'E, 21 XI 2005, mixed broadleaf forest incl. *Beilschmidia tawa*, FMHD#2005-024, berl., leaf & log litter, A. Newton & M. Thayer, et al., ANMT site 1147; 1♂, Mill Rd., Kaimanawa For. Pk., SSE Taupo, 840m, 3–8 IV 1980, *Nothofagus* forest, A. Newton & M. Thayer, carrion trap (squid) 610; 1♂, Waituhi Saddle, 16 XI 1983, C. F. Butcher, litter, moss and rotten wood 83/112; 1♀, Waikato-Waipakihi Junction, 32km S of Turangi, 915m, 19 II 1979, J. S. Dugdale, mosses liverworts and litter 79/23; 1♀, Waituhi Saddle, 1 IX 1993, leaf litter, J. Nunn; 1♀, Retaruke nr Frua, III 1911, 1885, T. Broun collection, A. E. Brookes collection; **Hawkes Bay (HB):** 1♀, Ngahere Hut, 980m, 21 XII 1983, J. C. Watt, litter and woodmould 83/141; **Rangitikei (RI):** 1♂, Fern Walk, Totara Res, Pohangina 15 II 1997, in forest leaf litter, J. Nunn; 1♀, Wharite nr summit, 23 X 1993, J. Nunn; **Wanganui (WI):** 1♀, nr Glow-worm Cave, Table Hill Rd nr Apiti, 8 II 1998, J. Nunn; **Wellington (WN):** 1♂2♀, Tararua Forest Park, above Akatarawa Saddle, 455m, 40°56.936'S, 175°06.529'E, 26 XI 2005, broadleaf-podocarp forest on slope, FMHD#2005-033, berl., leaf & log litter, A. Newton & M. Thayer, ANMT site 1151; 1♂1♀, Tararua Forest Park, above Akatarawa Saddle, 455m, 40°56.936'S, 175°06.529'E, 26 XI–21 XII 2005, broadleaf-podocarp forest on slope, FMHD#2005-0112, flight intercept trap, A. Newton & M. Thayer, ANMT site 1151; 1♂6♀, Wellington, Wilton's Bush, 110m, 41°15.963'S, 175°45.159'E, 24 XI 2005, mixed broadleaf-podocarp forest, FMHD#2005-030, berl., leaf & log litter, M. Thayer & A. Newton, ANMT site 1150; 4♂4♀, Akatarawa saddle, Tararua S.F. (S of Waikanoe), 500m, 7 III 1978, S Peck, Berl litter; 4♂1♀, Tararua Ra, Dundas Hut, 1250m, 13 II 1985, B.A. Holloway, litter and tussock 85/25; 1♂1♀, Tararua Ra, Dundas Hut Ridge, 990m, 13 II 1985, C. F. Butcher, sifted litter 85/20; 1♂, Tararua Ra, Dundas Hut Ridge, 950m, 3 XII 1984, R. C. Craw, sifted litter 84/87; 1♂, Tararua Ra, Dundas Hut, 1250m, 4 XII 1984, R. C. Craw, sifted litter 84/89; 1♂, Tararua Ra, Dundas Hut Ridge, Rain Gauge Knob, 13 II 1985, G.W. Ramsay litter 85/14; 1♂2♀

(1♂ slide-mounted), Tararua Forest Park, off Waiotauru Rd, 31 VIII 1998, E. Spurr; 1♂2♀, Tararua Forest Park, off Waiotauru Rd, 15 IX 1998, E. Spurr; 1♀, Tararua Forest Park, off Waiotauru Rd, 18 VIII 1998, E. Spurr; 1♀, Tararua Ra, Dundas Hut Ridge, 990m, 3 XII 1984, B. G. Bennett & T. K. Crosby, sifted litter 84/83; 2♀, Tararua Forest Park, off Waiotauru Rd, 8 IX 1998, E. Spurr; 1♂1♀, Karori Reservoir, 9 III 1997, in earthy/twiggy streamside debris, J. Nunn; 1♂, Khandallah, Domain, 4 VI 1995, in subhumified wood, J. Nunn; 1♂, Pakuratahi Forks, 1 VI 1992, J. Nunn; 1♂, Mt Thompson, 2000', Tararua F.P., 24 IX 1988, J. Nunn; 1♂, West L Wairarapa Res, 20 IV 1997, Shaken from fallen *Astelia*, J. Nunn; 1♂, Pakuratahi Forks, Kaitoka, 1 VIII 1993, in *Cortaderia* litter; 2♂, Karori Reservoir, 21 XII 1994, J. Nunn; 1♂, Makara Bush, V 1977, J. Nunn; 1♀, Khandallah Domain, 26 IX 1993, in *Cyathea* litter, J. Nunn; 2♀, Khandallah Domain, in *Cyathea* litter, J. Nunn; 1♀, Khandallah Domain, XI 1993, J. Nunn; 2♀, Tararua FP, 4km along Waiotauru Rd, 16 XI 1991, J. Nunn; 1♀, Khandallah Domain, 5 IV 1994, leaf litter, J. Nunn; 1♀, Pakurarahi Forks, Kairoke, 24 VII 1993, in *Cortaderia*, J. Nunn; 1♀, Johnston Hill, Karori, 28 VII 1996, in/on *Auricularia* infested log on forest floor, J. Nunn; 1♀, Wilton Bush, Wellington, 10 VII 1993, in *Astelia*, J. Nunn; 1♀, Tararua Forest Park, Judd Ridge, Field's Track, Field Hut vic., 855m, 40°54.474'S, 175°15.371'E, 24 XI–26 XI 2005, broadleaf (*Notho. mezesii*, *Weinmannia racemosa*)-podocarp forest, FMHD#2005-037, berl., forest leaf litter, A. Solodovnikov & D. Clarke, ANMT site 1143; **Nelson (NN)**: 6♂9♀, 39km NW Motueka, Tasman Nat. Pk., 22 V 1982, FMHD#82-596, beech forest stump litter, S. Peck; 1♀, 20km NW Motueka, Riwaka River Res., 28 V 1982, FMHD#82-605, mixed forest litter, S. Peck; 1♀, Riwaka, 7 I 1942, A. Hamilton; 2♂1♀, Takaka Hill, 2500', 7 V 1957, E.S. Gourlay; 3♂, Glenhope, 10 XII 1914, T. Hall, 3824, T. Broun collection, A. E. Brookes collection; **Marlborough Sounds (SD)**: 3♂1♀, 70km NE Nelson, Tennyson Inlet, 480m, 27 V 1982, FMHD#82-604, Beech forest litter, S. Peck; 1♂3♀, 30km NE Havelock, Mistletoe Bay Res., 26 V 1982, FMHD#82-603, Beech forest litter, S. Peck; 1♀, Tennyson Inlet Road, 115–135m, 30 XII 1984–5 I 1985, forest streams. hdwd. *-podo.-nikau* for., A. Newton & M. Thayer 723, berl., leaf & log litter, forest floor; 2♀, 3km NW Picton, Queen Charlotte Dr., 26 V 1982, FMHD#82-602, forest litter, S. Peck; 1♀, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd., A. Newton & M. Thayer 710, flight intercept (window) trap; **Marlborough (MB)**: 2♂1♀, 15km W Havelock, Pelorus Bridge Res., 25 V 1982, FMHD#82-600, mixed forest litter, S. Peck; 1♀, Pelorus Bridge Scenic Reserve, 35m, 41°18.3'S, 173°34'E, 27 XI 2005, mixed broadleaf (incl. *Nothofagus* spp.)-podocarp forest, FMHD#2005-042, berl., leaf & log litter, A. Newton & D. Clarke, ANMT site 1155; **Buller (BR)**: 7♂5♀, Nelson Lakes Nat. Park, Lake Rotoiti, 600m, 6 II 1978, S & J Peck, *Nothofagus* forest, streamside litter; 3♂, Nelson Lakes N.P., Mt. Robert, Speargrass Track, 875m, 41°49.469'S, 172°48.311'E, 17 XII 2005, *Nothofagus* spp. forest, FMHD#2005-110, berl., leaf & log litter, A. Solodovnikov & D. Clarke, ANMT site 1161; 2♂7♀, Nelson Lks N.P., n slope Mt. Robert, Pinchgut Track, 950m, 14 XII 1984–6 I 1985, *Nothofagus* spp. forest, A. Newton & M. Thayer 707, berl., leaf & log litter, forest floor; 1♂, Nelson Lakes N.P., Mt. Robert, Speargrass Track, 875m, 41°49.469'S, 172°48.311'E, 30 XI–17 XII 2005, *Nothofagus* spp. forest, FMHD#2005-059, flight intercept trap, A. Newton & M. Thayer, ANMT site 1161; 2♀, Nelson Lakes N.P., Mt. Robert, Speargrass Track, 875m, 41°49.469'S, 172°48.311'E, 30 XI–17 XII 2005, *Nothofagus* spp. forest, FMHD#2005-061, pitfall traps (10), A. Solodovnikov & D. Clarke, ANMT site 1161; 2♀ (1♀ slide-mounted), Lewis, Pass Nat. Res., 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* spp. forest, A. Newton & M. Thayer 715, berl., leaf & log litter, forest floor; 1♀, Nelson Lks. N.P., Lake Rotoiti, St. Arnaud Track, 670m, 14 XII 1984–6 I 1985, *Nothofagus*

spp. forest, A. Newton & M. Thayer 706; 1♂, Nelson Lakes N.P., N slope Mt. Robert, 860m, 23–26 III 1980, *Nothofagus* spp., A. Newton & M. Thayer, berl., leaf & log litter, forest floor; 1♂, Nelson Lakes Nat. Park, Lake Rotoiti, 600m, 4–9 II 1978, S & J Peck, *Nothofagus* forest, bait traps (carrion); 2♂1♀, L. Rotoiti, 600m, 6 II 1978, S & J Peck, streamside litter; 1♀, 14km SE Reefton, 250m, 29 V 1982, FMHD#82-606, beech forest, S. Peck; 1♀, Glenhope SR, 21 II 1989, J. Nunn; 1♀, Lewis Pass Nat. Res., 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* spp. forest, A. Newton & M. Thayer 714, flight intercept (window) trap; **Westland (WD)**: 1♀, 2.7km S Franz Josef Glacier Alex Knob Tr., 200–250m, 43°25'S, 173°10'E, #071, ex *Cyclomyces tabascinus*, 16 I 1998, C. Carlton & R. Leschen; 2♂1♀, Okuku Cl., 11.3km SSE Kumara, 60m, 18–22 III 1980, podocarp-broadf., A. Newton & M. Thayer, berl., leaf & log litter, forest floor; 1♂, Otira R., 6.8km NE Otira, 280m, 18–21 III 1980, *Nothofagus fusca*-podocarp, A. Newton & M. Thayer, berl., leaf & log litter, forest floor; 2♂, Kelly's Ck, Otira, 25 II 1989, J. Nunn; 1♀, Kellys Ck, Otira Vly, 9 IV 2010, sifted ground litter, kamahi forest, J. Nunn; 1♀, L. Mahinapua Scen. Res., 30m, 16–22 III 1980, podocarp-mixed broadleaf, A. Newton & M. Thayer, berl., leaf & log litter, forest floor; **Otago Lakes (OL)**: 1♂ (slide-mounted), Lake Hawea, Hunter Valley Road, Sawyer Burn, 400m, 10–17 I 1985, *Noth. solandri* forest, A. Newton & M. Thayer 737, under bark *Nothofagus solandri* logs. Specimens are deposited in the collections of DSC, FMNH, JTN, and NZAC.

Diagnosis. *Exeirarthra enigma* differs from *E. longiceps*, *E. macleanensis*, and *E. mcollae* by larger eyes (Figure 5c), more elongate elytra (Figure 4a), fully developed hind wings, and abdominal tergite IV with a pair of transverse patches of microtrichia (Figure 5j). This species is similar in appearance to *E. nunni* and *E. parviceps*, but it can be distinguished by the contiguous frontal rostral lobes (Figure 5c: small arrow), longer antennomeres 4–7 (Figures 5a–b), and unique shape of the genitalia (Figure 5l).

Redescription. Length 2.3–2.7 mm. Male antennomere 1 elongate, 2 longer than wide, 3 slightly longer than wide, 4–7 longer than wide, 8–11 weakly clavate (Figure 5a). Female antennomere 1 elongate, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–7 slightly longer than wide, 8–11 weakly clavate (Figure 5b).

Head. Head approximately 1.3 times longer than wide. Frontal rostral lobes contiguous (Figure 5c: small arrow). Frontal sulcus reaching level of two-thirds length of eye from end of frontal rostral lobes (Figure 5c: large arrow). Four pairs of setal pores present dorsally on head (Figure 5c). Eye large and prominent, as long as temple (Figure 5c). Labrum as in Figure 5d.

Thorax. Prosternum as long as wide (Figure 5g). Elytra rectangular, approximately 1.9 times longer than wide. Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide (Figure 5h).

Abdomen. Abdominal tergite IV with a pair of transverse patches of microtrichia (Figure 5j: arrow). Tergite VI transverse, approximately 0.67 times as long as wide.

Aedeagus. Median lobe shorter than parameres, flagellum present at tip (Figure 5l). Paramere enlarged, seven setae present (Figure 5l).

Type locality. Howick (AK), New Zealand.

Distribution. Throughout North Island and northwestern part of South Island, New Zealand (Figure 8).

Habitat. Most specimens were collected by sifting litter, or using window and flight intercept traps in broadleaf, podocarp, and *Nothofagus* forests.

Comments. *Exeirarthra enigma* may be separated from other species externally by the size of the eyes, form of the frontal rostrum, and the antennomere sizes and shapes. The types of

E. angustula and *E. pallida* share these diagnostic characters. *Exeirarthra enigma* has been collected at or near the type localities of both *E. angustula* and *E. pallida*. For these reasons, I concluded that there is not sufficient evidence to maintain *E. angustula* and *E. pallida* as separate species.

***Exeirarthra longiceps* Broun, 1917**

Exeirarthra longiceps Broun, 1917: 375. Hudson, 1923: 366; 1934: 184. Nomura and Leschen, 2006: 241.

Type material examined. Holotype: New Zealand: Otago Lakes (OL): ♂, “Type” [red label, printed]; “3825. ♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hollyford, 19-2-1914.” [white label, handwritten]; “*Exeirarthra Longiceps*. ♂” [white label, handwritten]. Deposited BMNH.

Additional material (n=11). New Zealand: Westland (WD): 1♂, 3.2km NE Haast, 14m, Haast River Walk, 43°52'S, 169°03'E, #072, *Nothofagus*/*Podocarp* forest leaf litter berlese, 17 I 1998, C. Carlton & R. Leschen; 1♂, 3km N of Bruce Bay, 6 II 2009, sifted moss from podocarp swamp forest; **Fiordland (FD):** 2♂3♀ (1♂ slide-mounted), Milford Rd, Tutoko River, #112, 44°41'S, 167°56'E, coastal forest leaf litter berlese, 22 I 1998, C. Carlton & R. Leschen; 1♂3♀, Fiordland N.P., Milford Sound Rd., Tutoko Track, 70m, 44°40.517'S, 167°57.895'E, 9 XII 2005, very mossy *Nothofagus* spp. forest, emergent podocarp, FMHD#2005-086, berl., leaf & log litter, A. Newton & M. Thayer, ANMT site 1168. Specimens are deposited in the collections of FMNH and LSAM.

Diagnosis. *Exeirarthra longiceps* differs from *E. enigma*, *E. nunni* and *E. parviceps* by smaller eyes (Figure 6c), short and compact elytra (Figure 4b), and abdominal tergite IV lacking transverse patches of microtrichia. It differs from *E. mccollae* by the separate frontal rostral lobes (Figure 6c: small arrow). This species is similar to *E. maclellanensis*, but it may be distinguished by the ring-shaped posterior frontal sulcus (Figure 6c), arrangement of labral setae (Figure 6d), and unique shape of genitalia unique to species (Figure 6e).

Redescription. Length 1.8–2.1 mm. Male antennomere 1 elongate, 2 longer than wide, 3 subquadrate, 4–8 longer than wide, 9–11 weakly clavate (Figure 6a). Female antennomere 1 elongate, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8 subquadrate, 8–11 weakly clavate (Figure 6b).

Head. Head approximately 1.4 times longer than wide. Frontal rostral lobes separated by frontal sulcus (Figure 6c: small arrow). Frontal sulcus reaching level of middle of eye (Figure 6c: large arrow), posterior frontal sulcus ring-shaped (Figure 6c). Three pairs of setal pores present dorsally on head (Figure 6c). Eye of normal size, prominent, approximately 0.6 times as long as temple (Figure 6c). Labrum as in Figure 3d.

Thorax. Prosternum as long as wide. Elytra approximately triangular, approximately 1.6 times longer than wide. Hind wings absent. Meso- and metathorax trapezoidal, as long as wide.

Abdomen. Abdominal tergite IV without a pair of transverse patches of microtrichia. Tergite VI transverse, approximately 0.7 times as long as wide.

Aedeagus. Median lobe as long as paramere, broader than paramere (Figure 6e). Paramere slender, several setae present at tip (Figure 6e).

Type locality. Hollyford, north of Lake Wakatipu (OL), New Zealand.

Distribution. Midwestern part of South Island, New Zealand (Figure 9: triangles).

Habitat. Most specimens were collected by sifting litter in podocarp, and *Nothofagus* forests.

***Exeirarthra macleannanensis* Park & Carlton, new species**

Type material. Holotype. New Zealand: Southland (SL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “MacLennon Southld. 100’ 13.11.68 J. I. Townsend”, “moss 68/30”, “N.Z. Arthropod collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “HOLOTYPE *Exeirarthra macleannanensis* Park and Carlton des. 2011”. *The original locality label seems to be misspelled. MacLennan is presumed as the correct name of “MacLennon”. **Paratype (n=4). New Zealand: Southland (SL):** 1 ♀ (slide-mounted), “MacLennon Southld. 100’ 13.11.68 J. I. Townsend”, “moss 68/38”, “N.Z. Arthropod collection, NZAC Private Bag 92170 AUCKLAND New Zealand” (NZAC); **Fiordland (FD):** 1 ♂ 1 ♀ (1 ♂ slide-mounted), “NEW ZEALAND: FD: Fiordland N.P., Borland Rd., Borland Saddle vic., 980m, 45°44.81’S, 167°22.88’E, 10 XII 2005, *Nothofagus menziesii* forest in ravine, FMHD#2005-090, berl., leaf & log litter, A, Newton & M. Thayer, ANMT site 1171” (FMNH); 1 ♀, “New Zealand FD Borland Sdl Hunter Mtns 26 Jan 2011”, “Sifted ground moss from beech forest” (JTN).

Etymology. This species is named after the locality of holotype, MacLennan, Southland (SL).

Diagnosis. *Exeirarthra macleannanensis* differs from *E. enigma*, *E. nunni* and *E. parviceps* by its smaller eyes (Figure 6h), short and compact elytra (Figure 4c), and abdominal tergite IV lacking transverse patches of microtrichia. It differs from *E. mccollae* by the separate frontal rostral lobes (Figure 6h: small arrow). This species is similar in appearance to *E. longiceps*, but it may be distinguished by the linear posterior portion of the frontal sulcus (Figure 6h), arrangement of labral setae (Figure 6i), and unique shape of the genitalia (Figure 6j).

Description. Length 1.9–2.2 mm. Antennomere 1 elongate, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8 subquadrate, 9–11 weakly clavate (Figures 6f–g).

Head. Head approximately 1.5 times longer than wide. Frontal rostral lobes separated by frontal sulcus (Figure 6h: small arrow). Frontal sulcus reaching posterior to level of one-third length of eye (Figure 6h: large arrow), posterior portion of frontal sulcus linear (Figure 6h). Three pairs of setal pores present dorsally on head (Figure 6h). Eye of normal size, prominent, approximately 0.6 times as long as temple (Figure 6h). Labrum as in Figure 6i.

Thorax. Prosternum as long as wide. Elytra slightly triangular, approximately 1.5 times longer than wide. Hind wings absent. Meso- and metathorax trapezoidal, as long as wide.

Abdomen. Abdominal tergite IV without a pair of transverse patches of microtrichia. Tergite VI transverse, approximately 0.8 times as long as wide.

Aedeagus. Median lobe slender, but broader and slightly shorter than paramere (Figure 6j). Paramere extremely slender, several setae present at tip (Figure 6j).

Distribution. southern part of South Island, New Zealand (Figure 9: squares).

Habitat. Specimens were collected by sifting beech and moss litter in *Nothofagus* forests.

***Exeirarthra mccollae* Park & Carlton, new species**

Type material. Holotype. New Zealand: Westland (WD): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, WD Mt Greenland 305m 10 Jun 1983 H.P. McColl Litter 9/83”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “HOLOTYPE *Exeirarthra mccollae* Park and Carlton des. 2011”. **Paratypes (n=3). New Zealand: WD:** 1 ♀ (slide-mounted), Mt Greenland, 305m, 10 VI 1983,

H.P. McColl, Rotten wood & moss 10/83 (NZAC); 1♂1♀ (1♂, slide-mounted), Hokitika Gorge Res, Hokitika, 29 I 1978, S & J Peck, litter berl., 100m (FMNH).

Etymology. This species is named for the collector of the holotype, H. P. McColl.

Diagnosis. *Exeirarthra mccollae* differs from *E. enigma*, *E. nunni* and *E. parviceps* by smaller eyes (Figure 6m), short and compact elytra (Figure 4d), and abdominal tergite IV lacking transverse patches of microtrichia. This species also can be distinguished from *E. longiceps* and *E. macleannanensis* by the contiguous frontal rostral lobes (Figure 6m: small arrow), arrangement of labral setae (Figure 6n), and unique shape of genitalia unique to species (Figure 6o).

Description. Length 1.8–2.0 mm. Antennomere 1 elongate, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8 subquadrate, 9–11 weakly clavate (Figures 6k–l).

Head. Head approximately 1.5 times longer than wide. Frontal rostral lobes contiguous (Figure 6m: small arrow). Frontal sulcus reaching posteriorly to level of middle of eye (Figure 6m: large arrow). Three pairs of setal pores present on dorsal head (Figure 6m). Eye of normal size, prominent, approximately 0.6 times as long as temple (Figure 6m). Labrum as in Figure 6n.

Thorax. Prosternum as long as wide. Elytra approximately trapezoidal, approximately 1.55 times as long as wide. Hind wings absent. Meso- and metathorax trapezoidal, as long as wide.

Abdomen. Abdominal tergite IV without a pair of transverse patches of microtrichia. Tergite VI transverse, approximately 0.7 times as long as wide.

Aedeagus. Median lobe shorter than parameres, flagellum present at tip (Figure 6o). Paramere as wide as median lobe, several setae present (Figure 6o).

Distribution. Westland (WD), New Zealand (Figure 9: circles).

Habitat. Specimens were collected by sifting leaf litter.

Exeirarthra nunni Park & Carlton, new species

Type material. Holotype. New Zealand: Central Otago (CO): ♂, glued on rectangular card, “New Zealand CO Ailsa Craig Lammermoor Rng 7-Dec-08”, “Sifted moss and tussock litter”, “HOLOTYPE *Exeirarthra nunni* Park and Carlton des. 2011”. **Paratypes (n=10). New Zealand: Central Otago (CO):** 1♂, same data as holotype; 1♂ (slide-mounted), Ailsa Craig, Lammerlaw Rng, 14 VII 2008, J. Nunn (JTN); **Dunedin (DN):** 1♂, Flagstaff hill, Dunedin, 3 X 2010, sifted tussock litter, 668m, J. Nunn (JTN); 1♀ (slide-mounted), Orokonui, 2005, M. Nydegger, pit trap (JTN); 1♀, Cloud Forest of Leith track, 17 VIII 2010, wood mould and frass under bark dead tree, J. Nunn (JTN); 1♀, Glenleith, Dunedin, 3 VI 2002, in decayed tree fern caudex, J. Nunn (JTN); 1♀, Grahams Bush, Mt. Cargill, 25 XI 2001, in Kamahi litter, J. Nunn (JTN); 1♂1♀ (1♀, slide-mounted), Maukaatua Scenic Res., NW of Woodside, 88m, Lee Creek, III-8-2010, D. S. Chandler & J. T. Nunn, sift broadleaf forest litter (DSC); **Southland (SL):** 1♀, MW receiver stn, Blue Mountains, 2 I 2005, in ground litter from beech forest (JTN).

Etymology. This species is named for the collector of the holotype, J. T. Nunn.

Diagnosis. *Exeirarthra nunni* differs from *E. longiceps*, *E. macleannanensis*, and *E. mccollae* by larger eyes (Figure 7c), elongate elytra (Figure 4e), fully developed hind wings, and abdominal tergite IV with a pair of transverse patches of microtrichia. This species also can be distinguished from *E. enigma* by the separate frontal rostral lobes (Figure 7c: small arrow). This species is similar in appearance to *E. parviceps*, but it may be distinguished by the arrangement of labral setae (Figure 7d) and shape of the genitalia (Figure 7e).

Description. Length 1.7–2.2 mm. Antennomere 1 elongate, 2 slightly longer than wide, 3 subquadrate, 4 slightly longer than wide, 5–8 subquadrate, 9–11 weakly clavate (Figures 7a–b).

Head. Head approximately 1.4 times longer than wide. Frontal rostral lobes separated by frontal sulcus (Figure 7c: small arrow). Frontal sulcus reaching posteriorly to level of one-third of eye (Figure 7c: large arrow). Three pairs of setal pores present dorsally on head (Figure 7c). Eye large and prominent, approximately 0.82 times as long as temple (Figure 7c). Labrum as in Figure 7d.

Thorax. Prosternum as long as wide. Elytra rectangular, approximately 1.9 times longer than wide. Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide.

Abdomen. Abdominal tergite IV with a pair of transverse patches of microtrichia. Tergite VI transverse, approximately 0.64 times as long as wide.

Aedeagus. Median lobe shorter and broader than parameres, with field of microspines at tip (Figure 7e). Paramere slightly clavate, several setae present at tip (Figure 7e).

Distribution. Southeastern part of North Island, New Zealand (Figure 10: squares).

Habitat. Specimens were collected by sifting leaf, tree fern, moss or beech litter.

***Exeirarthra parviceps* Broun, 1921**

Exeirarthra parviceps Broun, 1921a: 486. Hudson, 1923: 366. Hudson, 1934: 184. Nomura and Leschen, 2006: 241.

Additional material (n=12). New Zealand: Nelson (NN): 2♂1♀, Kahurangi N.P., Arthur Range, above Flora Saddle, 1000m, 41°11.351'S, 172°44.456'E, 28 XI–19 XII 2005, Nothofagus dominant forest, FMHD#2005-044, flight intercept trap, A. Newton & M. Thayer, ANMT site 1156; 2♂2♀, Kahurangi N.P., Mt. Arthur Track, ca. 1400m, 28 XI 2005, above treeline, FMHD#2005-050, berl., alpine tussock litter, D. Clarke, ANMT site 1158; 1♀, Kahurangi N.P., Mt. Arthur Track, below Mt. Arthur Hut, 1200m, 28 XI 2005, Nothofagus forest, FMHD#2005-048, berl., dead wood, D. Clarke, ANMT site 1157; 2♀, Kahurangi N.P., Mt. Arthur Track, below Mt. Arthur Hut, 1200m, 28 XI 2005, Nothofagus forest, FMHD#2005-049, berl., leaf litter, A. Solodovnikov & D. Clarke, ANMT site 1157; 1♂ (slide-mounted), Kahurangi N.P., Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, flight intercept trap, A. Newton, M. Thayer & A. Solodovnikov, ANMT site 1159; 1♂, Mount Hope, 3824, 14 II 1915, T. Hall. Deposited FMNH.

Diagnosis. *Exeirarthra parviceps* differs from *E. longiceps*, *E. maclellanensis*, and *E. mccollae* by the larger eyes (Figure 7h), elongate elytra (Figure 4f), fully developed hind wings, and abdominal tergite IV with a pair of transverse patches of microtrichia. This species also can be distinguished from *E. enigma* by the separated frontal rostral lobes (Figure 7h: small arrow). This species is similar in appearance to *E. nunni*, but it may be distinguished by arrangement of labral setae (Figure 7i) and shape of genitalia unique to species (Figure 7j).

Redescription. Length 1.7–2.0 mm. Male antennomere 1 elongate, 2 slightly longer than wide, 3 subquadrate, 4–5 slightly longer than wide, 6–8 subquadrate, 9–11 weakly clavate (Figures 7f). Female antennomere 1 elongate, 2 slightly longer than wide, 3 subquadrate, 4 slightly longer than wide, 5–8 subquadrate, 9–11 weakly clavate (Figures 7g).

Head. Head approximately 1.48 times longer than wide. Frontal rostral lobes separated by frontal sulcus (Figure 7h: small arrow). Frontal sulcus reaching posteriorly to one-half length of eye (Figure 7h: large arrow). Four pairs of setal pores present dorsally on head (Figure 7h). Eye large and prominent, approximately 0.9 times as long as temple (Figure 7h). Labrum as in Figure 7i.

Thorax. Prosternum as long as wide. Elytra rectangular, approximately 1.85 times longer than wide. Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide.

Abdomen. Abdominal tergite IV with a pair of transverse patches of microtrichia. Tergite VI transverse, approximately 0.66 times as long as wide.

Aedeagus. Median lobe shorter and broader than parameres, with field of microspines at tip (Figure 7j). Paramere slightly clavate, several setae present at tip (Figure 7j).

Type locality. Mount Hope, Near Nelson (NN), New Zealand.

Distribution. Northwestern part of North Island, New Zealand (Figure 10: circle).

Habitat. Specimens were collected using flight intercept traps, or by sifting leaf, wood or tussock litter in *Nothofagus* forests.

Comments. I could not examine the holotype, because it was not found in either the Natural History Museum, London, National Museum of Natural History in Paris, France, or New Zealand Arthropod Collection, Auckland. To our knowledge, all of Broun's pselaphine types are housed in one of these three collections. Our conclusion that the specimens examined are conspecific with *E. parviceps* is based on comparison with a specimen from the type locality identified by T. Broun.

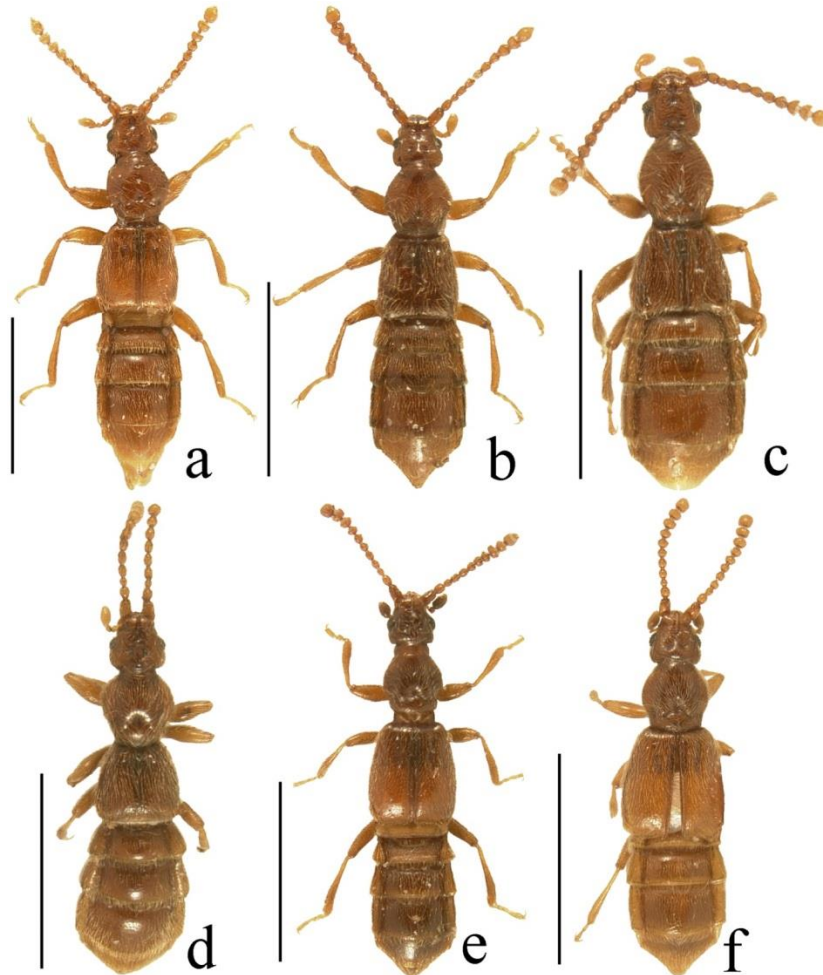


Figure 4. Habitus of *Exeirarthra*, dorsal views. a) *Exeirarthra enigma* Broun; b) *E. longiceps* Broun; c) *E. maclellanensis* sp. nov.; d) *E. mccollae* sp. nov.; e) *E. nunni* sp. nov.; f) *E. parviceps* Broun; Scale bars = 1 mm.

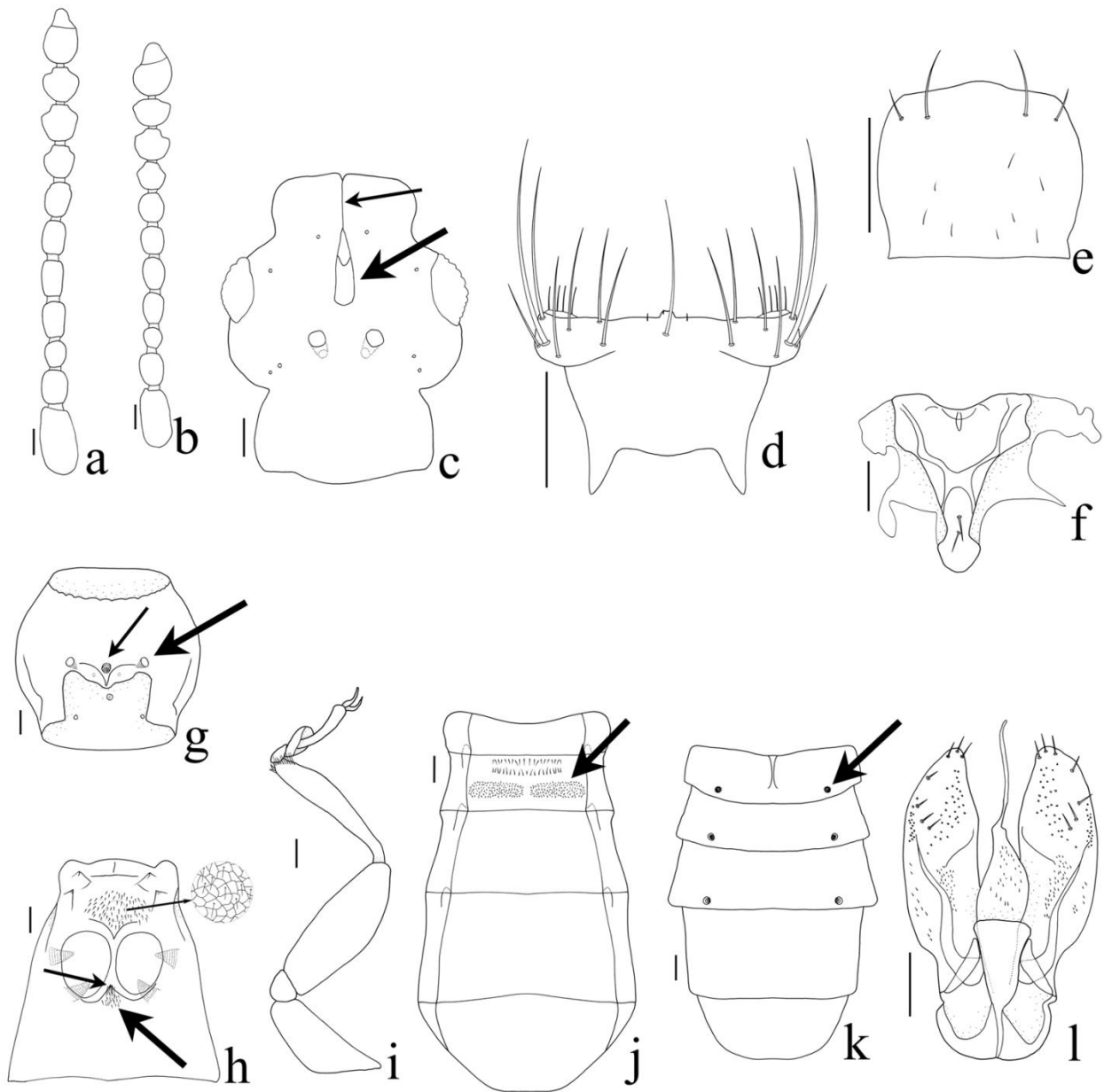


Figure 5. *Exeirarthra enigma*. a) male antenna, dorsal view; b) female antenna, dorsal view; c) head, dorsal view; d) labrum, dorsal view; e) mentum, ventral view; f) scutellum, dorsal view; g) prothorax, ventral view; h) meso- and metasternum, ventral view; i) prothoracic leg; j) abdominal tergites, dorsal view; k) abdominal sternites, ventral view; l) aedeagus, dorsal view; Scale bars = 0.05 mm.

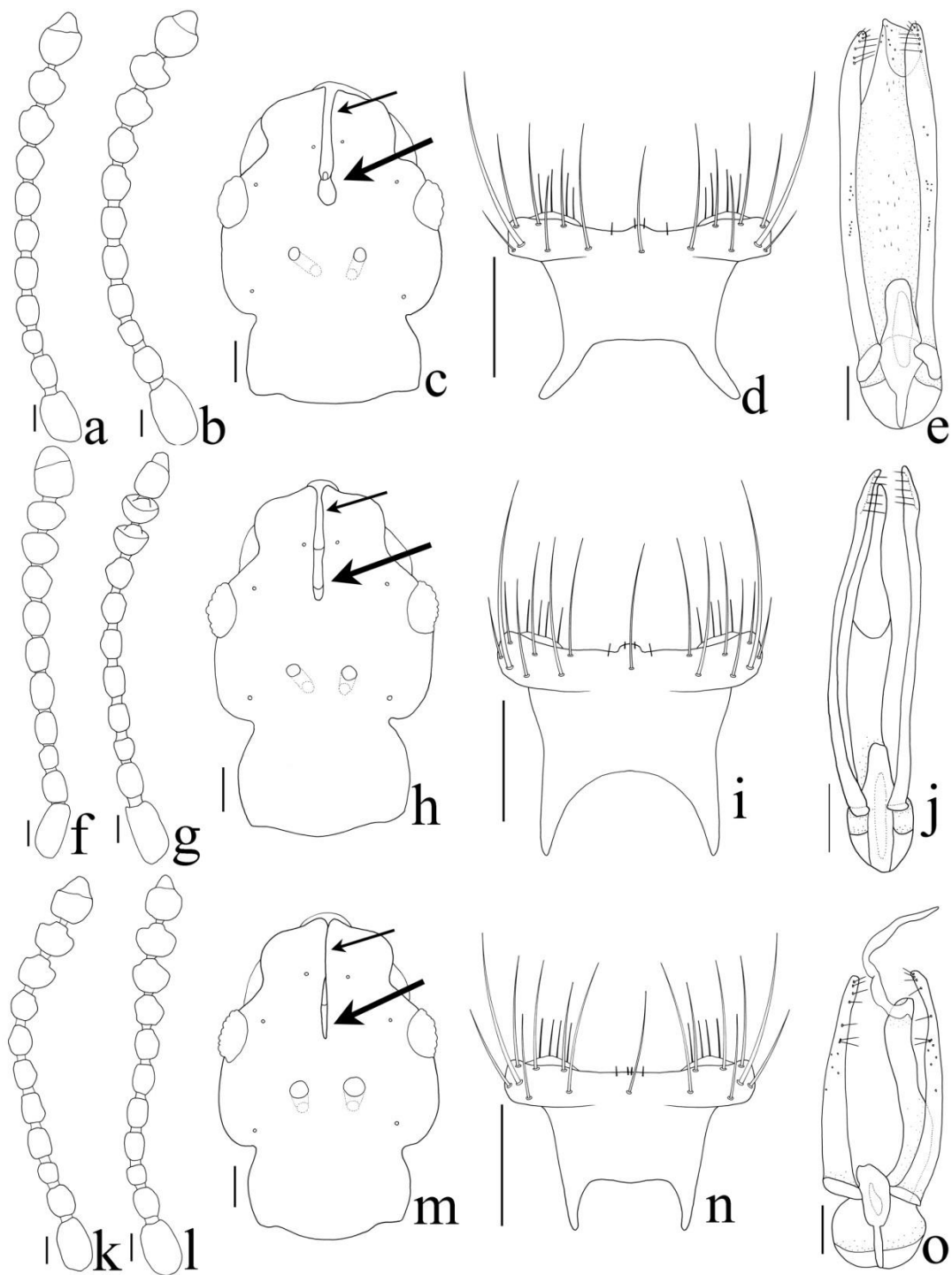


Figure 6. a–e, *Exeirarthra longiceps*. a) male antenna, dorsal view; b) female antenna, dorsal view; c) head, dorsal view; d) labrum, dorsal view; e) aedeagus, dorsal view. f–j, *E. maclellanensis* sp. nov. f) male antenna, dorsal view; g) female antenna, dorsal view; h) head, dorsal view; i) labrum, dorsal view; j) aedeagus, dorsal view; k–o, *E. mccollae* sp. nov. ;k) male antenna, dorsal view; l) female antenna, dorsal view; m) head, dorsal view; n) labrum, dorsal view; o) aedeagus, dorsal view; Scale bars = 0.05 mm.

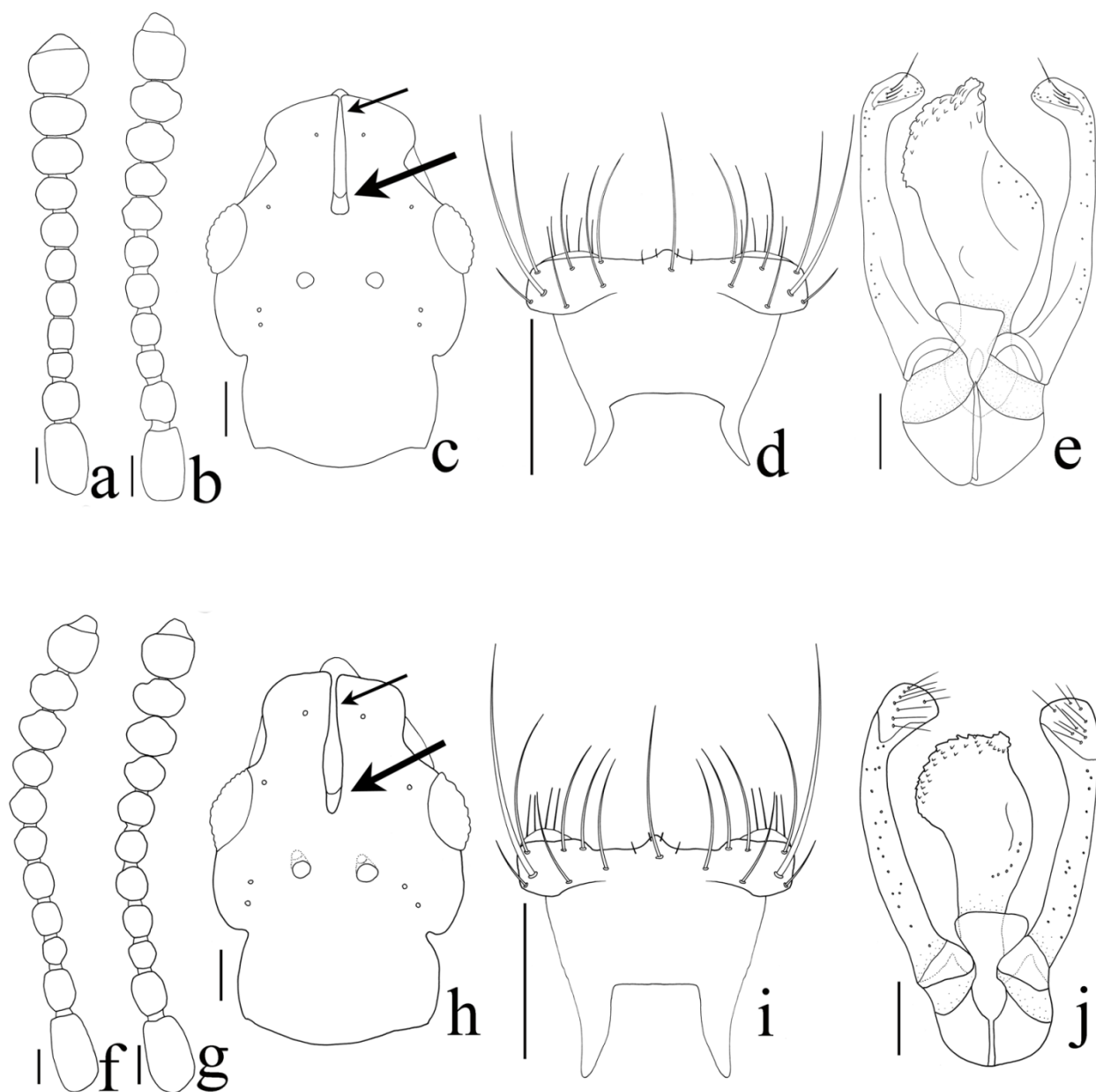


Figure 7. a–e, *E. nunni* sp. nov. a) male antenna, dorsal view; b) female antenna, dorsal view; c) head, dorsal view; d). labrum, dorsal view; e) aedeagus, dorsal view. f–j, *E. parviceps*. f) male antenna, dorsal view; g) female antenna, dorsal view; h) head, dorsal view; i) labrum, dorsal view; j) aedeagi, dorsal view; Scale bars = 0.05 mm.



Figure 8. Locations where *Exeirarthra enigma* specimens have been collected in New Zealand: triangles.



Figure 9. Locations where *Exeirarthra longiceps*, *E. maclellanensis* sp. nov., and *E. mcollae* sp. nov. specimens have been collected in New Zealand. *E. longiceps*: triangles; *E. maclellanensis*: squares; *E. mcollae*: circles.



Figure 10. Locations where *Exeirarthra nunni* sp. nov. and *E. parviceps* specimens have been collected in New Zealand. *E. nunni*: squares; *E. parviceps*: circles.

3.2 REVISION OF THE GENUS *STENOSAGOLA* BROUN*

The New Zealand endemic genus *Stenosagola* Broun, 1921 includes six previously described species. It originally included three species, *S. planioculara* Broun (the type species), *S. oblongiceps* Broun and *S. griseipila* Broun, with three other species previously described as members of the genus *Sagola* Sharp; *S. gracilis* (Broun), *S. crassicornis* (Broun) and *S. connata* (Broun). These were subsequently moved to this *Stenosagola* by Broun (1921a). The following study presents the first revisional study of *Stenosagola* since the original descriptions.

Genus *Stenosagola* Broun

Stenosagola Broun, 1921a: 504. Hudson, 1923: 366; 1934: 184. Newton and Chandler, 1989: 18. Klimaszewski *et al.*, 1996: 147. Newton and Thayer, 2005a. Nomura and Leschen, 2006: 244.

Type species. *Stenosagola planioculara* Broun (designated by Newton and Chandler 1989: 18).

Diagnosis. Species of genus *Stenosagola* are polymorphic with three primary phenotypes: winged males; wingless males; and wingless females. Winged females have not been documented. Winged male specimens have longer antennomeres (Figures 12a, 18a), larger eyes (Figures 12d, 18d), longer elytra (Figures 12k, 18i), fully developed hind wings, longer meso- and metaventrites (Figures 12m, 18h), and abdominal tergite IV bearing a pair of transverse patches of microtrichia (Figures 12p, 18k). Wingless males have intermediate sized antennomeres (Figures 12b, 18b), and eyes (Figures 12e, 18e), hind wings reduced to small pads, shorter meso- and metaventrites (Figures 12m, 18h), and abdominal tergite IV lacking transverse patches of microtrichia (Figures 12q, 18l). Females have more transverse antennomeres (Figures 12c, 18c), smaller eyes (Figures 12f, 18f) and elytra (Figures 12l, 18j), hind wings, meso- and metaventrites (Figures 12m, 18h) and abdominal tergite IV (Figures 12q, 18l) similar to those of wingless males.

The members of *Stenosagola* may be separated from other faronite genera by the following combination of characters: smaller size, antennae, when bent posteriorly, reaching midpoint of prothorax, antennomere 5 larger than 6, 6–10 transverse, 7–10 weakly clavate (Figures 12a–c; 18a–c); head with frontal sulcus broad and open anteriorly (Figures 12d–f, 14e) or cylindrical and closed anteriorly (Figures 18d–f, 20g, 22g); eyes largest in winged males (Figures 12d, 18d), smaller in wingless males (Figures 12e, 14e, 18e, 20g), and smallest in females (Figures 12f, 18f, 22g); scutellum inverted-triangular, two setae present on posterior area (Figure 12j); elytra longer than wide in winged males (Figures 12k, 18i), as long as wide in wingless males and females (Figures 12l, 18j); meso- and metaventrites with lateral mesocoxal foveae and lateral metaventral foveae (Figures 12m, 18h); abdominal tergite IV with a pair of transverse patches of microtrichia in winged males (Figures 12p, 18k; arrow), absent in wingless males and females (Figures 12q, 18l; arrow). Tergite and ventrite VI larger than V and VII (Figures 12p–q, 18k–l).

* This chapter 3.2 previously appeared as Park & Carlton, A Revision of the New Zealand genus *Stenosagola* (Coleoptera: Staphylinidae: Pselaphinae: Faronitae), 2013. It is reprinted by permission of Ronald D. Cave (See Appendix D).

Key to species of the genus *Stenosagola*

The key is mainly based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Head with broad frontal sulcus open anteriorly (Figures 12d–f, 14e); mesoventrites without promesocoxal foveae (Figure 12m); body larger, 1.4–1.8 mm (Figure 11).....2 (*gracilis*-group)
- 1'. Head with elongate frontal sulcus closed anteriorly (Figures 18d–f, 20g, 22g); prosternum as long as wide (Figure 18g); mesoventrites with promesocoxal foveae (Figure 18h); body small, 1.1–1.5 mm (Figures 16–17).....9 (*connata*-group)
- 2 (1). Head dull dorsally (Figure 11h–i, p); prosternum as long as wide (Figure 11h–i, p).....3
- 2'. Head glossy dorsally (Figure 11a–g, j–o); prosternum longer than wide (Figures 11a–g, j–o).4
- 3 (2). Dorsal margin of male pro-femur depressed basally (Figure 14g, arrow); left apical lobe of genitalia acute, longer than right apical lobe, right apical lobe folded over left (Figure 14c); recorded only from Egmont National Park, Taranaki (TK, Figure 15: black circle).....*S. egmontensis* n. sp.
- 3'. Dorsal margin of male pro-femur lacking depression at base; apical lobe of genitalia with two branches; major lobe divided apically, minor lobe divided from ventral base of main lobe, longer and slender (Figure 14j); recorded only from Stewart Island (SI, Figure 15: white square).....*S. stewartensis* n. sp.
- 4 (2). Apical lobe of genitalia not divided (Figure 14i); recorded only from Fiordland (FD, Figure 15: black star).....*S. eylesi* n. sp.
- 4'. Apical lobe of genitalia divided (Figures 12s, 14a–d, h); recorded from mid and southern part of North Island, and northern part of South Island.....5
- 5 (4). Minor apical lobe divided from ventral base of main lobe, longer and more slender (Figure 14h); recorded only from Nelson (NN, Figure 15 white circle).....*S. domettensis* n. sp.
- 5'. Apical lobe of genitalia divided laterally, length and width variable (Figures 12s, 14a–d)..6
- 6 (5). Right paramere broader than left (Figure 14b); left apical lobe long and slender (Figure 14b); recorded only from Nelson (NN, Figure 15: black triangle).....*S. clarkei* n. sp.
- 6'. Left paramere broader or as wide as right (Figure 12s, 14a, d); left apical lobe shorter than right (Figures 12s, 14a, d).....7
- 7 (6). Left apical lobe of genitalia as wide as right (Figure 14d); recorded only from Wellington (WN, Figure 15: black squares).....*S. ramsayi* n. sp.
- 7'. Left apical lobe of genitalia narrower than right (Figures 12s, 14a).....8
- 8 (7). Right apical lobe of genitalia broader than left, bent to left (Figure 11s)...*S. gracilis* (Broun)
- 8'. Right apical lobe of genitalia as wide as left, not bent (Figure 14a).....*S. pseudogracilis* n. sp.
- 9 (1). Apical lobe of genitalia divided or branched (Figures 20b–d).....10
- 9'. Apical lobe of genitalia simple (Figures 18p, 20a, e–f, 22a–f).....12
- 10 (9). Left apical lobe of genitalia longer than right (Figure 20d); recorded from mid-western part of North Island (Figure 21, circles).....*S. dugdalei* n. sp.
- 10'. Right apical lobe of genitalia longer than left (Figures 20b–c); recorded from northern part of North Island (Figures 19: squares, 21: triangles).....11
- 11 (10). Right apical lobe of genitalia with small process at right base (Figure 20b); recorded only from Northland (ND, Figure 19: square)*S. northlandensis* n. sp.
- 11'. Right apical lobe of genitalia without small process at base (Figure 20b); recorded only from Auckland (AK) and Coromandel (CL) (Figure 21, triangle).....*S. thayerae* n. sp.
- 12 (9). Apical lobe of genitalia long and slender (Figures 20e–f, 22b, f).....13
- 12'. Apical lobe of genitalia broad (Figures 18p, 20a, 22a, c–e).....16

- 13 (12). Head of wingless male circular (Figure 20g); apical lobe of genitalia broadly bent to right, weakly bulbous apically (Figure 20f).....*S. haunuiensis* n. sp.
 13'. Head of wingless male rectangular (Figure 18e); apical lobe of genitalia straight (Figures 20e, 22b, f).....14
 14 (13). Frontal rostral lobe of female head simple (Figure 18f); apical lobe of genitalia modified at tip (Figure 20e); recorded only from Wellington (WN, Figure 21: square).....*S. tararuaensis* n. sp.
 14'. Frontal rostral lobe of female head with a pair of blunt processes with setae present (Figure 22g); apical lobe of genitalia simple (Figures 23b, f); recorded from South Island (Figures 23: square, 24: white square).....15
 15 (14). Apical lobe of genitalia extremely long and slender, 3 times broader than paramere (Figure 22b).....*S. chandleri* n. sp.
 15'. Apical lobe of genitalia long and slender, 2 times broader than paramere (Figure 22f).....*S. fiordlandensis* n. sp.
 16 (12). Median lobe of genitalia at least 4 times broader than paramere (Figures 22c–d).....17
 16'. Median lobe of genitalia approximately 3 times broader than paramere (Figures 18p, 20a, 22a, b).....18
 17 (16). Frontal rostral lobe of female head simple (Figure 18f); apical lobe of genitalia acute anteriorly, bent to right (Figure 22d); recorded only from Mid Canterbury (MC) and Buller (BR) (Figure 24: circle).....*S. newtoni* n. sp.
 17'. Frontal rostral lobe of female head with a pair of processes with setae present (Figure 22g); apical lobe of genitalia not acute or bent at tip (Figure 22c); recorded from southern part of South Island (Figure 24, triangles).....*S. nunni* n. sp.
 18 (16). Apical lobe of genitalia emarginate (Figure 22e).....*S. butcheri* n. sp.
 18'. Apical lobe of genitalia not emarginate (Figures 18p, 20a, 22a).....19
 19 (18). Apical lobe of genitalia emarginate at tip (Figure 20a).....*S. huiaensis* n. sp.
 19'. Apical lobe of genitalia simple at tip (Figures 18p, 22a).....20
 20 (19). Apical lobe of male directly bent from main body (Figure 18p); recorded from middle of North Island (Figure 19, triangles).....*S. connata* (Broun)
 20'. Apical lobe of genitalia bent from narrow neck shaped structure (Figure 22a); recorded from southern part of North Island (Figure 23, triangles).....*S. pseudoconnata* n. sp.

***Stenosagola gracilis*-group**

Diagnosis. Body length 1.4–1.8 mm (Figure 11); head with frontal sulcus open anteriorly and broad (Figures 22d–f, 24e); prosternum longer than wide (Figure 12i) except as long as wide in *S. egmontensis* (Figure 14f) and *S. stewartensis*; mesoventrites without promesocoxal foveae (Figure 12m); abdominal tergite and ventrite VI slightly larger than V and VII (Figures 12p–q); genitalia with deeply divided median lobe (Figs 12s, 24a–d, 14h, j) except *S. eylesi* (Figure 14i).

***Stenosagola gracilis* (Broun, 1893)**

Sagola gracilis Broun, 1893: 1424. Raffray, 1904: 499; 1911: 6. Broun 1921a: 505. Hudson, 1923: 366; 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245.
Sagola crassicornis Broun, 1911: 501. Broun 1921a: 505. Hudson, 1923: 366. Raffray, 1924: 232. Hudson, 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245.

New synonym.

Stenosagola oblongiceps Broun, 1921a: 505. Hudson, 1923: 366; 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245. **New synonym.**

Stenosagola planiocola Broun, 1921a: 505. Hudson, 1923: 366; 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245. **New synonym.**

Type Material Examined. Holotype: New Zealand: Waikato (WO):

♀, glued on rectangular card, "Type" [red label, printed]; "2473." [white label, handwritten]; "Pirongia" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Sagola gracilis" [white label, handwritten]. **Holotype of *Stenosagola***

crassicornis: New Zealand: Taupo (TO): ♀, glued on rectangular card, "Type" [red label, printed]; "3372. ♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Raurimu. Jany. 1910." [white label, handwritten]; "Sagola crassicornis ♂" [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Syntypes of *Stenosagola oblongiceps*: New Zealand: Nelson (NN): ♂ (wingless males), glued on rectangular card, genitalia dissected and mounted in balsam on clear plastic card, "4020. ♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Glenhope. 10.12.1914." [white label, handwritten]; "Stenosagola oblongiceps Broun" [white label, handwritten]; "SYNTYPE" [blue label, printed]. ♂ (wingless males), glued on rectangular card, "4020. ♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Glenhope. 10.12.1914." [white label, handwritten]; "Stenosagola oblongiceps ♂" [white label, handwritten]; "SYNTYPE" [blue label, printed].

Syntypes of *Stenosagola planiocola*: New Zealand: Nelson (NN): ♀, glued on rectangular card, "4019. ♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Glenhope. 14.3.1915." [white label, handwritten]; "Stenosagola planiocola. ♂" [white label, handwritten]; "SYNTYPE" [blue label, printed]. 2♀, glued on rectangular card, "4019" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Glenhope. 14.3.1915." [white label, handwritten]; "Stenosagola planiocola." [white label, handwritten]; "SYNTYPE" [blue label, printed]. ♀, glued on rectangular card, "40019. ♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Glenhope. 3.3.1915." [white label, handwritten]; "Stenosagola planiocola. ♂" [white label, handwritten]; "SYNTYPE" [blue label, printed]. The original label indicates this specimen is a male, but it is female. Deposited BMNH.

Additional Material (n= 261; 161 males; 100 females). New Zealand: Buller (BR):

5♂♂, Nelson Lakes. N. P., Lake Rotoiti, St. Arnaud Track, 645m, 14 XII 1984–6 I 1985, *Nothofagus* spp. forest, A. Newton and M. Thayer 705, window trap; 1♂, Nelson Lakes N. P., n slope Mt. Robert, Pinchgut Track, 950m, 14 XII–6 I 1985, *Nothofagus* spp. forest, A. Newton and M. Thayer 707, window trap; 1♀, Nelson Lakes N. P., n slope Mt. Robert, Pinchgut Track, 950m, 14 XII–6 I 1985, *Nothofagus* spp. forest, A. Newton and M. Thayer 707, berl., leaf and log litter, forest floor; 1♂, Nelson Lakes N. P., Lake Rotorua, Braeburn Track, 470m, 16 XII 1984–7 I 1985, *Nothofagus* spp. forest, A. Newton and M. Thayer 712, window trap; 1♂, Nelson Lakes N. P., n slope Mt. Robert, Pinchgut Track, 1290m, 18 – 26 XII 1984, *Notho. sol.* elfin for., A. Newton and M. Thayer 716, flight intercept (window) trap; 1♂, Nelson Lakes N. P., Mt. Robert, Speargrass Track, 875m 41°49.469'S 172°48.311'E, 30 XI–17 XII 2005, *Nothofagus* spp. forest, FMHD#2005-059, flight intercept trap. A. Newton and M. Thayer, ANMT site 1161; 5♂♂, Lewis, Pass Nat. Res., 11.9km ese Spring Junction, 540m, 17 XII 1984–21 I 85, *Nothofagus* spp. forest, A. Newton and M. Thayer 715, window trap; 1♂, Maruia Springs, 25 IV 1977, J. Nunn; 1♂, Lewis Pass, 25 III 1965, N.A. Walker, litter; 1♂3♀♀, W Inangahua S.F., 126m, Fletchers

Ck., 18 IV 1972, J.S. Dugdale, Moss and litter on Beech forest floor; 3♂♂11♀♀, W Inangahua S.F., 127m, Stoney Ck., 18 IV 1972, J. McBurney, litter; 1♂4♀♀, Fletchers Ck., 7 III 1972, J. McBurney, litter; 4♀♀, Mawhera S.F., 9km SE of Ngahere, 10 XI 1971, J. McBurney, litter; 1♂, Capleston, Redmans Ck., 8 XI 1972, J.C. Watt, litter; 1♂, Hochstener S.F., 6km S of Ahaura, 11 Nov 1971, J.C. Watt, litter; 1♂, Paparoa N.P., 2km NE Punakaiki, Bullock Ck Rd, 42°06'S, 171°22'E, 50m, 12 Nov 2005, R. Leschen, S. Nomura, P. Lambert, litter; 1♂1♀, Punakaiki Scen. Res., Porarari R., 20m, 9 VI 1985, J.W. Early, moss and litter; 1♀, 3.5km N Rapahoe, 25m, 42°42'S, 171°15'E, *Nothofagus truncata* leaf litter berlese, 12 I 1998, C. Carlton and R. Leschen;

Gisborne (GB): 4♂♂, Urewera N.P., Maungapohatu Rd., 3.2km E Taupeupe Saddle, 1110m, 38°36.975'S 177°02.753'E, 22 XI–23 XII 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-025, flight intercept trap, M. Thayer and A. Solodovnikov, ANMT site 1148; 2♂♂2♀♀ (1♀, slide- mounted), Urewera N.P., Maungapohatu Rd., 3.2km E Taupeupe Saddle, 1110m, 38°36.975'S 177°02.753'E, 22 XI 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-027, berl., leaf and log litter, A. Newton and M. Thayer, ANMT site 1148; 1♂, Urewera N. P., Waikaremoana Rd., E end Matanunui Ridge, 720m, 38°44.404'S 177°05.806'E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, flight intercept trap, M. Thayer and A. Newton and A. Solodovnikov, ANMT site 1149;

Marlborough (MB): 1♂, Pelorus Bridge, 25 VII 1967, G. Kuschel, litter; **Mid Canterbury (MC):** 1♂, Arthurs Pass, Temple Basin, 1493m, 8 II 1982, J. S. Dugdale; **Nelson (NN):** 2♂♂, Glenhope, 10 XII 1914, T. Broun; 22♂♂9♀♀, Kahurangi N. P., Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172° 44.456'E, 28 XI–19 XII 2005, *Nothofagus* dominant forest, FMHD#2005-044, Flight intercept trap, A. Newton and M. Thayer, ANMT site 1156; 3♀♀, Kahurangi N.P., Mt. Arthur Track, below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, berl., leaf litter, A. Solodovnikov and D. Clarke, ANMT site 1157; 41♂♂, Kahurangi N. P., Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S 172° 41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* and *N. solandri cliffortioides* forest, FMHD#2005-051, flight intercept trap, A. Newton, M. Thayer and A. Solodovnikov, ANMT site 1159; 3♂♂1♀ (1♂, slide-mounted), Kahurangi N. P., Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S 172° 41.658'E, 29 XI 2005, *Nothofagus menziesii* and *N. solandri cliffortioides* forest, FMHD#2005-055, berl., leaf and log litter, M. Thayer, ANMT site 1159; 4♂♂, Kahurangi N.P., Cobb Dam Rd., Asbestos Track, 450m, 41°06.333'S 172°43.174'E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)- podocarp forest, FMHD#2005-056, flight intercept trap, A. Newton, M. Thayer and A. Solodovnikov, ANMT site 1160; 1♂1♀, Cobb Ridge, east of Cobb Reservoir, 990m, 2 I 1985, *Nothofagus* spp. Forest, A. Newton and M. Thayer 728, berl., forest leaf and log litter; 1♂, Cobb Reservoir, 10 I 1985, R.M. Emberson, *Nothofagus* forest litter; 2♂♂, Slaters Road, 0.7km s Whangamoia Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* spp. Forest, A. Newton and M. Thayer 703, flight intercept (window) trap; 4♂♂, 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* spp. forest, A. Newton and M. Thayer 717, flight intercept (window) trap; 1♂1♀, Denniston Saddle, 10 II 1999, R. Leschen, R. Hoare, Berlesate *Nothofagus* forest RL288, 41°44'S 171°48'E; 3♂♂1♀, start of Croesus Tck., Barrytown, 27 VIII 2010, washed soil sample, coastal broadleaf forest, J. Nunn; 2♂♂, start of Croesus Tck., Barrytown, 27 VIII 2010, sifted ground moss berlesate, J. Nunn; 1♂, 20km NW Motueka, Riwaka River Res., 28 V 1982, FMHD#82-605, mixed forest litter, S. Peck; 1♂, 30km NW Motueka, Tasman Nat. Pk., 22 V 1982, FMHD#82-596, Beech forest stump litter, S. Peck; 3♂♂43♀♀, Dun Mt., 31 VI 1966, A.K. Walker, litter; 1♀, Dun Mt., 2000' 4 XI 1943, E.S. Gourlay; 3♂♂5♀♀, Canaan Harwoods Tr., 2 II 1965, L.P. Marchant, litter; 2♂♂, Wakefield, 19

XI 1964, J.I. Townsend, litter; 1♂, Takaka Hill, 762m, 7 X 1964, G. Kuschel, Moss; 1♂, Glenhope Saddle, 28 VII 1964, J.I. Townsend, litter; 1♂, Whangamoia, 15 IX 1966; 1♀, Head of Fabians valley, 915m, 23 X 1963, J.I. Townsend, litter; 1♀, Kohaihai Bluff/Scotts Beach, E2434681, N6011650, 16 IV 2004, A.K. Affeld; **Marlborough Sounds (SD)**: 5♂♂, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd., A. Newton and M. Thayer 710, flight intercept (window) trap; 1♂1♀, slide-mounted, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton and M. Thayer 708, berl., leaf and log litter, forest floor; 1♂, slide-mounted, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton and M. Thayer 708, window trap; 1♂, Ship Cove, 27–30 XI 1972, J.M. Burney, litter; **Taranaki (TK)**: 1♂, White Cliffs Walkway, 5km S Tongaporutu, 7 XII 1982, J.S. Dugdale, Litter; 1♂, Dawson Falls, 914m, 23 I 1972, G.W. Ramsay, litter; **Taupo (TO)**: 1♂, Erua, 27 I 1982, C.F. Butcher, sifted litter and moss; **Westland (WD)**: 4♂♂, Lake Kaniere Road, 2.8km nw Lake, 120m, 8–19 I 1985, podocarp-hdwd. forest, A. Newton and M. Thayer 732, flight intercept (window) trap; 2♂♂, Loop Line Road Scen. Reserve, sse Kumara, 160m, 8–19 I 1985, podocarp-hdwd. forest, A. Newton and M. Thayer 730, flight intercept (window) trap; 1♂, Lake Kaniere Road, 2.8km nw Lake, 120m, 8–19 I 1985, podocarp-hdwd. forest, A. Newton and M. Thayer 732, berl., leaf and log litter, forest floor; 1♂, Okuku Scenic Reserve, 46.7km W Otira, 75m, 42°43'S 171°14'E, #50, *Laurelia novaezealandiae* leaf litter berlese, 12 I 1998, C. Carlton and R. Leschen; 1♂, Okuku State Forest, 10km E of Kumara, 28 VIII 1977, R.M. Emberson, Podocarp Broadleaf forest, moss and litter; **Wellington (WN)**: 5♂♂, Taranua Forest Park, above Akatarawa Saddle, 455m, 40°56.936'S 175°06.529'E, 26 XI–21 XII 2005, broadleaf-podocarp forest on slope, FMHD#2005-0112, flight intercept trap, A. Newton and M. Thayer, ANMT site 1151; 1♂, Taranua Forest Park, Judd Ridge, Field's Track, Field Hut vic., 855m, 40°54.474'S 175°15.371'E, 24 XI–26 XI 2005, broadleaf (*Notho. Mezesii*-*Weinmannia racemosa*)-podocarp forest, FMHD#2005-039, berl., forest leaf litter (mostly *Nothofagus*), A. Solodovnikov and D. Clarke, ANMT site 1153; 2♂♂3♀♀ (1♂ slide-mounted), Akatarawa saddle, Taranua S. F. (S of Waikanoe), 500m, 7 III 1978, S. Peck, berl. litter.

Diagnosis. Specimens of *S. gracilis* are similar in appearance to those of *S. pseudogracilis*, *S. clarkei*, *S. ramsayi*, *S. domettensis* and *S. eylesi*, but can be distinguished by the shape of the genitalia (Figure 12s). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the glossy dorsal surface of the head (Figures 11d–f).

Redescription. Length 1.6–1.8 mm (Figures 11a–c). *Head.* Winged male head approximately 1.43 times (Figure 12d), wingless males 1.33 times (Figure 12e), female 1.41 times (Figure 12f) longer than wide. Winged male eye approximately 0.93 times (Figure 12d), wingless male 0.70 times (Figure 12e), female 0.42 times (Figure 12f) as long as temple. Winged male antennomere 3 subquadrate, 4 longer than wide, 5 subquadrate (Figure 12a). Wingless male antennomere 3 slightly transverse, 4–5 subquadrate (Figure 12b). Female antennomere 3 transverse, 4 subquadrate, 5 transverse (Figure 12c). Labrum as in Figure 12g. Mentum as in Figure 12h.

Thorax. Prosteronum approximately 1.10 times longer than wide (Figure 12i). Winged male elytra approximately 1.80 times (Figure 12k), wingless male 1.32 times (Figure 12l), female 1.3 times longer than prosteronum. Winged male meso- and metaventrites trapezoidal, approximately 1.56 times (Figure 12m), wingless male 1.18 times, female 1.14 times as long as prosteronum (Figure 12m). Metacoxa as in (Figure 12r).

Aedeagus. Right apical lobe of genitalia longer than broader than left (Figure 12s). Left paramere broader than right, setae present anteriorly (Figure 12s).

Type locality. Mount Pirongia (WO), New Zealand.

Distribution. Mid-part of North Island, Wellington (WN) and northwestern part of South Island, New Zealand (Figure 13: triangles).

Habitat. Most specimens were collected in *Nothofagus* forests, some in broadleaf and podocarp forests. Winged males were mostly collected using window traps or flight intercept traps (FIT). Wingless males and females were collected by sifting leaf or moss litter.

Comments. Specimens of *S. gracilis* are difficult to separate from those of other species externally, but the shapes and sizes of the antennomeres and genitalia are diagnostic. The type specimens of *S. oblongiceps* share these diagnostic characters, and these species have been collected at or near the type locality. Only female specimens of *S. crassicornis* and *S. planiocula* are known, so I could not compare the genitalia. However, there is insufficient evidence to maintain *S. crassicornis* and *S. planiocula* as separate species based on comparisons of the shapes and sizes of the antennomeres. The proximity of the collections to the type locality or the localities of additional specimens of *S. gracilis* and the absence of males of any other species from these areas suggest a single species. For these reasons, I have placed *S. oblongiceps*, *S. crassicornis*, and *S. planiocula* in synonymy with *S. gracilis*.

***Stenosagola pseudogracilis* Park and Carlton, new species**

Type Material. Holotype. New Zealand: Wellington (WN): ♂ (winged male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: WN: Tararua Forest Park, Judd Ridge, Field’s Track, Field Hut vic., 855m, 40°54.474’S 175°15.371’E, 24XI-26 XI 2005, broadleaf (*Notho. menziesii*-*Weinmannia racemosa*)-podocarp forest; FMHD#2005-040, berl., moss on log, A. Solodovnikov and D. Clarke; ANMT site 1153”, “HOLOTYPE *Stenosagola pseudogracilis* Park and Carlton des. 2013”. **Paratypes (n=37; 30 males; 7 females).** **New Zealand: Bay of Plenty (BP):** 1♂, Kaimai-Mamaku Forest, Mt. Te Aroha, upper end Tui Mine Track, nr. Summit road, 775m, 37°31.685’S 175°44.684’E, 19 XI–26 XII 2005, low *Nothofagus menziesii* forest w/*Astelia* ground layer, FMHD#2005-019, flight intercept trap, A. Newton and M. Thayer, ANMT site 1145 (FMNH); 1♂, Kaimai-Mamaku Forest, Mt. Te Aroha, upper end Tui Mine Track, nr. Summit road, 775m, 37°31.685’S 175°44.684’E, 19 XI 2005, low *Nothofagus menziesii* forest w/*Astelia* ground layer, FMHD#2005-021, berl., leaf and log litter, A. Newton and M. Thayer, ANMT site 1145 (FMNH); **Gisborne (GB):** 2♂♂, Urewera N. P., Maungapohatu Rd., 3.2km E Taupeupe Saddle, 1110m, 38°36.975’S 177°02.753’E, 22 XI 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-027, berl., leaf and log litter, A. Newton and M. Thayer, ANMT site 1148 (FMNH); 2♂♂ (1♂, slide-mounted), Urewera N. P., Maungapohatu Rd., 3.2km E Taupeupe Saddle, 1110m, 38°36.975’S 177°02.753’E, 22 XI–23 XII 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-025, flight intercept trap, M. Thayer and A. Solodovnikov, ANMT site 1148 (FMNH); **Hawkes Bay (HB):** 1♂, Kaweka Ra., Makahu Hut, 976m, 24 II 1971, J.I. Townsend, A.C. Eyles, litter 71/21 (NZAC); **Marlborough (MB):** 1♂1♀, Titirangi, 20 X 1969, F.A. Alack, litter 69/174 (NZAC); 1♂, Mt. Robinson, S. Ridge, 518m, Kenepuru Hd., 13 III 1970, J.I. Townsend, litter 70/142 (NZAC); 1♂, Okiwi Bay, 27 VIII 1965, J.I. Townsend, moss 65/440 (NZAC); 1♂2♀♀, Head Fabians Valley, 23 X 1963, J.I. Townsend, litter 63/38 (NZAC); **Marlborough Sounds (SD):** 9♂♂ (1♂, slide-mounted), Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton and M. Thayer 708, window trap

(FMNH); 5♂♂3♀♀ (1♂1♀, slide-mounted), Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton and M. Thayer 708, berl., leaf and log litter, forest floor (FMNH); 1♂, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* spp. forest A. Newton and M. Thayer 708 (FMNH); 1♂, Tennyson Inlet, east side Duncan Bay, 30m, 15 XI 1984–5 I 1985, podocarp-*Nothofagus* forest A. Newton and M. Thayer 709 (DSC); 1♂, 70 km NE Nelson, Tennyson Inlet, 480m, 27 V 1982, FMHD#82-604, Beech forest litter, S. Peck (FMNH); **Wellington (WN)**: 3♂♂, Tararua Forest Park, Judd Ridge, Field's Track, Field Hut vic., 855m, 40° 54.474'S 175° 15.371'E, 24 XI 2005, broadleaf (*Notho. mezeiesii*-*Weinmannia racemosa*)-podocarp forest, FMHD#2005-037, berl., sedge-base litter, A. Solodovnikov and D. Clarke, ANMT site 1153 (FMNH).

Etymology. The specific epithet refers to the superficial similarity of this species to *S. gracilis*.

Diagnosis. Specimens of *S. pseudogracilis* are similar in appearance to those of *S. gracilis*, *S. clarkei*, *S. ramsayi*, *S. domettensis* and *S. eylesi*, but can be distinguished by the shape of the genitalia (Figure 14a). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the glossy dorsal surface of the head (Figures 11d–f).

Description. Length 1.6–1.8 mm (Figures 11d–f). *Head.* Winged male head approximately 1.37 times, wingless male 1.37 times, female 1.39 times longer than wide. Winged male eye approximately 0.81 times, wingless male 0.67 times, female 0.35 times as long as temple. Winged male antennomere 3 subquadrate, 4 longer than wide, 5 subquadrate. Wingless male antennomere 3 slightly transverse, 4–5 subquadrate. Female antennomere 3 transverse, 4 subquadrate, 5 transverse.

Thorax. Prosternum approximately 1.10 times longer than wide. Winged male elytra approximately 1.66 times, wingless male 1.35, female 1.14 longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.48 times, wingless male 1.20, female 1.12 longer than prosternum.

Aedeagus. Right apical lobe of genitalia longer than left (Figure 14a). Left paramere broader than right with setae present at tip and middle (Figure 14a).

Distribution. BP (Bay of Plenty), HB (Hawkes Bay), MB (Marlborough), SD (Marlborough Sounds), WN (Wellington), WO (Waikato), New Zealand (Figure 13: circles)

Habitat. Specimens of this species were collected using window traps, flight intercept traps, sifting moss or leaf litter in *Nothofagus*, broadleaf, and podocarp forests.

Stenosagola clarkei Park and Carlton, new species

Type Material. Holotype. New Zealand: Nelson (NN): ♂ (wingless male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: NN: Kahurangi N.P., Mt. Arthur Track, ca. 1400m, 28 XI 2005, above treeline; FMHD#2005-050, berl., alpine tussock litter, D. Clarke; ANMT site 1158”, “HOLOTYPE *Stenosagola clarkei* Park and Carlton des. 2013”. **Paratype (1 male).** New Zealand: Nelson (NN): 1♂, same data as holotype (FMNH).

Etymology. This species is named for the collector of the holotype, D. Clarke.

Diagnosis. Specimens of *S. clarkei* are similar in appearance to those of *S. gracilis*, *S. pseudogracilis*, *S. ramsayi*, *S. domettensis* and *S. eylesi*, but can be distinguished by the shape of the genitalia (Figure 14b). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the smooth and glossy dorsal surface of the head (Figure 11g).

Description. Length 1.4 mm (Fig 11g). *Head.* Wingless male head approximately 1.26 times longer than wide. Wingless male eye approximately 0.64 times as long as temple. Wingless male antennomere 3 transverse, 4–5 subquadrate.

Thorax. Prosternum approximately 1.10 times longer than wide. Wingless male elytra approximately 1.26 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.13 times longer than prosternum.

Aedeagus. Left apical lobe of genitalia slender and longer than right apical lobe (Figure 14b). Right paramere broader than left, setae present anteriorly (Figure 14b).

Distribution. Nelson (NN), New Zealand (Figure 15: black triangle).

Habitat. Specimens of this species were collected in alpine tussock litter.

Stenosagola egmontensis Park and Carlton, new species

Type material. Holotype. New Zealand: Taranaki (TK): ♂ (wingless male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND TK Pouakai Saddle 1220m Pouakai Ra 3 Dec 1975, J.S. Dugdale”, “Litter 75/204”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “HOLOTYPE *Stenosagola egmontensis* Park and Carlton des. 2013”. **Paratype (n=5; 2 males; 3 females). New Zealand: Nelson (TK):** 2♂♂3♀♀ (1♂1♀, slide-mounted), same data as holotype (NZAC).

Etymology. This species is named after the type locality, Egmont National Park, Taranaki (TK).

Diagnosis. Specimens of *S. egmontensis* are similar in appearance to those of *S. stewartensis*, but can be distinguished by the shape of the genitalia (Figure 14c) and the depression of the baso-dorsal margin of the male pro-femur (Figure 14g, arrow). Members of this species can be separated from those of *S. gracilis*, *S. pseudogracilis*, *S. clarkei*, *S. ramsayi*, *S. domettensis* and *S. eylesi* by the dull dorsal surface of the head (Figures 11h–i).

Description. Length 1.5–1.6 mm (Figure 11h–i). *Head.* Wingless male head approximately 1.24 times, female 1.19 times longer than wide (Figure 14e). Wingless male eye approximately 0.8 times, female 0.65 times as long as temple (Figure 14e). Wingless male antennomere 3 subquadrate, 4–5 slightly longer than wide, 6–7 subquadrate. Female antennomere 3 subquadrate, 4 slightly longer than wide, 5–7 subquadrate.

Thorax. Prosternum subquadrate, approximately 0.90 times longer than wide (Figure 14f). Wingless male elytra approximately 1.59 times, female 1.45 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.41 times, female 1.30 times longer than prosternum. Basodorsal margin of male pro-femur concave (Figure 14g, arrow).

Aedeagus. Left apical lobe of genitalia acute, longer than right apical lobe, right apical lobe folded over left (Figure 14c). Left paramere slightly longer than right, setae present anteriorly (Figure 14c).

Distribution. Taranaki (TK), New Zealand (Figure 15: black circle).

Habitat. Specimens of this species were collected by sifting leaf litter.

Stenosagola ramsayi Park and Carlton, new species

Type material. Holotype. New Zealand: Taranaki (TK): ♂ (winged male), “New Zealand: TK: Mt. Messenger, 182m 23 I 1972, G.W. Ramsay Litter 72/66”, “HOLOTYPE *Stenosagola ramsayi* Park and Carlton des. 2013”. **Paratype (n=11; 7 males; 4 females). New Zealand: Nelson (NN):** 1♂, Goulard Downs, 792m, Heaphy Tk., 5 II 1966, J.I. Townsend, Moss 66/66 (NZAC); **Taranaki (TK):** 2♂♂4♀♀ (1♂1♀, slide-mounted), same data as holotype

(NZAC). 1♂, Pouakia Hump, 1220m, 3 XII 1975, A.K. Walker, Moss 75/211 (NZAC); 1♂, Hump Plateau, 1220m, Pouakai Ra., 3 XII 1975, J.S. Dugdale, litter 75/199 (NZAC); **Wellington (WN):** 1♂ (slide-mounted), Balance Bridge, 18 I 1959, R. A. Cumber (NZAC); 1♂, W Lk Wairarapa Res., 15 VII 1995, decayed *Nothofagus*, J.T. Nunn.

Etymology. This species is named for the collector of the holotype, G. W. Ramsay.

Diagnosis. Specimens of *S. ramsayi* are similar in appearance to those of *S. gracilis*, *S. pseudogracilis*, *S. clarkei*, *S. domettensis* and *S. eylesi*, but can be distinguished by the shape of the genitalia (Figure 14d). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the glossy dorsal surface of the head (Figures 11j–l).

Description. Length 1.6–1.7 mm (Figure 11j–l). *Head.* Winged male head approximately 1.46 times, wingless male 1.36 times, female 1.39 times longer than wide. Winged male eye approximately 1.06 times, wingless male 0.69 times, female 0.59 times as long as temple. Winged male antennomere 3 subquadrate, 4 longer than wide, 5–6 subquadrate, 7 transverse. Wingless male antennomere 3 subquadrate, 4 slightly longer than wide, 5–6 subquadrate, 7 slightly transverse. Female antennomere 3–4 subquadrate, 5–7 transverse.

Thorax. Prosternum approximately 1.05 times longer than wide. Winged male elytra approximately 1.75 times, wingless male and female 1.26 times longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.54, wingless male 1.17 times, female 1.12 times longer than prosternum.

Aedeagus. Left apical lobe of genitalia equal in width and shorter than right (Figure 14d). Left paramere broader than right, setae present anteriorly (Figure 14d).

Distribution. Wellington (WN), New Zealand (Figure 15: black squares).

Habitat. Specimens of this species were collected by sifting leaf or moss litter.

Stenosagola domettensis Park and Carlton, new species

Type material. Holotype. New Zealand: Nelson (NN): ♂ (wingless male), “New Zealand: NN: NW Nelson, Mt. Domett, 1250m, 25 XI 1971 J. McBurney, mats 71/155”, “HOLOTYPE *Stenosagola domettensis* Park and Carlton des. 2013”. **Paratype (n=13; 10 males; 3 females). New Zealand: Nelson (NN):** 1♂2♀♀ (1♀, slide-mounted), same data as holotype (NZAC); 6♂♂, Mt. Domett, Summit, XII 1971, G.W. Ramsay, Moss 71/185 (NZAC); 2♂♂1♀, Mt. Domett, 1494m, 30 XI 1971, J.S. Dugdale, Litter 71/159 (NZAC); 1♂ (slide-mounted), Mt. Domett, 1463m, 1 XII 1971, J.S. Dugdale, Mats 71/181 (NZAC).

Etymology. This species is named after the type locality, Mt. Domett, Nelson (NN).

Diagnosis. Specimens of *S. domettensis* are similar in appearance to those of *S. gracilis*, *S. pseudogracilis*, *S. clarkei*, *S. ramsayi*, and *S. eylesi*, but can be distinguished by the shape of the genitalia (Figure 14h). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the glossy dorsal surface of the head (Figures 11m–n).

Description. Length 1.5–1.7 mm (Figures 11m–n). *Head.* Wingless male head approximately 1.32 times, female 1.24 times longer than wide. Wingless male eye approximately 0.55 times, female 0.35 times as long as temple. Wingless male antennomere 3–5 subquadrate, 6–7 slightly transverse. Female antennomere 3 transverse, 4–5 subquadrate, 6–7 transverse.

Thorax. Prosternum approximately 1.10 times longer than wide. Wingless male elytra approximately 1.30 times, female 1.10 longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.14 times, female 1.06 times longer than prosternum.

Aedeagus. Apical lobe of genitalia with two branches; main lobe hook-shaped apically, minor lobe divided from ventral base of main lobe, longer and narrower (Figure 14h). Parameres symmetrical, setae present at tip and middle of left (Figure 14h).

Distribution. Nelson (NN), New Zealand (Figure 15: white circle).

Habitat. Specimens of this species were collected by sifting leaf or moss litter.

***Stenosagola eylesi* Park and Carlton, new species**

Type material. Holotype. New Zealand: Fiordland (FD): ♂ (wingless male, aedeagus dissected and mounted in balsam on a clear plastic card), “New Zealand: FD: Turret Ra., 1200m 23 I 1970, A.C. Eyles Grass 70/87”, “HOLOTYPE *Stenosagola eylesi* Park and Carlton des. 2013”. **Paratype (1 male). New Zealand: Fiordland (FD):** 1♂ (slide-mounted), Mt. Barber, 1350m, Wilmot Pass, 15 I 1970, A.C. Eyles, Grass 70/57 (NZAC).

Etymology. This species is named for the collector of the holotype, A. C. Eyles.

Diagnosis. Specimens of *S. eylesi* are similar in appearance to those of *S. gracilis*, *S. pseudogracilis*, *S. clarkei*, *S. ramsayi* and *S. domettensis*, but can be distinguished by the shape of the genitalia (Figure 14i). Members of this species can be separated from those of *S. egmontensis* and *S. stewartensis* by the glossy dorsal surface of the head (Figure 11o).

Description. Length 1.75 mm (Figures 11o). **Head.** Wingless male head approximately 1.28 times longer than wide, eye 0.68 times longer than temple. Wingless male antennomere 3 subquadrate, 4 slightly longer than wide, 5–7 subquadrate.

Thorax. Prosternum approximately 1.07 times longer than wide. Wingless male elytra approximately 1.32 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.16 times longer than prosternum.

Aedeagus. Apical lobe of genitalia not divided (Figure 14i). Right paramere broader than left, setae present at tip and middle of left (Figure 14i).

Distribution. Fiordland (FD), New Zealand (Figure 15: black star).

Habitat. Specimens of this species were collected by sifting grass litter.

***Stenosagola stewartensis* Park and Carlton, new species**

Type material. Holotype. New Zealand: Stewart Island (SI): ♂ (wingless male, slide-mounted), “New Zealand: SI: Bigs Cape I, S Peak, 250’ 11 XI 1968, J. McBurney Litter 68/185”, “HOLOTYPE *Stenosagola stewartensis* Park and Carlton des. 2013”.

Etymology. This species is named after the type locality, Stewart Island (SI).

Diagnosis. Specimens of *S. stewartensis* are similar in appearance to those of *S. egmontensis*, but can be distinguished by the shape of the genitalia (Figure 14j). Members of this species can be separated from those of *S. gracilis*, *S. pseudogracilis*, *S. clarkei*, *S. ramsayi*, *S. domettensis*, and *S. eylesi* by the dull dorsal surface of the head (Figure 11p).

Description. Length 1.7 mm (Figures 11p). **Head.** Wingless male head approximately 1.13 times longer than wide, eye 0.89 times longer than temple. Wingless male antennomere 3–5 subquadrate, 6–7 slightly transverse.

Thorax. Prosternum approximately 0.92 times longer than wide. Wingless male elytra approximately 1.43 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.27 longer than prosternum.

Aedeagus. Apical lobe of genitalia with two branches; main lobe divided apically, minor lobe divided from ventral base of main lobe, longer and narrower (Figure 14j). Left paramere slightly broader than right, setae present at tip and middle of left (Figure 14j).

Distribution. Stewart Island (SI), New Zealand (Figure 15: white square).

Habitat. The unique holotype was collected by sifting leaf litter.

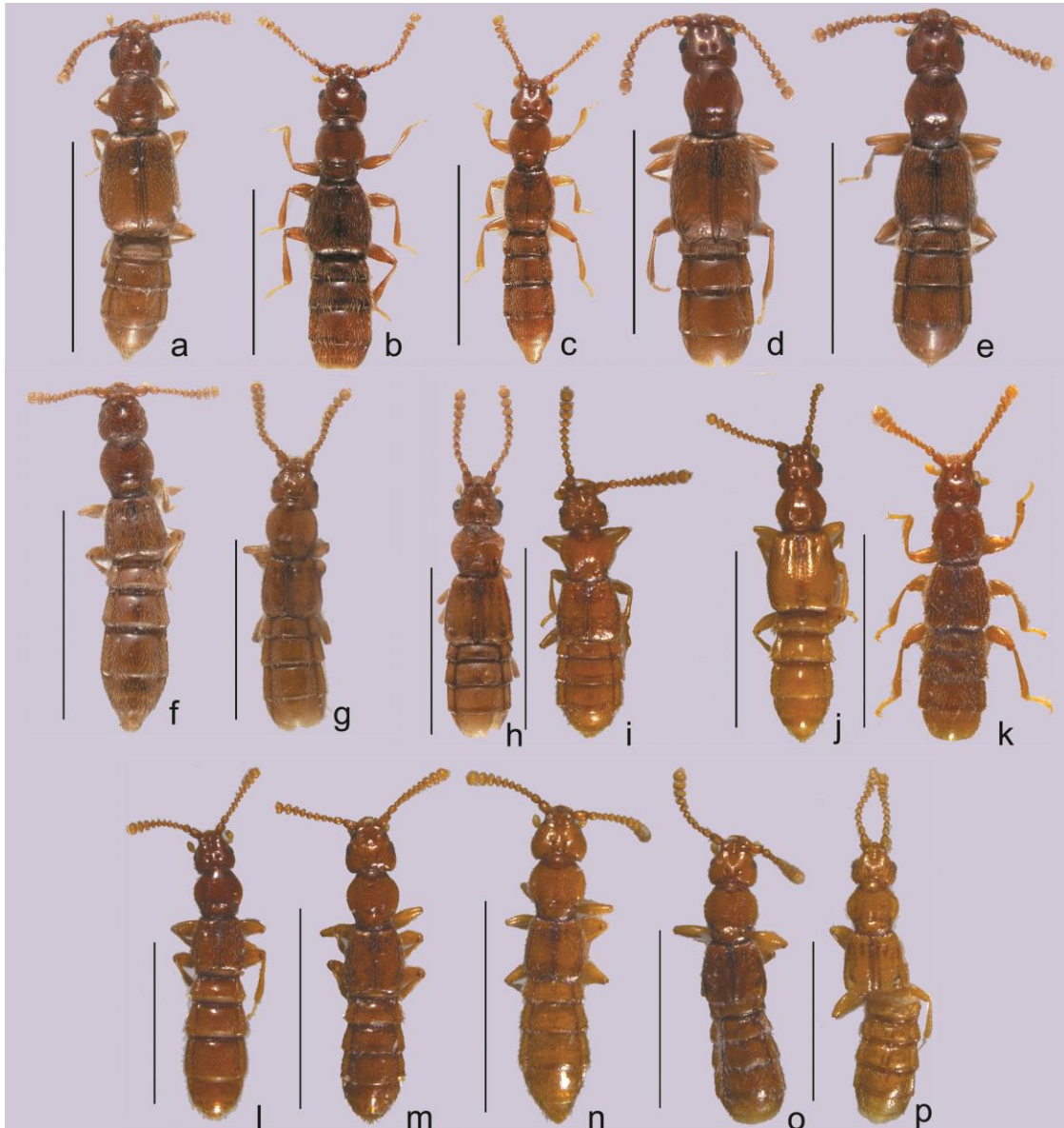


Figure 11. Habitus of *Stenosagola*, dorsal views. a) winged male of *Stenosagola gracilis* (Broun); b) wingless male of *S. gracilis* (Broun); c) female of *S. gracilis* (Broun); d) winged male of *S. pseudogracilis* sp. nov.; e) wingless male of *S. pseudogracilis* sp. nov.; f) female of *S. pseudogracilis* sp. nov.; g) wingless male of *S. clarkei* sp. nov.; h) wingless male of *S. egmontensis* sp. nov.; i) female of *S. egmontensis* sp. nov.; j) winged male of *S. ramsayi* sp. nov.; k) wingless male of *S. ramsayi* sp. nov.; l) female of *S. ramsayi* sp. nov.; m) wingless male of *S. domettensis* sp. nov.; n) female of *S. domettensis* sp. nov.; o) wingless male of *S. eylesi* sp. nov.; p) wingless of *S. stewartensis* sp. nov.. Scale bars = 1 mm.

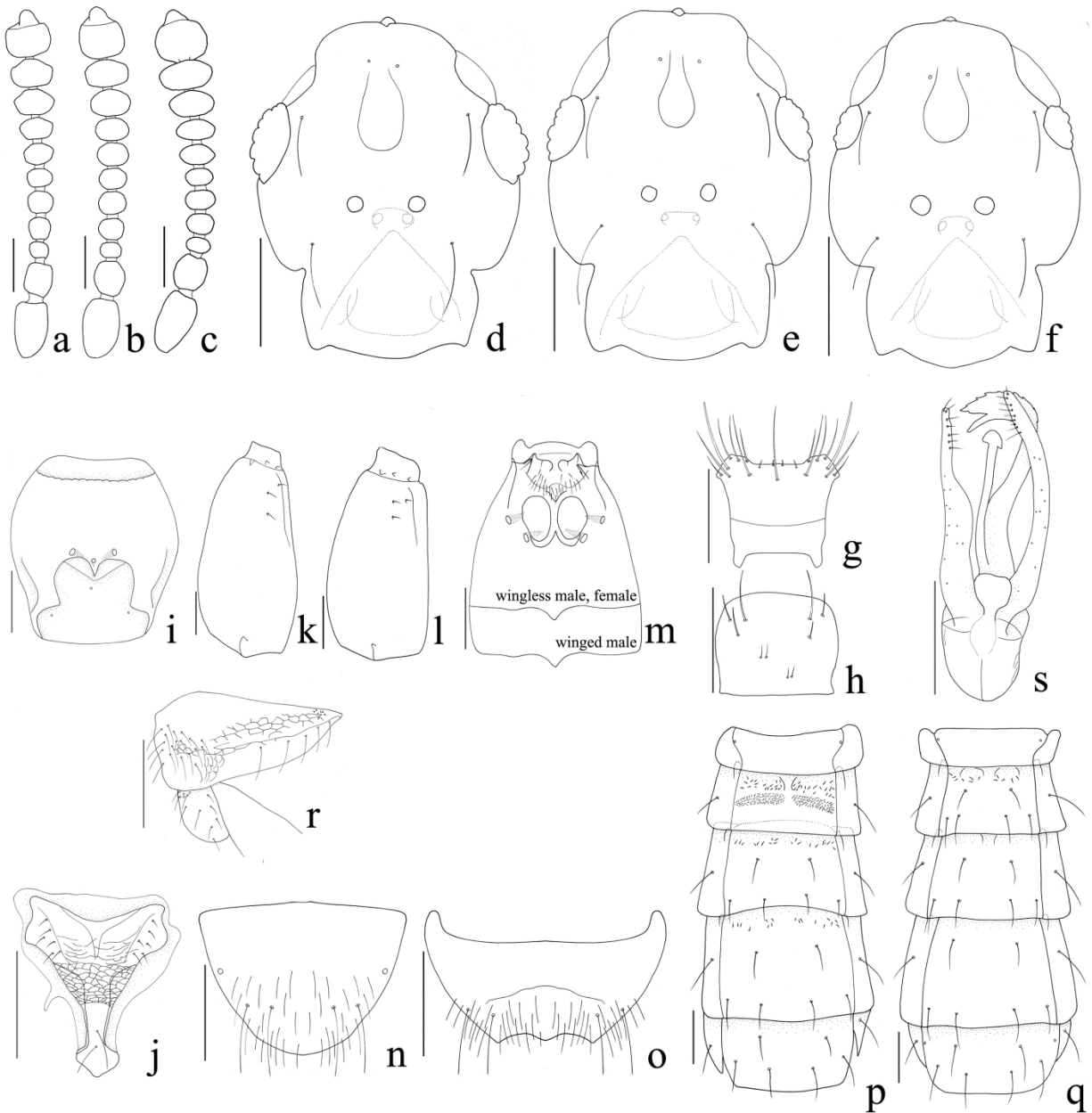


Figure 12. *Stenosagola gracilis* (Broun). a) winged male antenna, dorsal view; b) wingless male antenna, dorsal view; c) female antenna, dorsal view; d) winged male head, dorsal view; e) wingless male head, dorsal view; f) female head, dorsal view; g) labrum, dorsal view; h) mentum, ventral view; i) prothorax, ventral view; j) scutellum, dorsal view; k) winged male elytra, dorsal view; l) wingless male elytra, dorsal view; m) meso- and metaventrites, ventral view; n) abdominal tergite VIII, dorsal view; o) abdominal ventrite VIII, ventral view; p) winged male abdomen, dorsal view; q) wingless male abdomen, dorsal view; r) winged male hind-coxa, ventral view; s) aedeagus, dorsal view. Scale bars = 0.1 mm.

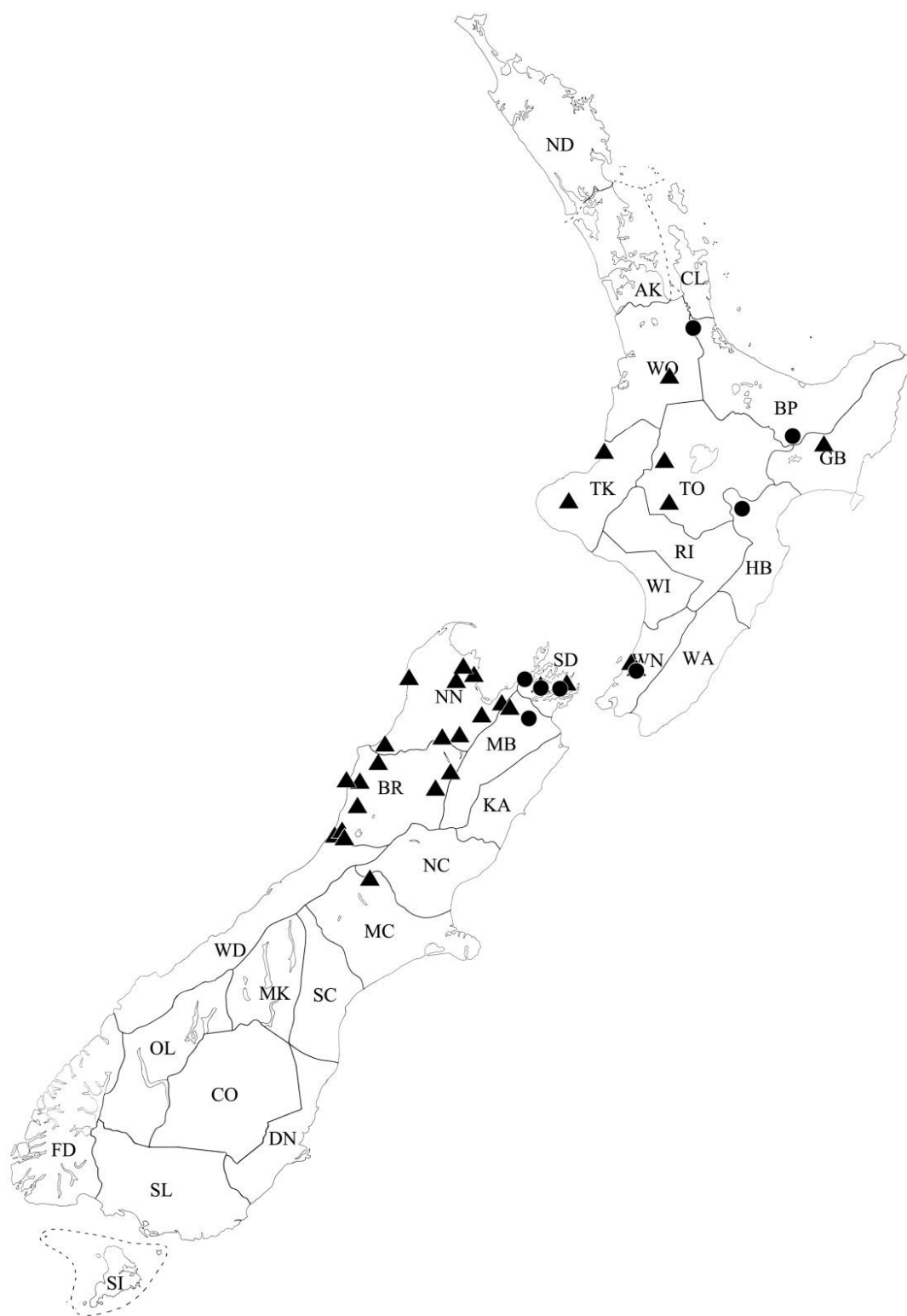


Figure 13. Locations where *Stenosagola gracilis* (Broun), and *S. pseudogracilis* sp. nov. specimens have been collected in New Zealand. *S. gracilis*: triangles; *S. pseudogracilis*: circles.

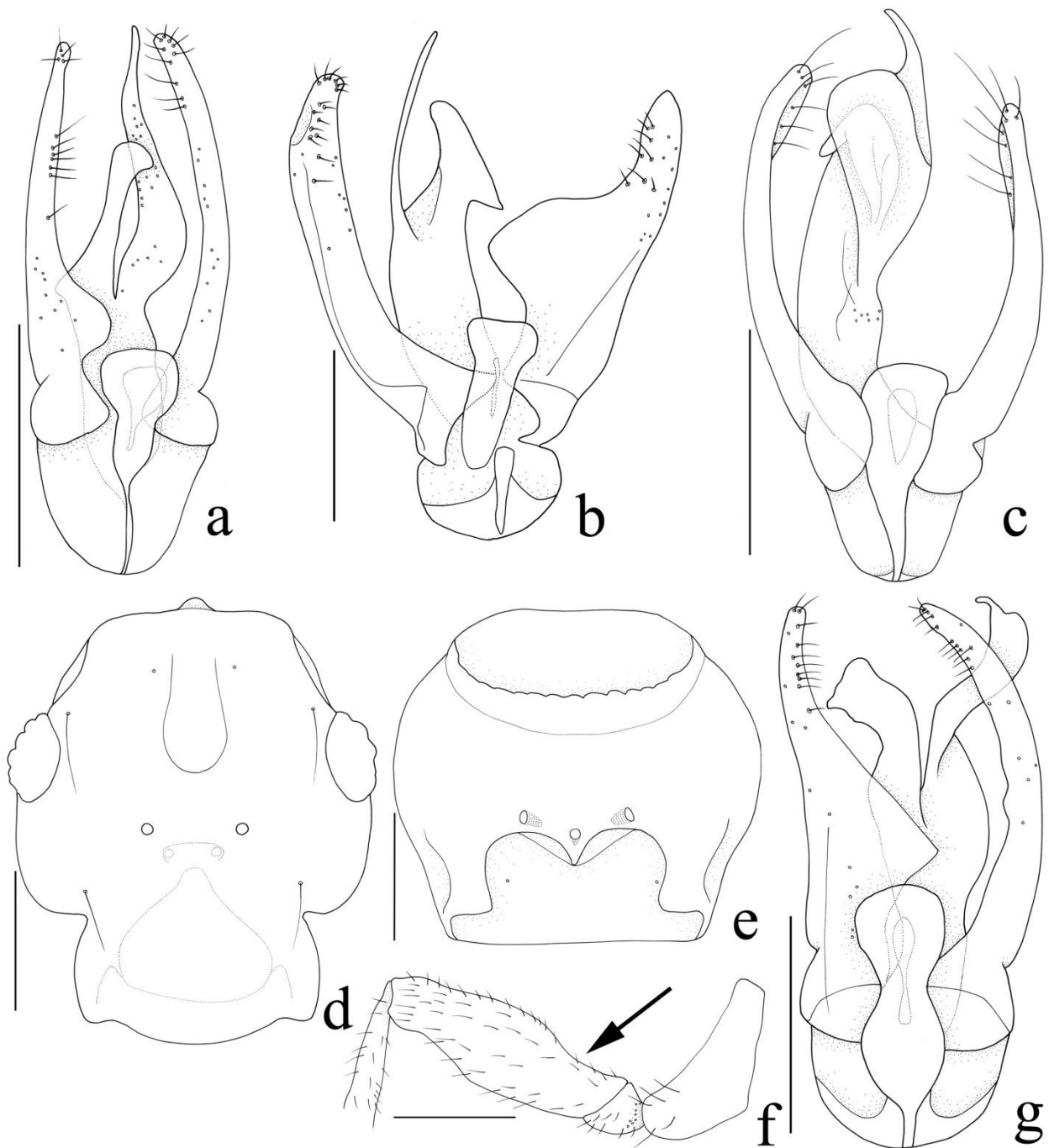


Figure 14. a-b, aedeagus, dorsal view. a) *Stenosagola pseudogracilis* sp. nov.; b) *S. clarkei* sp. nov.; c) *S. egmontensis* sp. nov.; d) *S. ramsayi* sp. nov.; e-g, *S. egmontensis* sp. nov.; e) winged male head, dorsal view; f) prothorax, ventral view; g) prothoracic leg. Aedeagus, dorsal view; h) *S. domettensis* sp. nov.; i) *S. eylesi* sp. nov.; j) *S. stewartensis* sp. nov.. Scale bars = 0.1 mm.

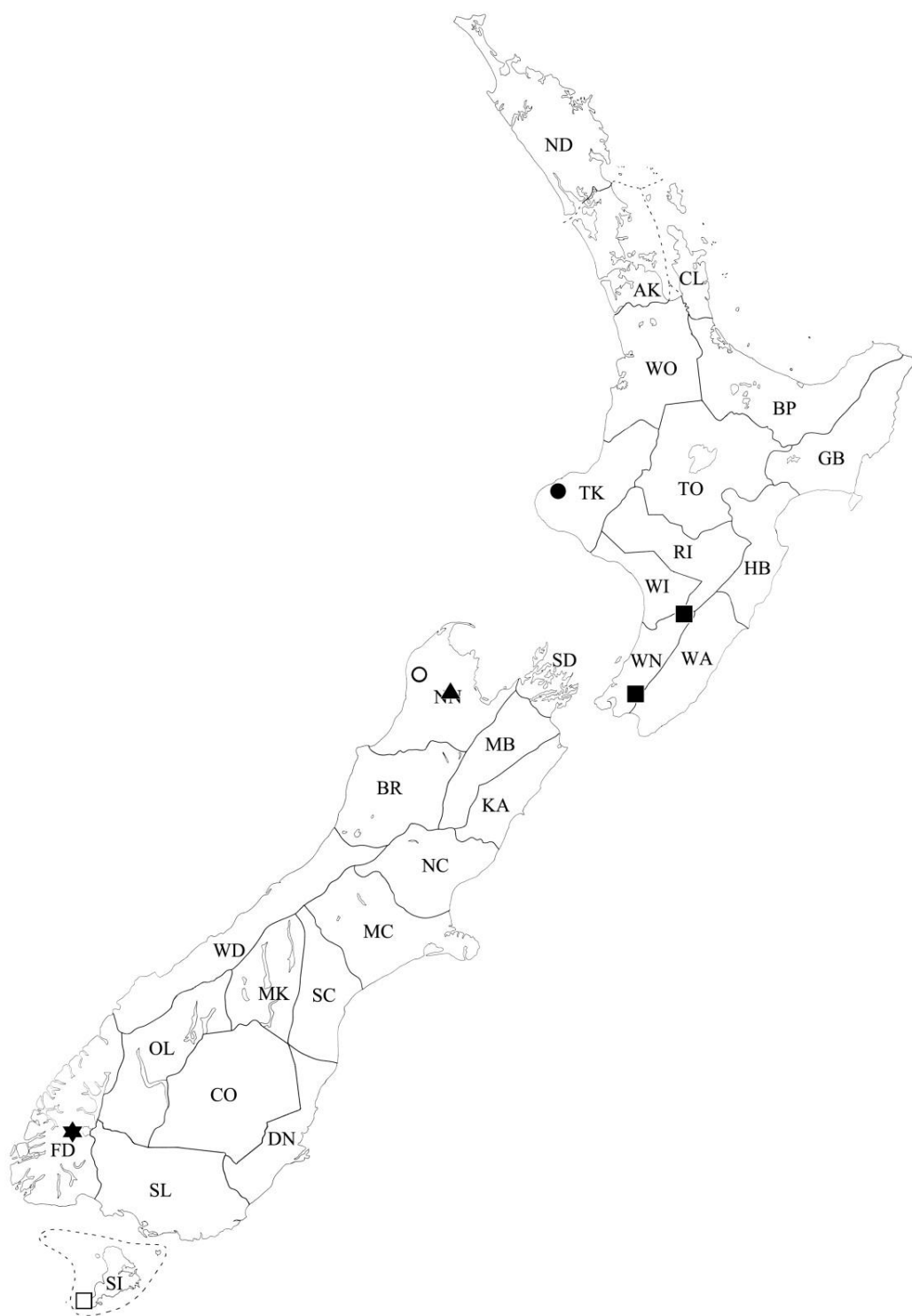


Figure 15. Locations where *Stenosagola clarkei* sp. nov., *S. egmontensis* sp. nov., *S. ramsayi* sp. nov., *S. domettensis* sp. nov., *S. eylesi* sp. nov., and *S. stewartensis* sp. nov. specimens have been collected in New Zealand. *S. clarkei*: black triangle; *S. egmontensis*: black circle; *S. ramsayi*: black squares; *S. domettensis*: white circle; *S. eylesi*; *S. stewartensis*: white square.

Connata-group

Diagnosis. Body length 1.1–1.5 mm (Figures 16–17); head with cylindrical frontal sulcus, closed anteriorly (Figures 18d–f, 11g, 13g); prosternum as long as wide (Figure 18g); mesoventrites with promesocoxal foveae (Figure 18h); abdominal tergite and ventrite VI distinctly larger than V and VII (Figures 18k–l); most genitalia with simple median lobe (Figures 18p, 11a, 11e–f, 13a–f), but some shallow divided (Figures 11b–d).

***Stenosagola connata* (Broun, 1911)**

Sagola connata Broun, 1911: 503. Broun 1921a: 505. Hudson, 1923: 366. Raffray, 1924: 232.

Hudson, 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245.

Stenosagola griseipila Broun, 1921a: 506. Hudson, 1923: 366; 1934: 184. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 245. **New synonym.**

Sagola longipennis Broun, 1911: 504. Hudson, 1923: 365. Raffray, 1924: 232. Hudson, 1934: 184. Kuschel, 1990: 48. Newton and Thayer, 2005b. Nomura and Leschen, 2006: 243.

New synonym.

Holotype: New Zealand: Waikato (WO): ♂ (wingless male), glued on rectangular card, genitalia dissected and mounted in balsam on clear plastic card, “Type” [red label, printed]; “3374. ♂.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Erua. Jany. 1911.” [white label, handwritten]; “Sagola connata” [white label, handwritten]. **Holotype of *Stenosagola griseipila*: New Zealand: Taupo (TO):** ♀, glued on rectangular card, “4021.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Makatote. Feby. 1910.” [white label, handwritten]; “Stenosagola griseipila.” [white label, handwritten]; “SYNTYPE” [blue label, printed]. Deposited BMNH. **Holotype of *Sagola longipennis*:** New Zealand: Waikato (WO): ♂ (winged male), “Type” [red label, printed]; “3375” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Erua. Feb. 1911.” [white label, handwritten]; “Sagola Longipennis” [white label, handwritten]. Deposited BMNH.

Additional material (n=39; 27 males; 12 females). New Zealand: Auckland (AK): 1♂, Lynfield, 17 Mar 1979, G. Kuschel; **Bay of Plenty (BP):** 1♂, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit road, 450m, 37°31.429'S 175°44.005'E, 19 XI 2005, mixed broadleaf forest w/many tree fern, nikau palms, FMHD#2005-016, flight intercept trap, A. Newton and M. Thayer, ANMT site 1144; 1♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit road, 450m, 37°31.429'S 175°44.005'E, 19 XI 2005, mixed broadleaf forest w/many tree fern, nikau palms, FMHD#2005-018, berl. leaf and log litter, A. Newton and M. Thayer, ANMT site 1144; 1♂, Mamaku/kaimai Ra., Otanewainuku, 640m, 21 IX 1981, B.M. May, Litter 81/91; **Gisborne (GB):** 4♂♂3♀♀, Urewera N. P., Maungapohatu Rd., 3.2km E Taupeupe Saddle, 1110m, 38°36.975'S 177°02.753'E, 22 XI 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-027, berl., leaf and log litter, A. Newton and M. Thayer, ANMT site 1148; 4♂♂3♀♀ (1♂1♀, slide-mounted), Urewera N. P., Waikaremoana Rd., S end Matanunui Ridge, 720m, 38°44.404'S 177°05.806'E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-118, berl., leaf and log litter, M. Thayer and A. Solodovnikov, ANMT site 1149; 4♂♂ (2♂♂, slide-mounted), Urewera N. P., Waikaremoana Rd., S end Matanunui Ridge, 720m, 38°44.404'S 177°05.806'E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, flight intercept trap, M. Thayer and A. Solodovnikov, ANMT site 1149; 7♂♂1♀, Lake Waikaremoana, 17 I 1972, G.W. Ramsay, Litter; 1♀, L. Waikaremoana, 21 VI 1991, C.F. Morales, litter 95/51; **Taupo (TO):** 1♂2♀♀ (1♀, slide-mounted), Whirinaki Forest Park,

Arohaki Lagoon Track, 500m, 38°40.82'S 176°40.032'E, 21 XI 2005, mixed broadleaf forest incl. *Beilschmidia tawa*, FMHD#2005-024, berl., leaf and log litter, A. Newton and M. Thayer, *et al.*, ANMT site 1147; 1♂, 34km SSE Taupo, Kaimanawa For. Pk., 850m, 11–26 III 1978, SandJ Peck, berl., litter *Nothofagus* forest; **Waikato (WO):** 1♂1♀, Mt. Pirongia SF, Rangitukia Stream, 37°58'S 175°07'E, 13 VI 2001, R. Leschen, berl., litter of tree holes leaf litter; 1♂, Pirongia Forest Park, Tirohanga Track (above end Corcoran Rd.), 500m, 37°58.409'S 175°07.173'E, 20 XI 2005, broadleaf forest, FMHD#2005-015, berl., forest litter, D. Clarke and A. Solodovnikov, ANMT site 1146; 1♂, Pirongia Forest Park, Tahunui Track, 840m, 37°58.953'S 175°05.523'E, 18 XI–27 XII 2005, mixed forest, near subalpine zone, FMHD#2005-012, flight intercept trap, A. Solodovnikov and D. Clarke, ANMT site 1143.

Diagnosis. Specimens of *S. connata* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 18p).

Redescription. Length 1.1–1.5 mm (Figures 16a–c). *Head.* Winged male head approximately 1.47 times (Figure 18d), wingless male 1.44 times (Figure 18e), female 1.49 times (Figure 18f) longer than wide. Winged male eye approximately 1.48 times (Figure 18d), wingless male 0.57 times (Figure 18e), female 0.46 times (Figure 18f) longer than temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse (Figure 18a). Wingless male antennomeres 3–6 subquadrate, 7–10 transverse (Figure 18b). Female antennomeres 3–5 subquadrate, 6–10 transverse (Figure 18c).

Thorax. Prosternum as long as wide (Figure 18g). Winged male elytra approximately 1.87 times (Figure 18i), wingless male 1.26 times, female 1.29 (Figure 18j) longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.66 times (Figure 18h), wingless male 1.19 times, female 1.18 times longer than prosternum (Figure 18h). Metacoxa as in Figure 18o.

Aedeagus. Apical lobe of genitalia acute and bent to right (Figure 18p). Left paramere longer than right, setae present anteriorly (Figure 18p).

Type locality. Erua (TO), New Zealand.

Distribution. Mid-part of North Island, New Zealand (Figure 19: triangles).

Habitat. Most specimens were collected using flight intercept traps (FIT) and sifting leaf, log, and tree fern litter in *Nothofagus* and broadleaf forests. A few specimens were collected from a tree hole.

Comments. Specimens of *Stenosagola connata* are difficult to separate from those of other species externally, but the sizes and shapes of the antennomeres and the genitalia are diagnostic. Insufficient evidence exists to maintain *S. griseipila* and *Sagola longipennis* as separate species based on comparisons of the shapes and sizes of antennomeres. Specimens of these species have been collected at or near the type locality or localities of additional specimens of *S. connata*. For these reasons, I have placed *S. griseipila* and *Sagola longipennis* in synonymy with *S. connata*.

***Stenosagola huiaensis* Park and Carlton, new species**

Type material. Holotype. New Zealand: Auckland (AK): ♂ (winged male), “♂”, “NEW ZEALAND AK Huia 150m Twin Packs Ridge 1 Apr 1981 B.M. May”, “at roots of *Metrosideros robusta*”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “HOLOTYPE *Stenosagola huiaensis* Park and Carlton des. 2013”. **Paratypes (n=13: 12 males; 1 female). New Zealand: Auckland (AK):** 1♂1♀ (1♀, slide-mounted), same data as holotype (NZAC); 2♂♂, Hunua Range Reg. Park, Kohukohunui Track nr. Mine Rd.,

475m, 37°02.396'S 175°11.251'E, 17 XI–28 XII 2005, broadleaf-podocarp forest, numerous tree ferns, FMHD#2005-001, flight intercept trap, A. Newton and M. Thayer, *et al.*, ANMT site 1140 (FMNH); 4♂♂ (1♂, slide-mounted), Waitakere Ra., Cascade-Kauri Park, Up. Kauri Tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd., A. Newton and M. Thayer 680, window trap 680 (2♂♂, FMNH; 2♂♂, DSC); 2♂♂, Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd.-podocarp forest, A. Newton and M. Thayer 697, flight intercept (window) trap (DSC); 1♂, Waitakere Ra., Cascade-Kauri Park, Anderson Tr., 85m, 23 XI–8 XII 1984, hdwd.-podocarp, A. Newton and M. Thayer 681 (DSC); 1♂, Waitakere Ra., Nohoanga Scen. Res., 260m, 36°57'S 174°35'E, 23 II 1987, hardwood-podocarp forest, A. Newton and M. Thayer 836; FMHD#87-272, berl., leaf and log litter, forest floor (excl. tree fern litter) (FMNH); **Northland (ND)**: 1♂, Poor Knights Is, Tawhiti Rahi, 6 XII 1980, G. Kuschel, sifted rotten wood (NZAC).

Etymology. This species is named after the type locality, Huia, Auckland (AK).

Diagnosis. Specimens of *S. huiaensis* are similar in appearance to other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 20a).

Description. Length 1.1–1.3 mm (Figures 16d–e). *Head.* Winged male head approximately 1.36 times, female 1.48 times longer than wide. Winged male eye approximately 1.33 times, female 0.32 times longer than temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Female antennomeres 3–4 subquadrate, 5 slightly transverse, 6–10 transverse.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.93 times, female 1.27 longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.7 times, female 1.17 times longer than prosternum.

Aedeagus. Apical lobe of genitalia blunt anteriorly and bent to right (Figure 20a). Left paramere slightly longer than right, otherwise symmetrical, setae present anteriorly (Figure 20a).

Distribution. Northern part of North Island, New Zealand (Figure 19: circles).

Habitat. Specimens were collected using window traps, flight intercept traps (FIT) and by sifting leaf, log and tree fern litter in *Nothofagus*, hardwood, podocarp and broadleaf forests. Three specimens were collected at roots of *Metrosideros robusta*.

***Stenosagola northlandensis* Park and Carlton, new species**

Type material. Holotype. New Zealand: Northland (ND): ♂ (winged male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Trounson Kauri Park 1 Oct 1980 J. S. Noyes”, “N.Z. Arthropod Collection, NZAC Private Bag 92710 AUCKLAND New Zealand”, “HOLOTYPE *Stenosagola northlandensis* Park and Carlton des. 2013”. **Paratypes (n=30; 21 males; 9 females). New Zealand: Northland (ND):** 1♂, same data as holotype (NZAC); 4♂♂, Waipoua State Forest, Toronui Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton and M. Thayer 685, flight intercept (window) trap (DSC); 1♂, Waipoua State Forest, Toronui Track, 120m, 2 XII 1984, kauri-podocarp-hdwd., A. Newton and M. Thayer 685, mixed mosses on logs and ground (FMNH); 2♂♂, Waipoua State Forest, 0.8km nw Wairau Summit, 350m, 27 XI–6 XII 1984, kauri-podocarp-hdwd., A. Newton and M. Thayer 689, flight intercept (window) trap (DSC); 1♂, Waipoua State Forest, Kauri Ricker Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton and M. Thayer 684, flight intercept (window) trap (DSC); 1♂2♀♀, Waipoua SF, Yakas Tree Tr., 350m, 11–14 IV 1980, broadlf.-podocarp, A. Newton and M. Thayer, berl., litter at bases of *Metrosideros robusta* trunks (DSC); 1♂, Waipoua For., Waipoua strm., 70m, 17 III 1978, S Peck, J Peck, berl., frass und. Bark kauri log (FMNH); 1♂, slide-mounted, Waipoua State Forest, Waikohatu Stream Bridge, 300m, 28

XI–6 XII 1984, kauri-hdwd.-podocarp, A. Newton and M. Thayer 690, window trap 690 (FMNH); 1♂, Omahuta Forest, Omahuta Kauri Sanctuary, 430m, 29 XI–5 XII 1984, kauri-podocarp-hdwd., A. Newton and M. Thayer 693, flight intercept (window) trap (DSC); 1♂, Omahuta S.F., 18 III 1978, S. B. Peck, litter; 1♂ (slide-mounted), Omahuta For., Picnic Area near Kauri Sanctuary, 330m, 29 XI–5 XII 1984, hdwd.-podocarp for., A. Newton and M. Thayer 694 (NZAC); 1♂ (slide-mounted), Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd.-podocarp forest, A. Newton and M. Thayer 683, flight intercept (window) trap (DSC); 4♀♀ (1♀, slide-mounted), Kauri Sanctuary, Omahuta S.F., 22 IV 1975, G. Kuschel, Rot inside in Taniwha Kauri tree 75/193 (NZAC); 1♂, Omahuta Kauri Sanctuary, 4 II 1975, G. Kuschel, rotten wood 75/21 (NZAC); 1♂, Kauri Sanctuary, Omahuta S.F., 16 VII 1974, G. Kuschel, Litter 74/40 (NACZ); 1♂2♀♀ (1♂, slide-mounted), Omahuta S.F., 22 IV 1975, J.S. Dugdale, Litter 75/141 (NZAC); 1♀, Omahuta S.F., Kauri Res., 10 X 1974, J.C. Watt, litter 74/81 (NZAC); 1♂, Waipoua S.F., Lookout, 29 X 1980, G. Kuschel, Moss 80/99 (NZAC); 1♂, Waipoua S.F., 25 XI 1980, G. Kuschel, Decayed wood 80/120 (NZAC).

Etymology. This species is named after the type locality, Northland (ND).

Diagnosis. Specimens of *S. northlandensis* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 20b).

Description. Length 1.1–1.4 mm (Figures 16f–h). *Head.* Winged male head approximately 1.5 times, wingless male 1.52 times, female 1.55 times longer than wide. Winged male eye approximately 1.27 times, wingless male 0.65 times, female 0.29 times longer than temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Wingless male antennomeres 3–6 subquadrate, 7 slightly transverse. Female antennomeres 3–5 subquadrate, 6–7 slightly transverse.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.91 times, wingless male 1.26 times, female 1.24 times longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.59 times, wingless male 1.15 times, female 1.18 times longer than prosternum.

Aedeagus. Apical lobe of genitalia shallow divided, right lobe longer than left; right lobe with small process at right basal (Figure 20b). Parameres symmetrical, setae present anteriorly (Figure 20b).

Distribution. Northland (ND), New Zealand (Figure 19: squares).

Habitat. Specimens were collected using window traps, flight intercept traps (FIT) and sifting leaf, log and moss litter in kauri, hardwood, podocarp and broadleaf forests.

Stenosagola thayerae Park and Carlton, new species

Type material. Holotype. New Zealand: Auckland (AK): ♂ (winged male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: AK: Hunua Ranges, Vining Reserve, Mangatangi Track, 240m, 37°07.747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc.; FMHD#2005-005, flight intercept trap, A. Newton and M. Thayer, et al.; ANMT site 1141”, “HOLOTYPE *Stenosagola thayerae* Park and Carlton des. 2013”. **Paratypes (n=29; 24 males; 5 females). New Zealand: Auckland (AK):** 14♂♂, (1♂, slide-mounted), same data as holotype (FMNH); 1♂, Hunua Ranges, Vining Reserve, Mangatangi Track, 240m, 37°07.747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc., FMHD#2005-007, pitfall traps (2), D. Clarke and A. Solodovnikov, ANMT site 1141 (FMNH); 1♂, Hunua Ranges, Vining Reserve, Mangatangi

Track, 240m, 37°07.747'S, 175°13.024'E, 17 XI–28 XII 2005, *Nothofagus–Agathis–Phyllocladus trichomanoides*, etc.; FMHD#2005-008, berl., leaf and log litter, A. Newton and A.

Solodovnikov, *et al.*, ANMT site 1141 (FMNH); 1♂, Hunua Ranges Reg. Park, 7km W Kaiaua Workman Track, 116m, 27 III 2010, D. S. Chandler, sift *Nothofagus* and *Cyathea* litter on slope (DSC); 1♂, Mangatangi, Hunua Range, 5 IV–5 V 1977, I. Barton, ARA Kauri Seed Project, pit trap (NZAC); 2♂♂ (1♂, slide-mounted), Hunua Ra., Kohukohunui, 550m, 30 III 1974, G. Kuschel, litter 74/19 (NZAC); **Coromandel (CL)**: 2♂♂1♀, Gt Barrier I, Mt. Hobson, Upper Kauri Dam, 11 IV 1982, Moss and Litter 82/51 (NZAC); 1♂, Great Barrier I, Mt. Hobson, 620m, 23–28 III 1978, ESNZ Field Trip, litter (NZAC); 4♀♀ (1♀, slide-mounted), Gt Barrier I, Mt. Hobson Summit, 621m, 11 IV 1982, J. C. Matt, litter (NZAC), 1♂, Great Barrier I., Little Windy Hill, 220m, 13 XII 2002–17 I 2003, P. Sutton, Forest edge, Malaise trap, L21055 (AMNZ).

Etymology. This species is named for the collector of the holotype, M. Thayer.

Diagnosis. Specimens of *S. thayerae* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 19c).

Description. Length 1.2–1.3 mm (Figures 16i–k). *Head.* Winged male head approximately 1.47 times, wingless male 1.46 times, female 1.44 times longer than wide. Winged male eye approximately 1.31 times, wingless male 0.68 times, female 0.24 times longer than temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Wingless male antennomeres 3–7 subquadrate, 8 slightly transverse, 9–10 transverse. Female antennomeres 3–4 subquadrate, 5 slightly transverse, 6–10 transverse.

Thorax. Prosternum approximately 1.1 times longer than wide. Winged male elytra approximately 1.79 times, wingless male 1.26 times, female 1.27 longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.63 times, wingless male 1.18 times, female 1.17 times longer than prosternum.

Aedeagus. Apical lobe of genitalia shallow divided, right lobe longer than left (Figure 20c). Paramere symmetrical, setae present anteriorly (Figure 20c).

Distribution. Auckland (AK) and Coromandel (CL) (Figure 21: triangles).

Habitat. Specimens were collected using window traps, flight intercept traps (FIT), malaise traps, pitfall traps and by sifting leaf, log, and moss litter in *Nothofagus* and *Cyathea* forests.

***Stenosagola dugdalei* Park and Carlton, new species**

Type material. Holotype. New Zealand: Gisborne (GB): ♂ (winged male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, GB Kakanui, 300m 1 Feb 1993 J.S. Dugdale Litter 93/13”, “N.Z. Arthropod Collection, NZAC Private Bag 92710 AUCKLAND New Zealand”, “HOLOTYPE *Stenosagola dugdalei* Park and Carlton des. 2013”.

Paratypes (7 males). New Zealand: Gisborne (GB): 1♂ (slide-mounted), L. Waikaremoana, 21 VI 1991, C. F. Morales, litter (NZAC); 1♂ (slide-mounted), Urewera N.P. nr Aniwhaniwa Vis. Ctr. Stream, dead *Nothofagus* Berlese, 18 III 2000, C. Carlton, A. Weir, #049 (LSAM); **Bay of Plenty (BP):** 1♂, Waiaroho, 26 I–10 III 1993, J. S. Dugdale, Malaise trap (NZAC); 1♂, Orete Forest, Te Puia Hut, 25 I 1993, J. S. Dugdale, litter (NZAC); 1♂, Paratea, 26 IV 1993, J. S. Dugdale, Bryophytes (NZAC); 1♂, Rereauria, 26 I 1993, J. S. Dugdale, litter (NZAC); 1♂, slide-mounted, Waiaroho, 21 X–25 XI 1992, G. Hall, Malaise trap (NZAC).

Etymology. This species is named for the collector of the holotype, J. S. Dugdale.

Diagnosis. Specimens of *S. dugdalei* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 19d).

Description. Length 1.2–1.4 mm (Figures 16l–m). *Head.* Winged male head approximately 1.51 times, wingless male 1.49 longer than wide. Winged male eye approximately 1.45, wingless male 0.82 times longer than temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Wingless male antennomeres 3–6 subquadrate, 7–10 transverse.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.85 times, wingless male 1.32 longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.59 times, wingless male 1.19 times longer than prosternum.

Aedeagus. Apical lobe of genitalia broadly divided, left lobe longer than right (Figure 19d). Paramere symmetrical, setae present anteriorly (Figure 19d).

Distribution. Mid-western part of North Island, New Zealand (Figure 20: circles).

Habitat. Specimens were collected using malaise traps and by sifting leaf litter.

***Stenosagola tararuaensis* Park and Carlton, new species**

Type material. Holotype. New Zealand: Wellington (WN): 1♂ (wingless male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: WN: Tararua Forest, above Akatarawa Saddle, 455m, h, 26 XI–21 XII 2005, broadleaf-podocarp forest on slope; FMHD#2005-0112, flight intercept trap, A. Newton and M. Thayer; ANMT site 1151”, “HOLOTYPE *Stenosagola tararuaensis* Park and Carlton des. 2013”.

Paratypes (n=8: 6 males; 2 females). New Zealand: Wellington (WN): 2♂♂ (1♂, slide-mounted), Tararua Forest, above Akatarawa Saddle, 455m, 40°56.936’S 175°06.529’E, 26 XI 2005, broadleaf-podocarp forest on slope, FMHD#2005-033, berl., leaf and log litter, A. Newton and M. Thayer, ANMT site 1151 (FMNH); 1♂, Tararua Forest Park, Judd Ridge, Field’s Track, Field Hut vic., 855m, 40°54.474’S 175°15.371’E, 24 XI–26 XI 2005, broadleaf (*Notho. mezesii-Weinmonnia racemosa*)-podocarp forest, FMHD#2005-040, berl., moss on logs, A. Solodovnikov and D. Clarke, ANMT site 1153 (FMNH); 3♂♂2♀ (2♀, slide-mounted), Akatarawa saddle, Tararua S. F., (S of Waikanoa), 500m, 7 III 1978, S Peck, berl. litter (FMNH).

Etymology. This species is named after the type locality, Tararua Forest Park, Wellington (WN).

Diagnosis. *Stenosagola tararuaensis* is similar in appearance to other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 20e).

Description. Length 1.2–1.5 mm (Figures 17a–b). *Head.* Wingless male head approximately 1.30 times, female 1.48 times longer than wide. Wingless male eye approximately 0.70 times, female 0.42 times as long as temple. Wingless male antennomeres 3–6 subquadrate, 7–8 slightly transverse, 9–10 transverse. Female antennomeres 3–5 subquadrate, 6–10 transverse.

Thorax. Prosternum as long as wide. Wingless male elytra approximately 1.22 times, female 1.25 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.19 times, female 1.14 times longer than prosternum.

Aedeagus. Median lobe slender, approximately twice as broad as paramere (Figure 20e). Paramere symmetrical, setae present anteriorly (Figure 20e).

Distribution. Wellington (WN), New Zealand (Figure 21: squares).

Habitat. Specimens were collected using flight intercept traps (FIT) and by sifting leaf, log, and moss litter in *Nothofagus*, podocarp and broadleaf forests.

***Stenosagola haunuiensis* Park and Carlton, new species**

Type material. Holotype. New Zealand: Wairarapa (WA): ♂ (wingless male), aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand WA Castlehill / Haunui area. SE Puketoi RA March 2010”, “HOLOTYPE *Stenosagola haunuiensis* Park and Carlton des. 2013”. **Paratype (1 male).** New Zealand: Wellington (WN): 1♂ (slide-mounted), Tararua Forest Park, Judd Ridge, Field’s Track, Field Hut vic., 855m, 40°54.474’S 175°15.371’E, 24 XI–26 XI 2005, broadleaf (*Notho. Mezesii-Wein-mannia racemosa*)-podocarp forest, FMHD#2005-039, berl., forest leaf litter (mostly *Nothofagus*), A. Solodovnikov and D. Clarke, ANMT site 1153 (FMNH).

Etymology. This species is named after the type locality, Haunui, Wairarapa (WA).

Diagnosis. Specimens of *S. haunuiensis* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 10f) and circular male head (Figure 20g).

Description. Length 1.6 mm (Figure 17c). *Head.* Wingless male head circular, approximately 1.18 times (Figure 20g). Wingless male eye approximately 0.56 longer than temple (Figure 20g). Wingless male antennomeres 3–7 subquadrate, 8 slightly transverse, 9–10 transverse.

Thorax. Prosternum as long as wide. Wingless male elytra approximately 1.38 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.22 times longer as prosternum.

Aedeagus. Median lobe slender, approximately as wide as paramere, broadly bent to right, weakly bulbous apically (Figure 20f). Paramere symmetrical, setae present anteriorly (Figure 20f).

Distribution. Southern part of North Island, New Zealand (Figure 21: stars).

Habitat. Specimens were collected from forest leaf litter in mixed broadleaf/Podocarp forests.

***Stenosagola pseudoconnata* Park and Carlton, new species**

Type material. Holotype. New Zealand: Wellington (WN): ♂ (winged male), “NEW ZEALAND: WN: Tararua Forest Park, Waitewaewae Track, 220m, 40°51.98’S 175°15.319’E, 26 XI–21 XII 2005, broadleaf (much *Knightia exelsa*)-podocarp forest; FMHD#2005-034, flight intercept trap, A. Newton and M. Thayer; ANMT site 1152”, “HOLOTYPE *Stenosagola pseudoconnata* Park and Carlton des. 2013”. **Paratype (n=12; 10 males; 1 female).** New Zealand: Taranaki (TK): 1♂, Dawson Falls, 914m, 23 I 1972, G.W. Ramsay, Litter 72/68 (NZAC); Wellington (WN): 2♂♂ (slide-mounted), same data as holotype (FMNH); 1♂, Wellington, Wilton’s Bush, 110m, 41°15.963’S 175°45.159’E, 24 XI 2005, mixed broadleaf-podocarp forest, FMHD#2005-030, berl., leaf and log litter, M. Thayer and A. Newton, ANMT site 1150 (FMNH); 1♂, Pakuratahi Forks, Kaitoke, 24 VII 1995, in wood mould, J. Nunn (JTN); 1♂, Pakuratahi Forks, Kaitoke, 18 VII 1995, in wood mould, J. Nunn (JTN); 1♂, Porirua SR, Elsdon, 18 IX 1993, in decayed wood, J. Nunn (JTN); 1♀ (slide-mounted), Pakuratahi Forks, Kaitoke, 1 VIII 1993, in wood mould, J. Nunn (JTN); 1♂, Tunnel Gully, Te Marua, 5 V 1996, in wood mould, base of tree, J. Nunn (JTN); 1♂, Tararua Forest, above Akatarawa Saddle, 455m, h, 26 XI–21 XII 2005, broadleaf-podocarp forest on slope; FMHD#2005-0112, flight intercept trap, A. Newton and M. Thayer; ANMT site 1151 (FMNH); 1♂, Tararua Ra., 610m, 14 XI 1968, S. Edridge, Litter 68/200; Rangitikei (RI): 1♂, Ruahine Ra, Triplex, 10 II 1980, C. F. Butcher, litter (NZAC).

Etymology. The specific epithet refers to the superficial similarity of this species to *S. connata*.

Diagnosis. Specimens of *S. pseudoconnata* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 21a).

Description. Length 1.1–1.3 mm (Figures 17d–e). *Head.* Winged male head approximately 1.45 times, wingless male 1.42 times, female 1.37 times longer than wide. Winged male eye approximately 1.69 times, female 0.33 times longer than temple. Wingless male eye as long as temple. Winged male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Wingless male antennomeres 3–6 subquadrate, 7–10 transverse. Female antennomeres 3–5 subquadrate, 6–10 transverse.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.92 times, wingless male 1.29 times, female 1.30 times longer than prosternum. Winged male mesoventrites trapezoidal, approximately 1.66 times, wingless male and female 1.18 longer than prosternum.

Aedeagus. Median lobe bent to right, weakly pointed apically (Figure 22a). Paramere symmetrical, setae present anteriorly (Figure 22a).

Distribution. Southern part of North Island, New Zealand (Figure 23: triangles).

Habitat. Specimens were collected using flight intercept traps (FIT) and by sifting leaf and log litter in podocarp and broadleaf forests.

***Stenosagola chandleri* Park and Carlton, new species**

Type material. Holotype. New Zealand: Dunedin (DN): ♂ (wingless male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: DN, Maukatua Scenic Res NW of Woodside, 88m Lee Creek, III-8-2010 D.S. Chandler and J.T. Nunn, rotten wood”, “HOLOTYPE *Stenosagola chandleri* Park and Carlton des. 2013”. **Paratypes (n=30; 25 males; 5 females). New Zealand: Central Otago (CO):** 2♂♂ (1♂, slide-mounted), Pisa Range, L. McKay, 1707m, 16 II 1983, J. C. Matt, grass (NZAC); 1♂, Alexandra, Dunstan Ra., 1615m, 23 II 1974, J.C. Watt, mixed turf 74/14 (NZAC); **Dunedin (DN):** 1♀ (slide-mounted), Mt. Hut, Lammermoor Range, 26 IV 2009, washed soil sample, soil under moss at base of tor, J. T. Nunn (JTN); **Fiordland (FD):** 3♂♂, Mt. Barber, 1350m, Wilmot Pass, 23 I 1970, A.C. Eyles, mats 9 swards 70/88 (NZAC); 3♂♂, Turret Ra., Mt. Grey, 1200m, 14 I 1970, G.W. Ramsay, Mats 70/46-7 (NZAC); 1♂, Barrier Ra., Little Red Hill, Mt. Allison, 4 II 1972, J.S. Dugdale, litter 75/52 (NZAC); 1♂, Secretary I, Mt. Grono, 853m, 27 XI 1981, C.F. Butcher, mats moss and tussock 81/186 (NZAC); **Mid Canterbury (MC):** 2♀♀, Scotts Saddle, Mt. Hut, 5 II 2007, washed soil sample beech forest, J.T. Nunn (JTN); **Nelson (NN):** 1♀ (slide-mounted), Kahurangi N.P., Mt. Arthur Track, below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, berl., leaf litter, A. Solodovnikov and D. Clarke, ANMT site 1157 (FMNH); 1♂, Kahurangi N.P., Mt. Arthur Track, ca. 1400m, 28 XI 2005, above treeline, FMHD#2005-050, berl., alpine tussock litter, D. Clarke, ANMT site 1158 (FMNH); 2♂♂, Mt. Arthur, 1341m, 22 III 1971, A.C. Eyles, Mats 71/90 (NZAC); 1♂, Mt. Arthur, 1200m, 20 XI 1969, J.I. Townsend, mats 69/230 (NZAC); 1♂, St. Arnaud Ra., 1524m, 23 Dec 1964, J.I. Townsend, 64/153; **Otago Lakes (OL):** 1♂, Headlong Pk., 1830m, 13-19 II 1980, J.C. Watt, pit trap 12 (NZAC); 1♂, Headlong Pk., 1830m, 19 II 1980, J.C. Watt, Litter tussock humus 80/276 (NZAC); 4♂♂, Rees Saddle, 1600m, 14 II 1980, J.S. Dugdale, mixed swards 80/18 (NZAC); 4♂♂, Rees Saddle, 14 II 1980, J.S. Dugdale, Swards 80/19 (NZAC). **Marlborough Sounds (SD):** 1♀, Mt. Stokes, 762m, 12 III 1970, J.I. Townsend, Litter 70/141 (NZAC).

Etymology. This species is named for the collector of the holotype, D. S. Chandler.

Diagnosis. *Stenosagola chandleri* is similar in appearance to other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 22b) and the frontal rostral lobe of the female head bearing a pair of blunt processes (Figure 22g).

Description. Length 1.3–1.5 mm (Figures 17f–g). *Head.* Wingless male head approximately 1.41 times, female 1.42 times longer than wide. Wingless male eye approximately 1.28 times, female 0.46 times as long as temple. Frontal rostral lobe of female head bearing pair of blunt processes with setae present (Figure 22g). Frontal fovea of female head indistinct (Figure 22g). Wingless male antennomeres 3–8 subquadrate, 9 slightly transverse, 10 transverse. Female antennomeres 3–6 subquadrate, 7–10 transverse, 8 slightly smaller than 7.

Thorax. Prosternum as long as wide. Wingless male elytra approximately 1.48 times, female 1.33 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.28 times, female 1.19 longer than prosternum.

Aedeagus. Median lobe extremely long and slender, approximately three times broader than paramere (Figure 22b). Paramere symmetrical, setae present anteriorly (Figure 22b).

Distribution. Mid Canterbury (MC), Nelson (NN), Marlborough Sounds (SD), and southern part of South Island, New Zealand (Figure 23: squares).

Habitat. Most specimens were collected by sifting forest litter. One specimen using a pitfall trap and several specimens were collected from grass tussocks.

***Stenosagola nunni* Park and Carlton, new species**

Type material. Holotype. New Zealand: Southland (SL): ♂ (winged male), “NEW Zealand: SL: N.E. Big S. Cape 22II1969, J.I. Townsend Litter 69/82 ”, “HOLOTYPE *Stenosagola nunni* Park and Carlton des. 2013”. **Paratype (n=57; 30 males; 27 females). New Zealand: Fiordland (FD):** 1♂2♀♀ (1♂, slide-mounted), Takitumu Forest, 45°36'S, 167°58'E, #123, *Nothofagus* leaf litter berlese, 23 I 1998, C. Carlton, R.L. Leschen (LSAM); 1♂, Breaksea Sound, Gilbert I No 6, 6 V 1982, C.F. Butcher, litter (NZAC); 2♀♀, Breaksea Sound, Gilbert I No 6, V 1982, C.F. Butcher, litter (NZAC); 1♀, Breaksea Sound, Gilbert I No 6, 13 V 1983, C.F. Butcher, moss 83/45 (NZAC); 1♂, Murchison Mts., Point Burn, 11 XII 1972, A.C. Eyles, litter 72/272 (NZAC); 1♂, Fiordland N.P., Kepler Track, below Mt. Luxmore Hut, 900m, 45°24.86'S, 167°38.675'E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-101, berl., leaf and log litter, A. Solodovnikov and D. Clarke, ANMT site 1176 (FMNH); **Stewart Island (SI):** 1♂ (slide-mounted), Codfish Island, Loop Track, 26 XI 1981, B. A. Holloway, sifted litter (NZAC); 8♂♂19♀♀, N.T. Long IS., 22 II 1969, J.I. Townsend, Litter 69/78 (NZAC); 3♂, N.E. Big S. Cape, 22 II 1969, J.I. Townsend, Litter 69/82 (NZAC); 1♂, NE Big S Cape I, 91m, 22 II 1969, J.I. Townsend, Moss 69/83 (NZAC); 8♂♂, Big S Cape I, S. Pk., 11 XI 1968, G. Kuschel, Mats 68/183 (NZAC); 1♂, Big S Cape I, 11 XI 1968, J. McBurney, Mats 68/181 (NZAC); 1♂, S.W. Stewart I., Big S Cape I, N. Peck, 213m, 10 XI 1968, J.S. Dugdale, litter 68/178 (NZAC); 1♂, Codfish IS, Rocky Bay, 16 XII 1966, J.S. Townsend, Moss 66/449 (NZAC); 1♂1♀, nr. Summit, Codfish IS., 244m, 14 XII 1966, J.I. Townsend, litter in bush (NZAC); **Southland (SL):** 1♂2♀♀, Bog Burn, Waterloo Burn Tck., 4 VI 2007, washed soil sample, 800m, *Nothofagus* forest, J. T. Nunn (JTN).

Etymology. This species is named for the collector of the holotype, J. T. Nunn.

Diagnosis. Specimens of *S. nunni* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 22c).

Description. Length 1.3–1.4 mm (Figures 17h–j). *Head.* Winged male head approximately 1.47 times, wingless male 1.28 times, female 1.41 times longer than wide. Winged male eye approximately 2.00 times, female 0.71 times longer than temple. Frontal rostral lobe of female head bearing pair of blunt processes with setae present (Figure 22g). Frontal fovea of female head indistinct (Figure 22g). Winged male antennomeres 3 subquadrate, 4–5 slightly longer than wide, 6–8 subquadrate, 9 slightly transverse, 10 transverse. Wingless male antennomeres 3 subquadrate, 4–5 slightly longer than wide, 6–8 subquadrate, 9 slightly transverse, 10 transverse. Female antennomeres 3–6 subquadrate, 7–10 transverse, 8 slightly smaller than 7.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.90 times, wingless male 1.40 times, female 1.36 longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.67 times, wingless male 1.31 times, female 1.22 times longer than prosternum.

Aedeagus. Median lobe of genitalia broad, broadest in basal half. Apical lobe weakly bent to left (Figure 22c). Paramere symmetrical, setae present anteriorly (Figure 22c).

Distribution. Southern part of South Island, New Zealand (Figure 24: triangles).

Habitat. Specimens were collected by sifting moss or leaf litter in *Nothofagus* forests.

***Stenosagola newtoni* Park and Carlton, new species**

Type material. Holotype. New Zealand: Buller (BR): 1♂ (winged male), aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: BR, Lewis Pass Nat. Res., 12.3km s Lewis Pass, 650m 17.xii.1984–21.i.1985 *Nothofagus* spp. forest A.Newton/M.Thayer 713”, “flight intercept (window) trap”, “HOLOTYPE *Stenosagola newtoni* Park and Carlton des. 2013”. **Paratype (1 male). New Zealand: Mid Canterbury (MC):** 1♂, slide-mounted, Banks Peninsula, Mt. Sinclair Scen. Res., 775m, 43°42.977’S, 172°51.098’E, 3 XII 2005, ridgetop mixed broadleaf w/emergent podocarpus totara; FMHD#2005-072, berl., leaf and log litter, A. Newton and A. Solodovnikov; ANMT site 1163 (FMNH).

Etymology. This species is named for the collector of the holotype, A. F. Newton.

Diagnosis. Specimens of *S. nunni* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 22d).

Description. Length 1.2 mm (Figure 17k). *Head.* Wingless male head approximately 1.40 times longer than wide, eye approximately 1.23 times longer than temple. Wingless male antennomeres 3–7 subquadrate, 8 slightly transverse, 9–10 transverse.

Thorax. Prosternum as long as wide. Wingless male elytra approximately 1.47 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.36 times longer than prosternum.

Aedeagus. Apical lobe of genitalia acute apically, weakly bent to right (Figure 22d). Parameres slender, bearing setae apically (Figure 22d).

Distribution. Buller (BR) and Mid Canterbury (MC), New Zealand (Figure 24: circle).

Habitat. Specimens were collected by sifting litter and using flight intercept traps in broadleaf, podocarp, and *Nothofagus* forests.

***Stenosagola butcheri* Park and Carlton, new species**

Type material. Holotype. New Zealand: 1♂ (winged male), “NEW ZEALAND WO Mt Karioi 11 Oct 1981 C.F. Butcher Litter 81/95”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “HOLOTYPE *Stenosagola butcheri* Park and Carlton des.

2013". **Paratypes (2 males). New Zealand: Auckland (AK):** 1♂ (slide-mounted), Clevedon Scenic Reser. 0.5km N Clevedon, 20m, III-19-2010 D.S. Chandler, sift forest litter by stream (DSC); **Northland (ND):** 1♂ (slide-mounted), Mangamuka summit, 400m, 15 XII 1976, N.M. May, litter 76/108 (NZAC).

Etymology. This species is named for the collector of the holotype, C. F. Butcher.

Diagnosis. Specimens of *Stenosagola nunni* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 22e).

Description. Length 1.2–1.3 mm (Figures 17l–m). *Head.* Winged male head approximately 1.52 times, wingless male 1.50 times longer than wide. Winged male eye approximately 1.59 times, wingless male 0.90 times longer than temple. Winged male antennomeres 3–8 subquadrate, 9–10 transverse. Wingless male antennomeres 3–7 subquadrate, 8 slightly transverse, 9–10 transverse.

Thorax. Prosternum as long as wide. Winged male elytra approximately 1.89, wingless male 1.29 times longer than prosternum. Winged male meso- and metaventrites trapezoidal, approximately 1.65 times, wingless male 1.19 times longer than prosternum.

Aedeagus. Apical lobe of genitalia emarginate and bent to right (Figure 22e). Left paramere longer than right, bearing setae apically (Figure 22e).

Distribution. Northern part of North Island, New Zealand (Figure 24: black squares).

Habitat. All specimens were collected by sifting forest litter.

Stenosagola fiordlandensis Park and Carlton, new species

Type material. Holotype. New Zealand: Fiordland (FD): ♂ (wingless male, slide-mounted), "NEW ZEALAND FD Resolution I Disappointment Cove 26 May 1982", "C.F. Butcher Sifted litter 82/61", "Duplicate specimens in alcohol", "N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand", "HOLOTYPE *Stenosagola fiordlandensis* Park and Carlton des. 2013". **Paratypes (4 females). New Zealand: Fiordland (FD):** 3♀♀ (1♀, slide-mounted), same data as holotype (NZAC); 1♀, Resolution I, Disappointment Cove, 29 V 1982, C.F. Butcher, baited sifted litter 82/64 (NZAC).

Etymology. This species is named after the type locality, Fiordland (FD).

Diagnosis. Specimens of *S. fiordlandensis* are similar in appearance to those of other members of the *connata*-group, but can be distinguished by the shape of the genitalia (Figure 22f) and the frontal rostral lobe of female head bearing a pair of blunt processes (Figure 22g).

Description. Length 1.2–1.3 mm (Figures 17d–e). *Head.* Wingless male head approximately 1.43 times, female 1.42 times longer than wide. Wingless male eye approximately 1.5 times, female 0.53 times longer than temple. Frontal rostral lobe of female head bearing pair of blunt processes with setae present (Figure 22g). Frontal fovea of female head indistinct (Figure 22g). Winged male antennomeres 3 subquadrate, 4–5 longer than wide, 6–7 subquadrate, 8 slightly transverse, 9–10 transverse. Female antennomeres 3–8 subquadrate, 8 smaller than 7, 9–10 transverse.

Thorax. Prosternum as long as wide. Wingless male elytra approximately 1.36 times, female 1.34 times longer than prosternum. Wingless male meso- and metaventrites trapezoidal, approximately 1.25 times, female 1.22 longer than prosternum.

Aedeagus. Median lobe long and slender (Figure 22f). Parameres symmetrical, setae present anteriorly (Figure 22f).

Distribution. Fiordland (FD), New Zealand (Figure 24: white square).

Habitat. All specimens were collected by sifting forest litter.

DISCUSSION

The five species synonymized and 19 species described herein bring the total number of species in *Stenosagola* to 21. Three phenotypes are found within the genus, winged males, wingless males, and wingless females. Winged females have not been documented. Such polymorphisms are rarely reported in the Staphylinidae, and only a few cases are known in the subfamily Pselaphinae (Ferro and Carlton 2010). Winged males have fully developed hind wings, and differ from other phenotypes by their longer antennomeres, larger eyes, and longer elytra. Wingless males and females have the hind wings reduced to small pads, and differ from winged males in the possessing smaller antennomeres and eyes. Females of many species cannot be separated from other species due to lack of diagnostic external characters. Molecular barcoding using rapidly evolving genes may be required to identify female specimens to species.

A total of 593 specimens were examined during this study. Examples of both winged and wingless male morphotypes were found in 11 of the 21 species known (Table 4). All species represented by more than thirty specimens exhibited both male morphotypes except *Stenosagola chandleri*. The number of winged males was always greater than wingless males (Table 4), and the average ratio of total specimens was 2.7:1:1.5 (winged male:wingless male:female).

I divide *Stenosagola* into the *gracilis*- and *connata*-group. Each group is distinctive morphologically and can be easily separated using external characters. Members of the *connata*-group possess promesocoxal foveae (Figure 17h), which may justify elevating the *connata*-group to the separate genus, but I designate it here as a species group because of its unknown relationship to the large genus *Sagola*, a closely related and possibly paraphyletic group (Chandler 2001a). To address these questions, a genus-level phylogenetic study using morphological and molecular data is needed.

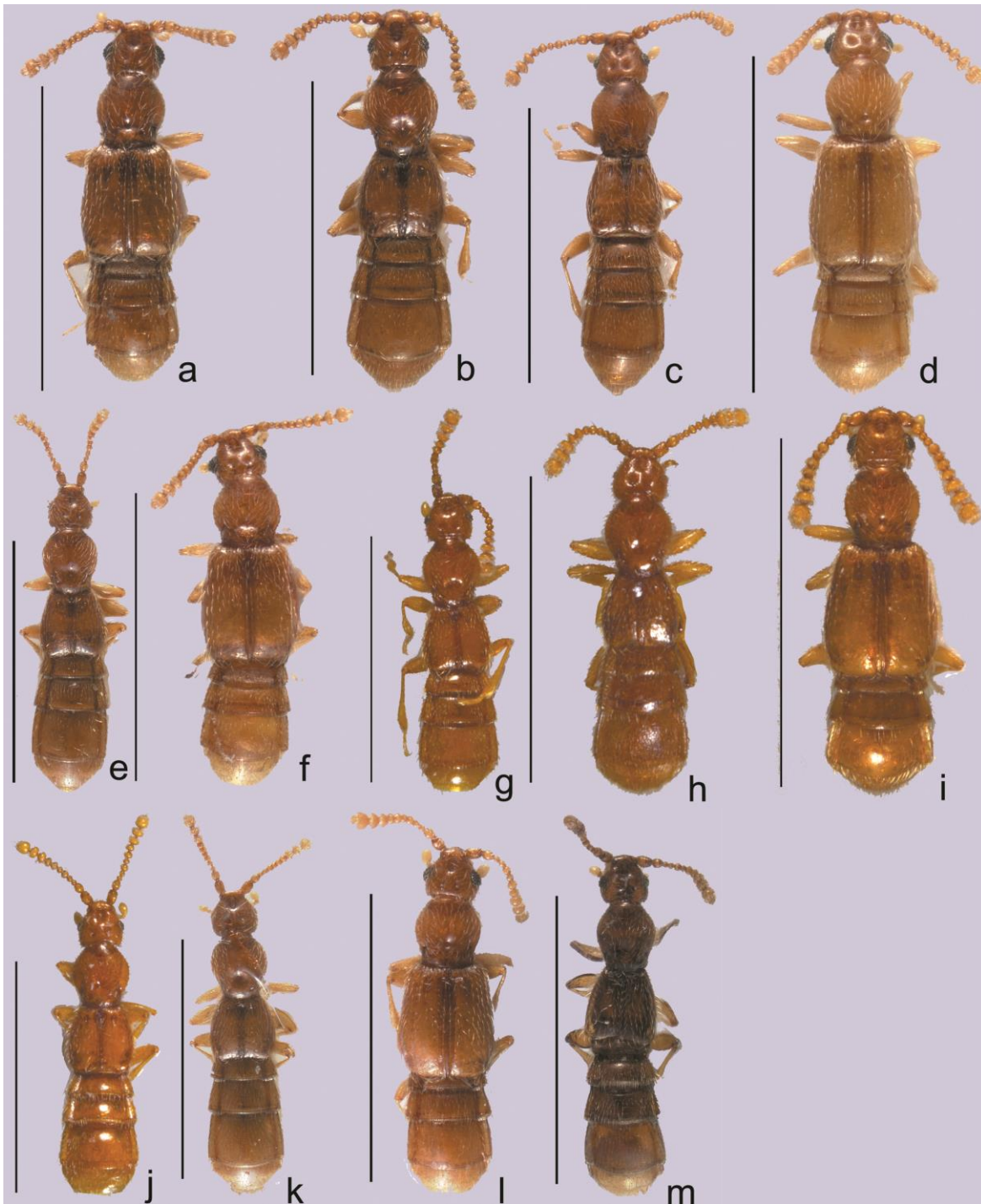


Figure 16. Habitus of *Stenosagola*, dorsal views. a) winged male of *Stenosagola connata* (Broun); b) wingless male of *S. connata* (Broun); c) female of *S. connata* (Broun); d) winged male of *S. huiaensis* sp. nov.; e) female of *S. huiaensis* sp. nov.; f) winged male of *S. northlandensis* sp. nov.; g) wingless male of *S. northlandensis* sp. nov.; h) female of *S. northlandensis* sp. nov.; i) winged male of *S. thayerae* sp. nov.; j) wingless male of *S. thayerae* sp. nov.; k) female of *S. thayerae* sp. nov.; l) winged male of *S. dugdalei* sp. nov.; m) wingless male of *S. dugdalei* sp. nov. Scale bars = 1 mm.

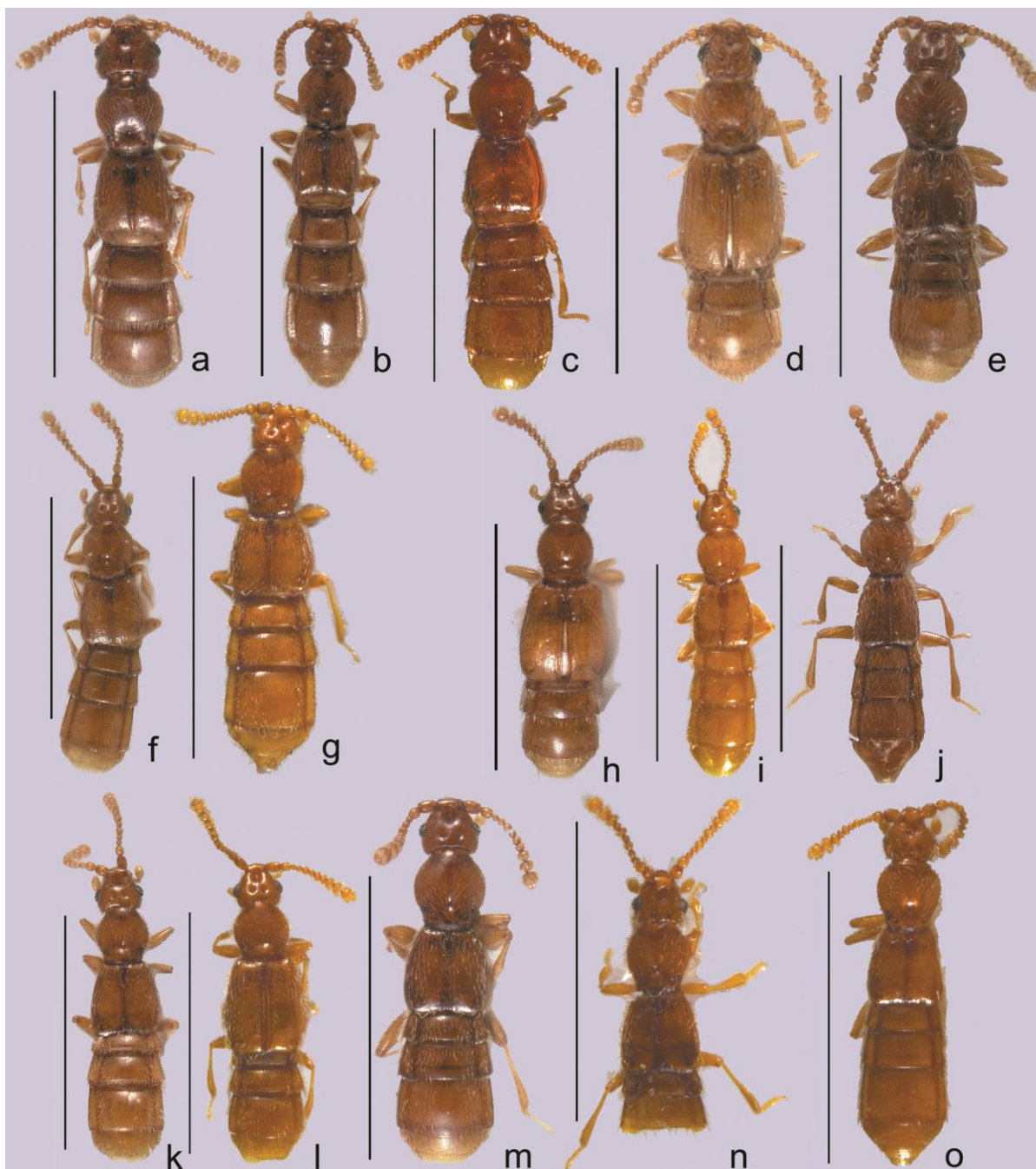


Figure 17. Habitus of *Stenosagola*, dorsal views. a) wingless male of *Stenosagola tararuaensis* sp. nov.; b) female of *S. tararuaensis* sp. nov.; c) wingless male of *S. haunuiensis* sp. nov.; d) winged male of *S. pseudoconnata* sp. nov.; e) wingless male of *S. pseudoconnata* sp. nov.; f) wingless male of *S. chandleri* sp. nov.; g) female of *S. chandleri* sp. nov.; h) winged male of *S. nunni* sp. nov.; i) wingless male of *S. nunni* sp. nov.; j) female of *S. nunni* sp. nov.; k) wingless male of *S. newtoni* sp. nov.; l) winged male of *S. butcheri* sp. nov.; m) wingless male of *S. butcheri* sp. nov.; n) wingless male of *S. fiordlandensis* sp. nov.; o) female of *S. fiordlandensis* sp. nov. Scale bars = 1 mm.

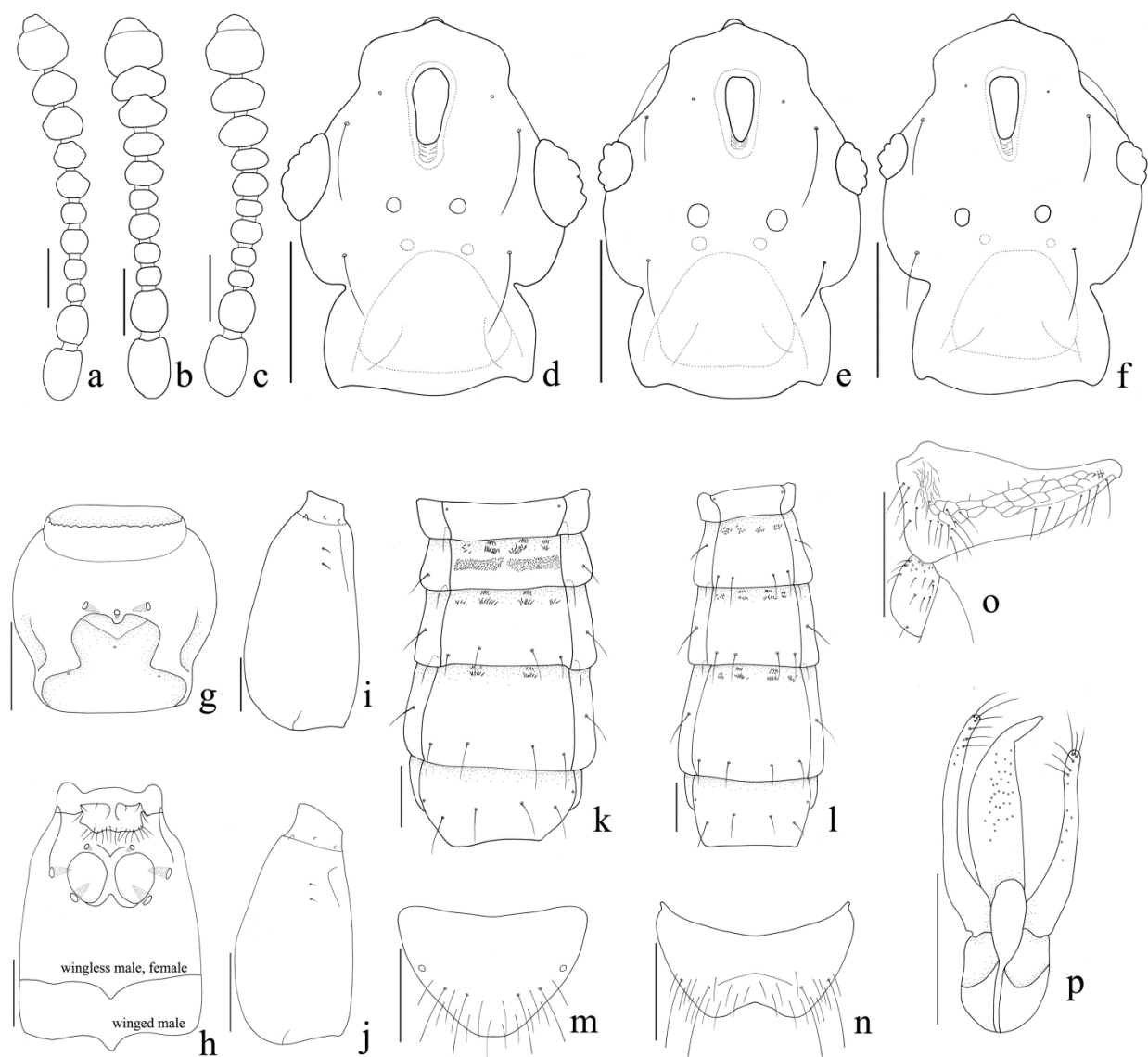


Figure 18. *Stenosagola connata* (Broun). a) winged male antenna, dorsal view; b) wingless male antenna, dorsal view; c) female antenna, dorsal view; d) winged male head, dorsal view; e) wingless male head, dorsal view; f) female head, dorsal view; g) prothorax, ventral view; h) meso- and metaventrites, ventral view; i) winged male elytra, dorsal view; j) wingless male elytra, dorsal view; k) winged male abdomen, dorsal view; l) wingless male abdomen, dorsal view; m) abdominal tergite VIII, dorsal view; n) abdominal ventrite VIII, ventral view; o) winged male hind-coxa, ventral view; p) aedeagus, dorsal view. Scale bars = 0.1 mm.



Figure 19. Locations where *Stenosagola connata* (Broun), *S. huiaensis* sp. nov., and *S. northlandensis* sp. nov. specimens have been collected in New Zealand. *S. connata*: triangles; *S. huiaensis*: circles; *S. northlandensis*: squares.

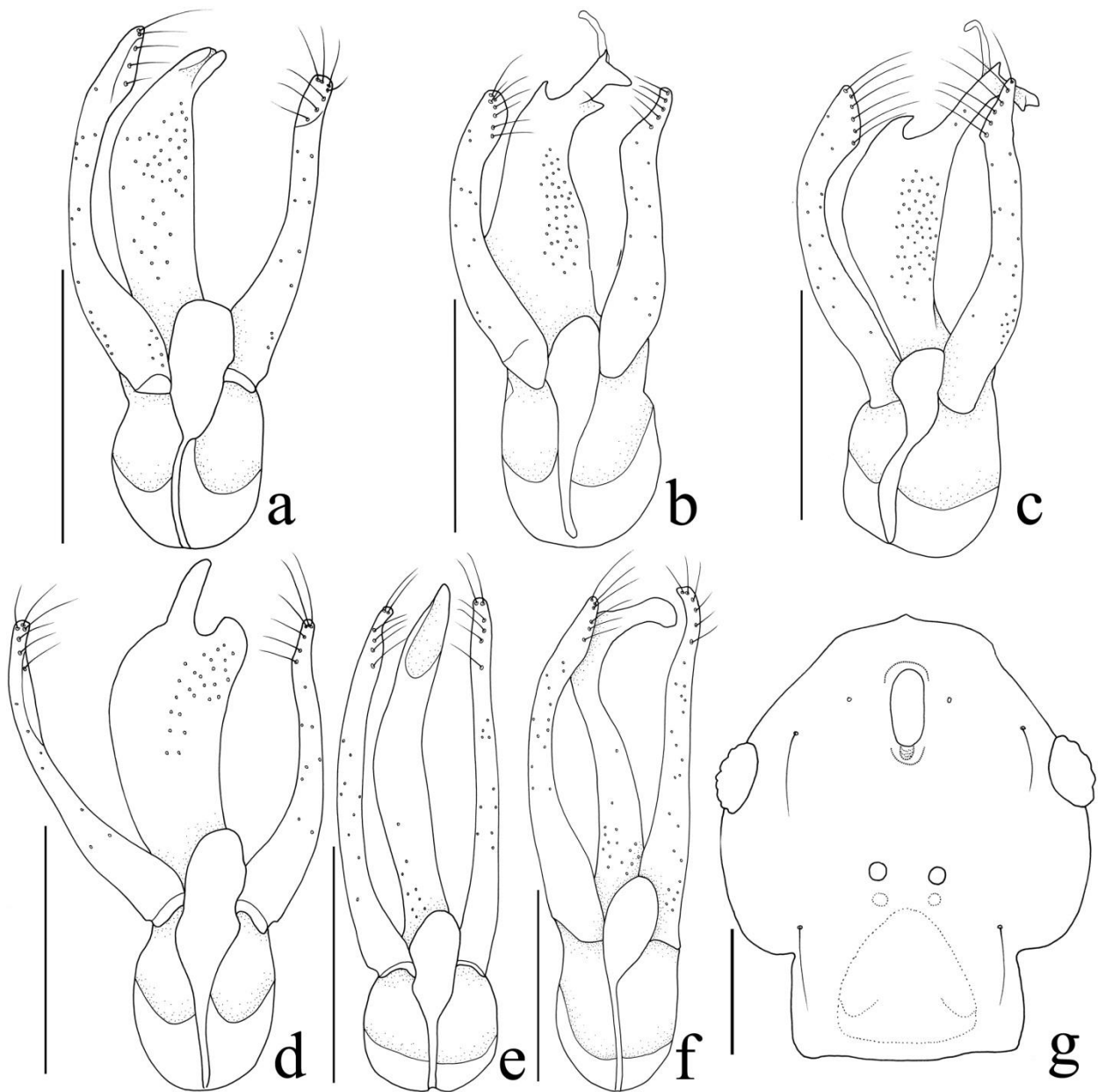


Figure 20. a-e, aedeagus, dorsal view. a) *Stenosagola huiaensis* sp. nov.; b) *S. northlandensis* sp. nov.; c) *S. thayerae* sp. nov.; d) *S. dugdalei* sp. nov.; e) *S. tararuaensis* sp. nov.; f-g, *S. haunuiensis* sp. nov.; f) aedeagus, dorsal view; g) wingless male head, dorsal view. Scale bars = 0.1 mm.

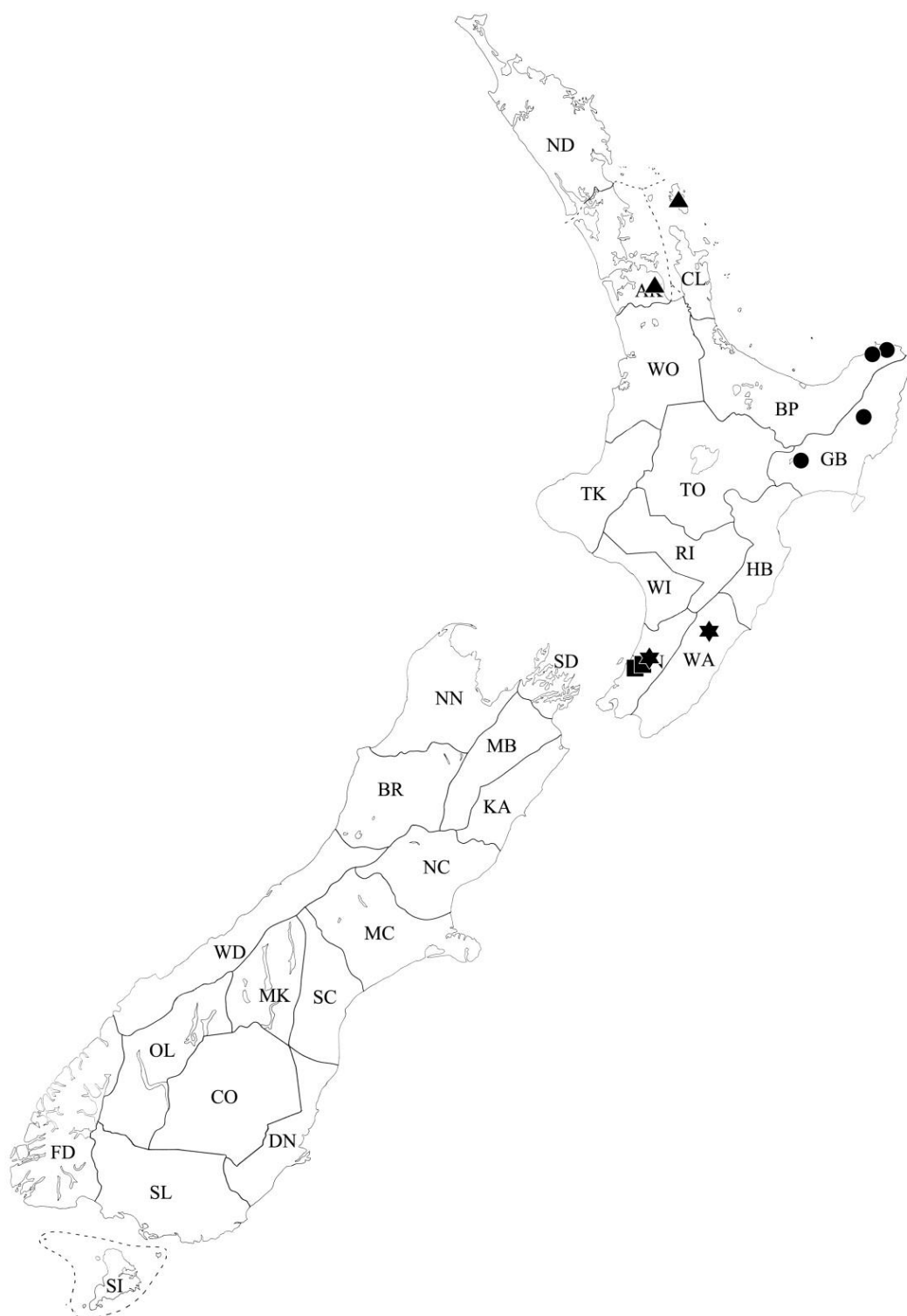


Figure 21. Locations where *Stenosagola thayerae* sp. nov., *S. dugdalei* sp. nov., *S. tararuaensis* sp. nov., and *S. haunuiensis* sp. nov. specimens have been collected in New Zealand. *S. thayerae*: triangles; *S. dugdalei*: circles; *S. tararuaensis*: squares; *S. haunuiensis*: stars.

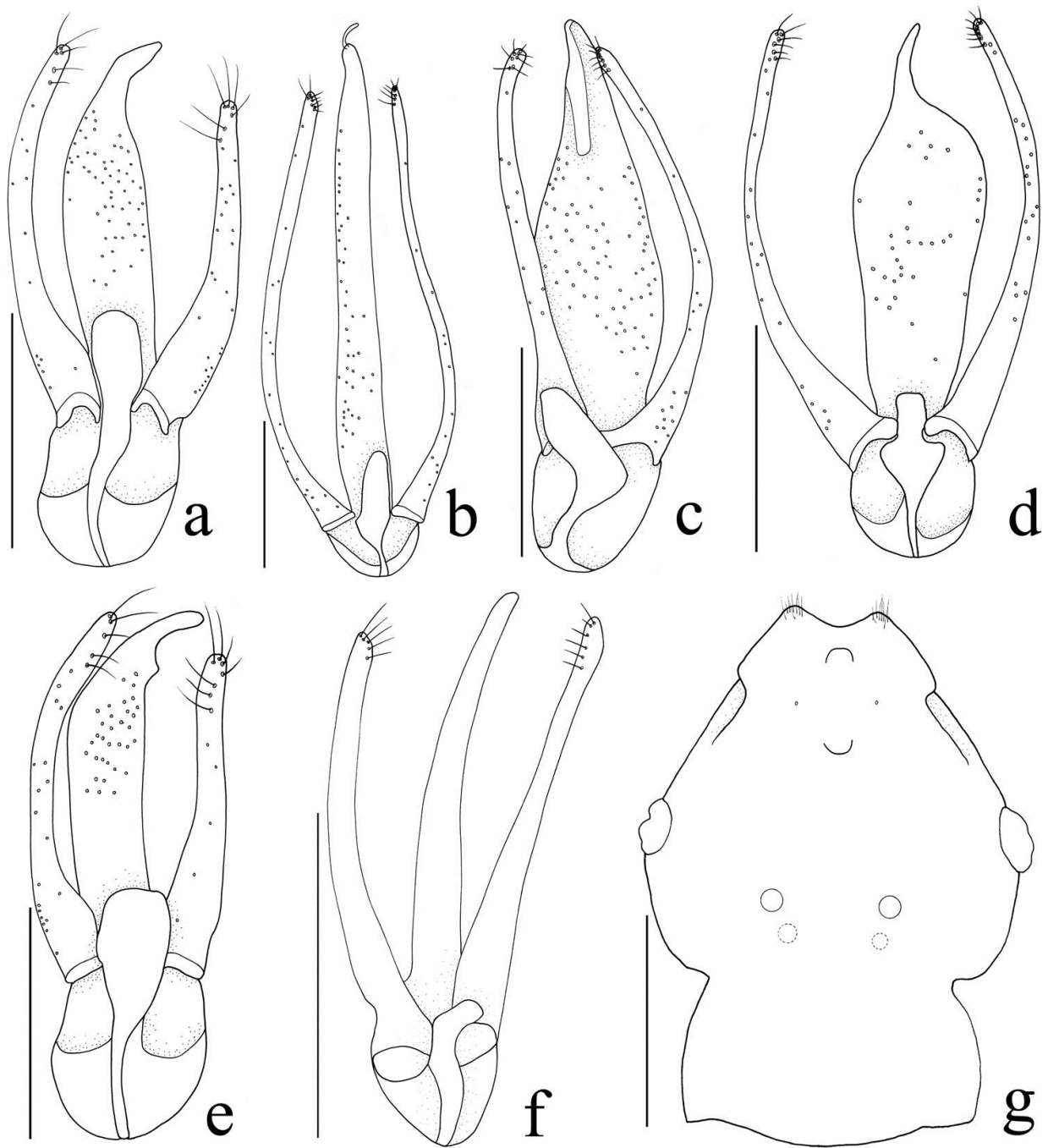


Figure 22. a-f, aedeagus, dorsal view. a) *Stenosagola pseudoconnata* sp. nov.; b) *S. chandleri* sp. nov.; c) *S. nunni* sp. nov.; d) *S. newtoni* sp. nov.; e) *S. butcheri* sp. nov.; f) *S. fiordlandensis* sp. nov.; g) wingless male head of *S. fiordlandensis* sp. nov., dorsal view. Scale bars = 0.1 mm.

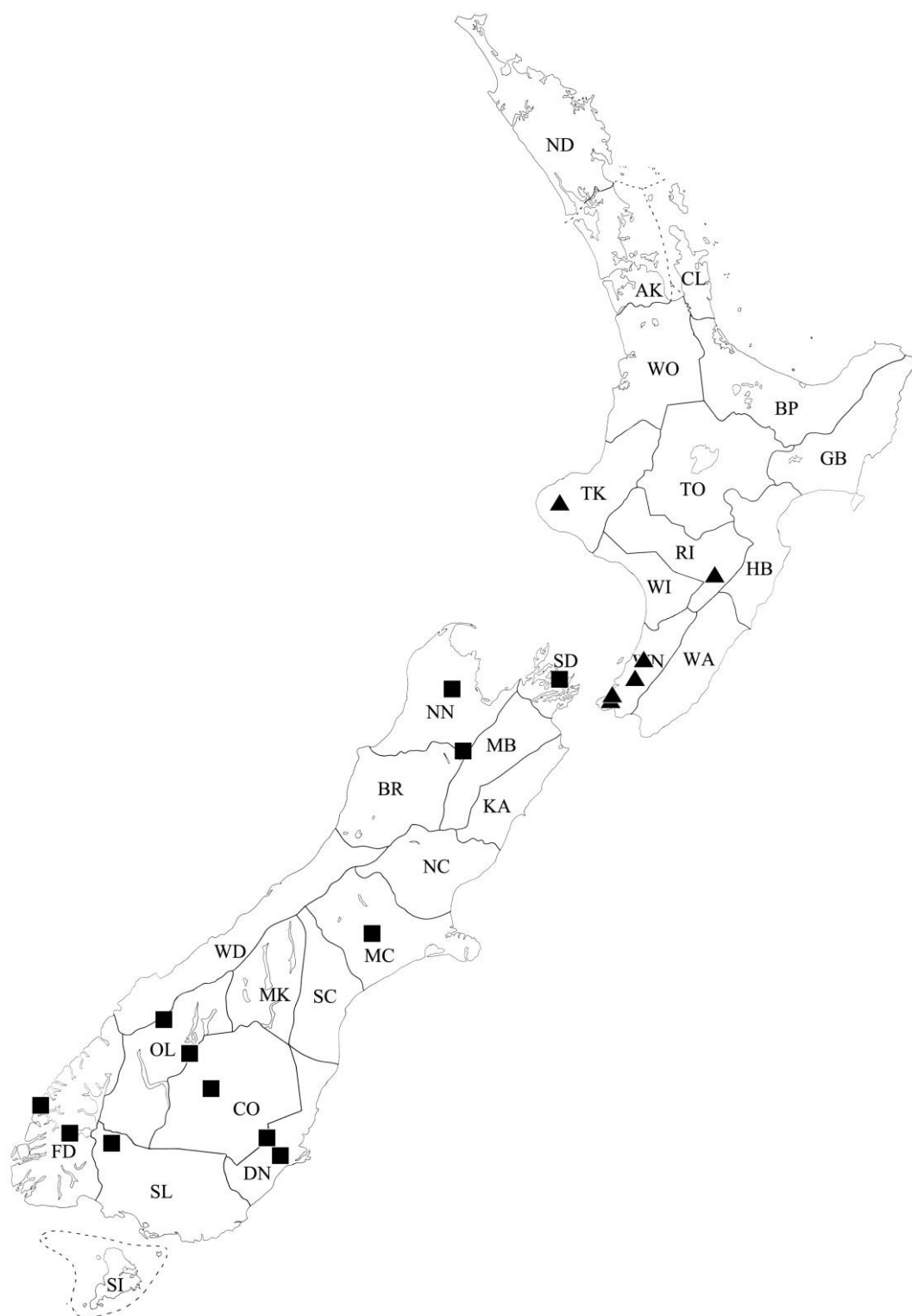


Figure 23. Locations where *Stenosagola pseudoconnata* sp. nov., and *S. chandleri* sp. nov. specimens have been collected in New Zealand. *S. pseudoconnata*: triangles; *S. chandleri*: squares.

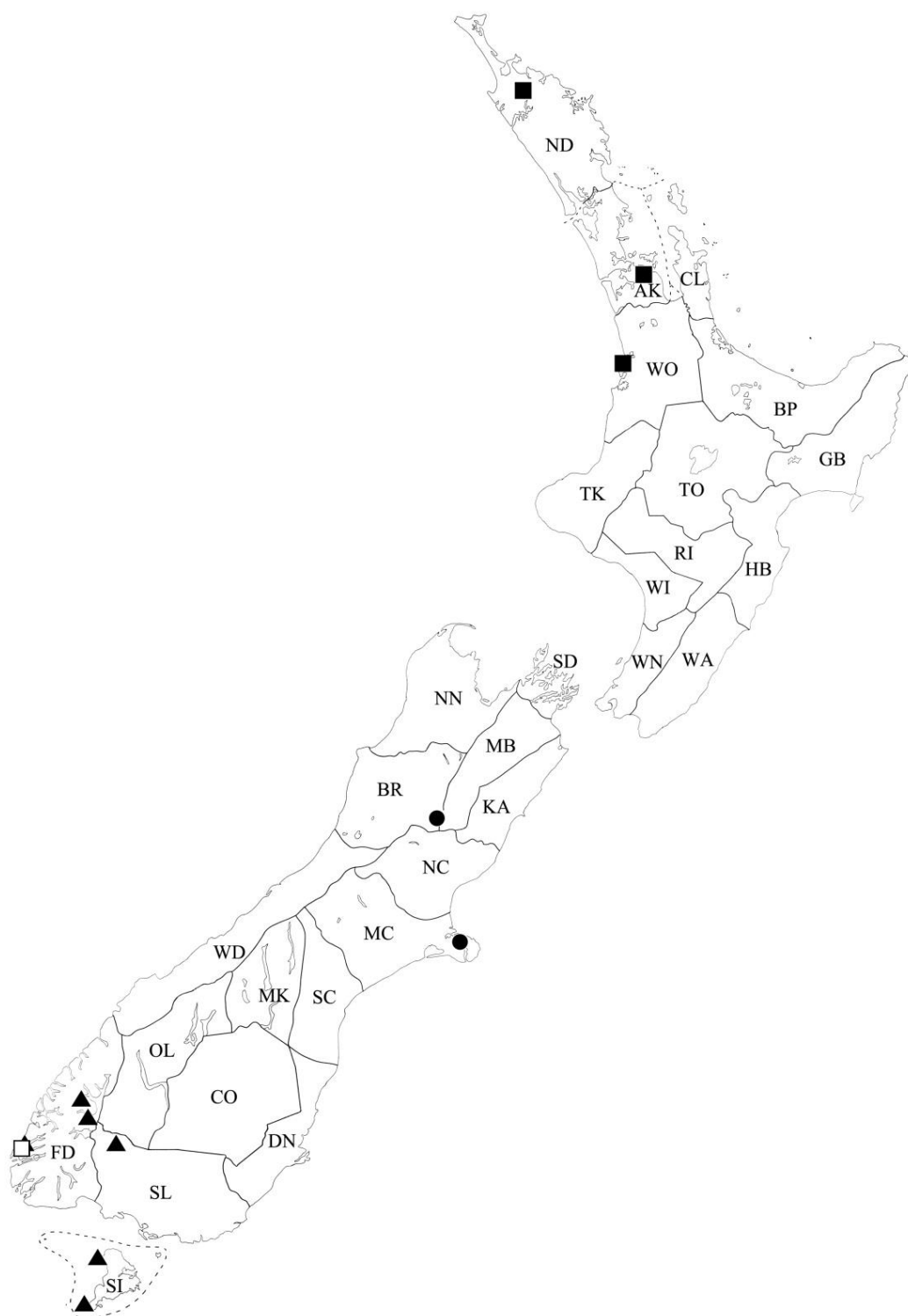


Figure 24. Locations where *Stenosagola nunni* sp. nov., *S. newtoni* sp. nov., *S. butcheri* sp. nov., and *S. fiordlandensis* sp. nov. specimens have been collected in New Zealand. *S. nunni*: triangles; *S. newtoni*: circle; *S. butcheri*: black squares; *S. fiordlandensis*: white square.

Table 4. Numbers of specimens and phenotype proportions of *Stenosagola* species.

Species (# of specimens)		# of Winged male (% of total)	Wingless male (% of total)	Female (% of total)
Gracilis-group	<i>Stenosagola gracilis</i> (261)	137 (53%)	24 (9%)	100 (38%)
	<i>Stenosagola pseudogracilis</i> (37)	17 (46%)	13 (35%)	7 (19%)
	<i>Stenosagola clarkei</i> (2)	n/a	2	n/a
	<i>Stenosagola egmontensis</i> (6)	n/a	3	3
	<i>Stenosagola ramsayi</i> (12)	5 (42%)	3 (25%)	4 (33%)
	<i>Stenosagola domettensis</i> (14)	n/a	11	3
	<i>Stenosagola eylesi</i> (2)	n/a	2	n/a
	<i>Stenosagola stewartensis</i> (1)	n/a	1	n/a
Connata-group	<i>Stenosagola connata</i> (40)	8 (20%)	20 (50%)	12 (30%)
	<i>Stenosagola huiaensis</i> (14)	13	n/a	1
	<i>Stenosagola northlandensis</i> (31)	21 (68%)	1 (3%)	9 (29%)
	<i>Stenosagola thayerae</i> (30)	22 (73%)	3 (10%)	5 (17%)
	<i>Stenosagola dugdalei</i> (8)	7	1	n/a
	<i>Stenosagola tararuaensis</i> (9)	n/a	7	2
	<i>Stenosagola haunuiensis</i> (2)	n/a	2	n/a
	<i>Stenosagola pseudoconnata</i> (12)	9 (75%)	2 (17%)	1 (8%)
	<i>Stenosagola chandleri</i> (31)	n/a	26	5
	<i>Stenosagola nunni</i> (58)	27 (47%)	4 (6%)	27 (47%)
	<i>Stenosagola newtoni</i> (2)	1	1	n/a
	<i>Stenosagola butcheri</i> (3)	2	1	n/a
	<i>Stenosagola fiordlandensis</i> (5)	n/a	1	4

3.3 REVISION OF THE GENUS *SAGOLA* SHARP

As the largest group of the supertribe Faronitae, the genus *Sagola* Sharp currently holds 142 species; 133 species and 9 species are recorded in New Zealand and Australia, respectively (Nomura and Leschen 2006). All members except two species, *Sagola incisa* and *S. triregia*, were described 80 + years ago, and have only been treated by checklist and catalog studies since their original descriptions. The most influential specialist of this genus was Thomas Broun who described 124 *Sagola* species (over 88%) from 1880 to 1921. He described habitus and external characters in comparative detail but did not deal with fine scale characters of mouthparts, internal structures, and genitalia, nor did he provide diagnostically useful illustrations (Figure 25). Therefore, identification based on original descriptions is nearly impossible. Moreover, no single character or combination of characters separates the genus *Sagola* from other faronite genera, so the genus is suspected to be a paraphyletic group (Chandler 2001b). These problems have been a serious obstacle to studying the supertribe Faronitae. They have hindered study of the subfamily Pselaphinae in general by virtue of the putatively basal phylogenetic position of the faronite with respect to other pselaphine genus group taxa.

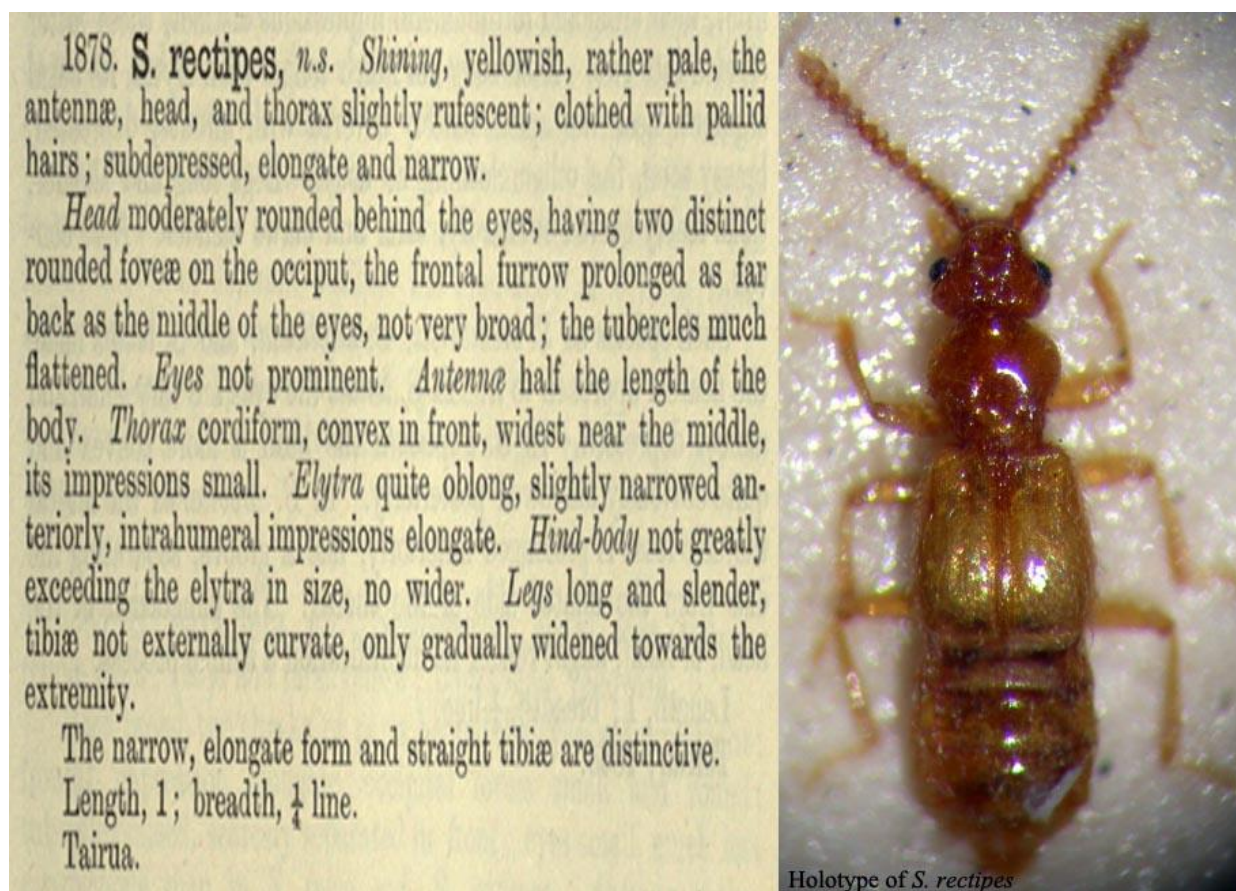


Figure 25. Example of Broun's description with modern photograph of type for comparison.

Genus *Sagola* Sharp

Sagola Sharp, 1874: 506. Broun, 1880: 134. Reitter, 1882c: 199. Brendel, 1888: 302. Schaufuss, 1888: 64. Raffray, 1890: 84; 1893: 2. Casey, 1894: 434. Raffray, 1904: 492. Hudson, 1923: 365. Hudson, 1934: 183. Jeannel, 1961: 47. Jeannel, 1967: 442. Newton, 1985: 195. Newton and Chandler, 1989: 18. Kuschel, 1990: 48. Klimaszewski *et al.*, 1996: 147. Chandler, 2001a: 50. Newton & Thayer, 2005a. Nomura and Leschen, 2006: 241.
Type species. *Sagola misella* Sharp (designated by Oke, 1928: 5).

Key to species groups of *Sagola*

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Male hind-claw enlarged (Figure 79k).....Group 24
- 1'. Male hind-claw simple as fore- and mid-craw.....2
- 2 (2). Male abdominal tergite V distinctly depressed with processes from anterior and posterior edge with long and dense setae between processes (Figure 77f).....Group 23
- 2'. Male abdominal tergite V simple without any modification.....3
- 3 (2). Frontal sulcus reversed Y or V-shape, divided and each posterior end meet to vertexal fovea (Figures 75p, r).....Group 22
- 3'. Frontal sulcus not divided.....4
- 4 (3). Male fore-femur with semicircular depression (Figure 27u).....5
- 4'. Male fore-femur without semicircular depression.....13
- 5 (4). Head transverse (Figures 48g, 50e).....6
- 5'. Head round or blunt triangular.....7
- 6 (5). Anterior frontal fovea small round, but not externally observable owing to covered by connected frontal rostrum (Figure 50e).....Group 9
- 6'. Anterior frontal fovea elongate, partially covered by frontal rostrum (Figure 48g).....Group 8
- 7 (5). Eye distinctly prominent due to depressed frontal gena (Figures 46e–d).....Group 7
- 7'. Eye normal and frontal gena without depression.....8
- 8 (7). Male antennomeres 5–6 enlarged (Figure 44e).....Group 6
- 8'. Male antennomeres normal.....9
- 9 (8). Ventral surface of male head with a pair of processes laterally (Figure 42j).....Group 5
- 9'. Ventral surface of male head without processes laterally.....10
- 10 (9). Gular of male head with transverse depression with medial process (Figure 39i)...Group 4
- 10'. Gular of male head without medial process.....11
- 11 (10). Gular of male head with bean-shape opening; ventral surface of male head with a pair of short carina from hind point of eyes, as long as eye (Figure 31j).....Group 2
- 11'. Gular of male head with round opening; ventral surface of male head without carina.....12
- 12 (11). Ventral surface of male head with large round depression (Figure 35m).....Group 3
- 12'. Ventral surface of male head with transverse depression (Figure 27s).....Group 1
- 13 (4). Head with dense setae around posterior frontal fovea (Figures 52a–b).....Group 10
- 13'. Head with sparse setae.....14
- 14 (13). Ventral surface of male head distinctly convex with heart-shape depression (Figure 58d).....Group 14
- 14'. Ventral surface of male head slightly convex or flat without heart-shape depression.....15
- 15 (14). Frontal sulcus deep and long, reaching between behind eye and end of head (Figures 61j–k).....Group 15

15'. Frontal sulcus not exceed to end of eye.....	16
16 (15). Ventral surface of male head with a pair of cone-shape temporal depression and small triangular medial process (Figure 73c).....	Group 21
16'. Ventral surface of male head without cone-shape temporal depression and medial process.....	17
17 (16). Male head triangular, ventral temple of male head depressed and projecting (Figures 87f, 89n, 93y–z, 98d).....	18
17'. Male head round, ventral temple of male head simple.....	21
18 (17). Posterior frontal fovea large round, as large as eye (Figure 98d).....	Group 29
18'. Posterior frontal fovea small.....	19
19 (18). Male ventral neck with patch of long and dense setae at tip (Figures 89o–t, 92a–x).....	20
19'. Male ventral neck without patch of setae at tip.....	Group 26
20 (19). Male genitalia robust and convex (Figures 89g–l).....	Group 27
20'. Male genitalia broad and flat (Figures 93a–x).....	Group 28
21 (17). Ventral surface of male head with process behind mouth parts bearing dense setae posterior margin (Figures 64f, 66d).....	22
21'. Ventral surface of male head without process behind mouth parts.....	23
22 (21). Ventral surface of male head with distinct triangular process; eye one-third length of temple (Figure 66d).....	Group 17
22'. Ventral surface of male head with round process; eye large, as long as temple (Figure 64f).....	Group 16
23 (21). Anterior frontal fovea open anteriorly (Figure 57c).....	Group 13
23'. Anterior frontal fovea close anteriorly.....	24
24 (23). Ventral surface of male head convex with hairy gular.....	25
24'. Ventral surface of male head simple.....	26
25 (24). Larger body, 2.3–2.9 mm; posterior frontal fovea elongate (Figure 54j).....	Group 11
25'. Small body, 1.7–1.9 mm; posterior frontal fovea round (Figure 56a).....	Group 12
26 (24). Antennomere 1 approximately 2.0 times longer than wide with dull surface (Figures 72a–b).....	Group 20
26'. Antennomere 1 approximately 1.5–2.0 times longer than wide without dull surface.....	27
27 (26). Frontal rostrum rectangular, lobes continuous, reaching posterior frontal fovea (Figure 82o).....	Group 25
27'. Frontal rostrum round, lobes not continuous, not reaching eye if continuous.....	28
28 (27). Elytra subquadrate; hind wings reduced to small pads (Figures 99a–b).....	Group 30
28'. Elytra rectangular; hind wings fully developed.....	29
29 (28). Median lobe of genitalia divided vertically, major lobe partially cover minor lobe (Figures 70f–j).....	Group 19
29'. Median lobe of genitalia not divided.....	Group 18

Diagnosis. The members of the genus *Sagola* may be separated from other genera by the following combination of characters: body length 1.5–4.2 mm; antenna clavate, not clubbed; dorsal head with anterior or posterior frontal fovea or both; prosternum with median procoxal fovea and lateral procoxal fovea (Figure 82p); mesoventrite with promesocoxal fovea (Figure 82q); metaventrite with lateral metasternal fovea (Figure 82q); abdominal ventrites IV–VI with basolateral fovea (Figure 82r); abdominal tergite VI slightly larger than V and smaller than VII (Figure 82r).

Group 1 (16 species)

Key to species of *Sagola* group 1

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Hind wings reduced to small pads; abdominal tergite IV without patches of microtrichia.....2
- 1'. Hind wings well developed; abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle.....3
- 2 (1). Smaller body size, length 2.4 mm; antennomere 1 approximately 2 times longer than wide, 4–5 subquadrate; mid-tibia bent (Figure 26p).....*Sagola* sp. nov.51-2
- 2'. Larger body size, length 2.5–2.9 mm; antennomere 1 approximately 2.5 times longer than wide, 4–5 longer than wide; mid-tibia straight (Figure 26l).....*S. sp. nov.*3-1
- 3 (1). Larger body, length 3.2–4.0 mm; antennomere 5 elongate, at least 1.5 times longer than wide.....4
- 3'. Smaller body, length 2.0–3.3 mm; antennomere 5 elongate, not exceed 1.5 times longer than wide.....5
- 4 (3). Apical lobe of genitalia bird-head shaped; left paramere with two minor slender lobes, originating from base (Figure 27b).....*S. terricola*
- 4'. Apical lobe of genitalia shaped differently; left paramere with one lobe originating anteriorly (Figure 27a).....*S. hirtalis*
- 5 (3). Smaller, body length, 2.0–2.5 mm; antennomere 1 not exceed 2.5 times longer than wide..6
- 5'. Larger, body length, 2.4–3.2 mm; antennomere 1 approximately 3 times longer than wide.....8
- 6 (5). Phallobase of median lobe symmetrical and elongate (Figure 27c).....*S. convexa*
- 6'. Phallobase of median lobe asymmetrical and triangular.....7
- 7 (6). Eye small, one-third length of temple; mid-femur and tibia normal; apical lobe of genitalia curved; left paramere rectangular (Figure 27k).....*S. sp. nov.*3
- 7'. Eye large, as long as temple; mid-femur with semicircular depression; mid-tibia bent; apical lobe of genitalia straight; left paramere L-shaped (Figure 27n).....*S. sp. nov.*26-1
- 8 (7). Apical lobe of genitalia bulbous and semicircular.....9
- 8'. Apical lobe not bulbous and not semicircular.....12
- 9 (8). Process, either slender or triangular, extending from middle of apical lobe of genitalia.....10
- 9'. Middle of apical lobe of genitalia lacking.....11
- 10 (9). Slender process extending from middle of apical lobe of genitalia (Figure 27e).....*S. sp. nov.*2-2
- 10'. Triangular process extending from middle of apical lobe of genitalia (Figure 27h).....*S. sp. nov.*2-5
- 11 (10). Slender process extending from base of apical lobe of genitalia; minor lobes of left paramere folded (Figure 27j).....*S. sp. nov.*2-7
- 11'. Apical lobe of genitalia lacking process; minor lobes of left paramere weakly bent (Figure 27i).....*S. sp. nov.*2-6
- 12 (8). Slender and short process extending from apical lobe of genitalia; left paramere lacking minor lobe (Figure 27d).....*S. sp. nov.*2-1
- 12'. Apical lobe of genitalia lacking process; left paramere divided, forming two lobes.....13
- 13 (12). Apical lobe of genitalia deeply divided into two lobes (Figure 27g).....*S. sp. nov.*2-4
- 13'. Apical lobe of genitalia not divided.....14

- 14 (13). Apical lobe of genitalia faucet-shaped; minor lobe of left paramere crescent-shaped (Figure 27f).....*S. sp. nov.*2-3
 14'. Apical lobe of genitalia triangular; minor lobe of left paramere divided but not crescent-shaped.....15
 15 (14). Minor lobes of left paramere divided and U-shaped; right paramere rectangular (Figure m).....*S. sp. nov.*24
 15'. Minor lobes of left paramere divided and V-shaped; right paramere L-shaped (Figure 27o).....*S. sp. nov.*27-2

Diagnosis. The members of group 1 may be separated from other *Sagola* groups by the following combination of characters: body length 2.0–4.0 mm; gular of male head with deep round depression; male antennomeres longer than those of female, antennomere 1 at least 2 times longer than wide with dull surface; prosternum with lateral procoxal foveae; male fore femur with semicircular depression (Figure 27u); mesoventrite with promesocoxal foveae (Figure 27t); abdominal tergites IV–VI with discal carinae; abdominal ventrites IV–VI with basolateral foveae; parameres distinctly asymmetrical and finely punctured (Figures 27a–p); present on North Island, not known from South Island (Figures 28–30).

Sagola hirtalis Broun

Sagola hirtalis Broun, 1893b: 1050. Raffray, 1904: 498; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola cilipes Broun, 1921a: 491. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Type Material Examined. Holotype: New Zealand: Auckland (AK): ♀, glued on rectangular card, “Type” [red label, printed]; “1876. ♂.” [white label, handwritten]; “Howick” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola hirtalis*” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Syntypes of *Sagola cilipes*:** 2♂♂, glued on rectangular card, “3999. ♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Waitakerei. 26.10.1914.” [white label, handwritten]; “*sagola cilipes*. ♂” [white label, handwritten].

Additional Material (n=7; 4 males; 3 females). New Zealand: Auckland (AK): 1♂ (slide-mounted), Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd.-podocarp forest, A. Newton, M. Thayer, FIT; 1♀, Titirangi, Waitakere Range, 26 X 1914, A. Brookes; **Northland (ND):** 2♂♂2♀♀ (1♀ slide-mounted), Waipoua State Forest, 0.8km nw Wairau Summit, 350m, 27 XI 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 689, berl., leaf & log litter forest floor; 1♂, Waipoua State Forest, Wairau Summit, 400m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 687, window trap 687.

Diagnosis. Specimens of *S. hirtalis* is separated from other species of group 1 by the following combination of characters: large body size, 3.2–4.0 mm; antennomere 1 elongate, approximately 3 times longer than wide; 4–5 antennomeres elongate, approximately 1.5 times longer than wide; posterior frontal fovea elongate; small eye, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Redescription. Length 3.2–4.0 mm. Body brown and elytra, legs, maxillary palpi yellowish brown (Figure 26a). *Head.* Head as long as wide, widest across eyes (Figure 26a). Antennomere 1 approximately 3 times longer than wide, 2–3 longer than wide, 4–5 elongate, 6

longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes (Figure 27r). Anterior fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple (Figure 27r). *Thorax*. Prosternum as long as wide, widest at one-third length of prosternum. Elytra rectangular (Figure 26a). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle in male and more limited in female. *Aedeagus*. Median lobe longer than parameres bearing two basal processes (Figure 27a). Phallobase of median lobe asymmetrical and triangular (Figure 27a). Left paramere larger than right with one slender branch on tip (Figure 27a).

Type locality. Near Howick (AK), New Zealand.

Distribution. Auckland (AK), Northland (ND) (Figure 28: black circles).

Habitat. Specimens of this species were collected using window traps and flight intercept traps, or by sifting leaf or log litter in hardwood and podocarp forests.

Comments. Specimens of *S. hirtalis* are difficult to separate from those of other species externally, but the shapes and sizes of the antennomeres, size of eye, presence or absence of hind wings, and genitalia are diagnostic. The type specimens of *S. cilipes* share these diagnostic characters, and these species have been collected at or near the type locality. For these reasons, I have placed *S. cilipes* in synonymy with *S. hirtalis*.

***Sagola terricola* Broun**

Sagola terricola Broun, 1886: 832. Raffray, 1893: 34; 1904: 498; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Type Material. Lectotype. New Zealand: Auckland (AK): ♂, glued on rectangular card, “Type” [red label, printed]; “1480. ♂.” [white label, handwritten]; “Waitakerei” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola terricola*” [white label, handwritten]. **Paratype (1 male). New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “1480. ♂.” [white label, handwritten]; “Waitakerei” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed].

Additional Material (n= 6; 5 males; 1 female). New Zealand : Northland (ND): 3♂♂ (1♂ slide-mounted), Waipoua State Forest, Toatoa Track, 270m, 12–15 IV 1980, toatoa-kauri-podocarp-broadleaf, A. Newton, M. Thayer, pitfall trap, berl. leaf and log litter, forest floor; 1♂, Waipoua SF, Ricker Tr., 100m, 11–15 IV 1980, kauri-podocarp-broadleaf, A. Newton, M. Thayer, pitfall trap 619; 1♂, Waipoua SF, Toronui Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 685, FIT, window trap; 1♀, SH12, Waipoua SF, 20 IX 1977, D. W. Helmore, rotten stumps and trees 77/102.

Diagnosis. Specimens of *S. terricola* is separated from other species of group 1 by the following combination of characters: larger body size, 2.8–3.5 mm; antennomere 1 elongate, approximately 3 times longer than wide; 4–5 antennomeres elongate, approximately 1.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Redescription. Length 2.8–3.5 mm. Body brown and elytra, legs, maxillary palpi yellowish brown (Figure 26b). *Head*. Head as long as wide, widest across eyes (Figure 26b). Antennomere 1 approximately 3 times longer than wide, 2 subquadrate, 3 longer than wide, 4–5 elongate, 6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching behind eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea

present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26b). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide (Figure 27t). *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe longer than parameres with bird head shape of apical lobe (Figure 27b). Phallobase of median lobe asymmetrical and triangular (Figure 27b). Left paramere with two slender branches from base, and right paramere longer than left (Figure 27b).

Type locality. Waitakerei Range (AK), New Zealand.

Distribution. Auckland (AK), Northland (ND) (Figure 28: triangles).

Habitat. Specimens of this species were collected using pitfall, window and flight intercept traps, or by sifting leaf or log litter in kauri, broadleaf, hardwood and podocarp forests.

Sagola convexa Broun

Sagola convexa Broun, 1886: 889. Raffray, 1893: 41; 1904: 498; 1911: 6; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Sagola basalis Broun, 1911: 496. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Sagola indiscreta Broun, 1915: 288. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Type Material. Holotype. New Zealand: Auckland (AK): ♂, glued on rectangular card, “Type” [red label, printed]; “1583. ♂.” [white label, handwritten]; “Tuakau” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola convexa. ♂.” [white label, handwritten]. **Holotype of *Sagola basalis*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “3368. ♂” [white label, handwritten]; “Howick” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola basalis” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola indiscreta*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “3703. ♂” [white label, handwritten]; “Howick” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola indiscreta. ♂” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (n= 60; 27 males; 33 females). New Zealand: Auckland (AK): 2♂♂2♀♀, Waitakere Ranges Reg. Park, 1.3km N Huia, Parau Track, 133m, 20 III 2010, D.S. Chandler, sift kauri, Cyathea & etc. leaf litter; 1♂, Waitakere Ra., Cascade kauri Park, up Kauri Tr., 170m, 23 XI–8 XII 1984, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT & window trap; 2♀♀, Waitakere Ra., Cascade kauri Park, up Kauri Tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT & window trap; 1♂3♀♀, Manurewa, Murphy’s Bush, 2 V 1981, G. Kuschel, rotten wood; 1♂2♀♀, Goldie Bush Scenic Res., Mokoroa Falls Track, 6km W Waitakere, 28 III 2910, 106m, D.S. Chandler, rotten wood & branch debris; 1♂1♀, Waitakere Ranges Reg. Park, Upper Huia Reser. Track, 31 I 2010, 340m, 4km SW Waitatarua, D.S. Chandler, sift rotten wood; 1♂, Hunua Ranges Reg. Park, Kohukohunui Track nr. Mine Rd, 475m, 37°02.396’S, 175°11.251’E, 17 XI–28 XII 2005, broadleaf-podocarp forest, numerous trees ferns, FMHD#2005-001, FIT, A. Newton & M. Thayer, et al., ANMT site 1140; 1♂, Waipipi Scen. Res., 2km wsw Waipipi, 40m, 37.14’S 174.40’E, 22 II 1987, native hardwood forest in gully, A. Newton & M. Thayer 835, FMHD#87-269, berl., leaf & log litter, forest floor; 1♂, Clevedon Scenic Reser., 0.5km N Clevedon, 20m, 19 III 2010, D.S. Chandler,

sift forest litter by stream; 1 ♀, Flat bush, Murphy's bush, 20 VIII 1977, J.C. Watt, podocarp forest litter; **Bay of Plenty (BP)**: 1 ♂ 1 ♀, Tapapa Tukorehe Res., 200m, 25 III 1978, S. Peck & J. Peck, berl. litter; **Northland (ND)**: 2 ♂ ♂ 5 ♀ ♀, Parahaki Park, 5 XI 1981, G. Kuschel, litter & decayed wood; 2 ♂ ♂ 1 ♀, Waipoua SF, Lookout, 29 X 1980, G. Kuschel, decayed wood & litter 80/94; 1 ♂ 3 ♀ ♀, Ngaiotonga Res., Malkway, 3 XI 1981, G. Kuschel, litter & decayed wood 81/118; 3 ♂ ♂ 4 ♀ ♀ (1 ♂ 1 ♀, slide-mounted), Waipoua For., Te Matua Ngahere, 370m, 19 III 1978, S. Peck, J. Peck, berl., rotten kauri log, kauri forest; 2 ♂ ♂ 1 ♀, Waipoua For., Te Matua Ngahere, 400m, 19 II 1978, berl., under bark of falleo tree with mushroom, S. Peck; 2 ♂ ♂ 1 ♀, Waipoua SF, 25 XI 1980, G. Kuschel, decayed wood 80/120; 2 ♀ ♀, Waipoua SF, Toronui Track, 20 X 1980, G. Kuschel, sifted wood & litter 80/95; 1 ♂ 1 ♀, Waipoua SF, Waikohatu Br., 290m, 11–14 IV 1980, Agathis-podocarp-broadlf, A. Newton, M. Thayer, berl., leaf & log litter, forest floor; 1 ♂, Mangamuka stm, 386m, 13 XII 1976, V. A. May, litter 76/109; 1 ♂, Waipoua SF, Yakas Tk, 27 VII–2 VIII 1998, R. Leschen, R. Joare, FIT2 236, 35'37S 173'32E; 1 ♂, Waipoua SF, vic. Wairau Summit, 460m, 27 XI–4 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 683, FIT & window trap; 2 ♂ (1 ♂, slide-mounted), Waipoua State Forest, Toronui Track, 120m, 2 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 685; 1 ♀, Waipoua SF, Toronui Tr., 150m, 13 IV 1980, kauri-podocarp-broadlf-mikau palm forest, A. Newton, M. Thayer, under bark with slime molds; 1 ♀, Waipoua SF, Toatoa Tr., 270m, 12–15 IV 1980. toatoa-kauri-podocarp-broadlf, A. Newton, M. Thayer, berl. leaf & log litter; **Wellington (WN)**: 1 ♀, Balance Bridge Res., 3 I 1975, J.C. Watt, litter 75/23.

Diagnosis. Specimens of *S. convexa* is separated from other species of group 1 by the following combination of characters: smaller body size, 2.0–2.4 mm; antennomere 1 elongate, approximately 3 times longer than wide; 4–5 antennomeres elongate, approximately 1.5 times longer than wide; posterior frontal fovea elongate; small eye, one-half length of temple; hind wings well developed; shape of genitalia unique to species.

Redescription. Length 2.0–2.4 mm. Body yellowish brown and elytra, legs, maxillary palpi paler (Figure 26c). *Head.* Head as long as wide, widest across eyes (Figure 26c). Antennomere 1 approximately 3 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 7–10 subquadrate. Frontal sulcus reaching midpoint of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26c). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse, reaching middle, patches of microtrichia. *Aedeagus.* Median lobe shorter than right paramere with triangular apical lobe (Figure 27c). Phallobase of median lobe symmetrical and elongate (Figure 27c). Left paramere shorter than right, setae present along edge (Figure 27c).

Type locality. Tuakau, Waikato (Auckland; AK).

Distribution. Auckland (AK), Bay of Plenty (BP), Northland (ND), Wellington (WN) (Figure 28: black squares).

Habitat. Most specimens of this species were collected using window and flight intercept traps, or by sifting moss or leaf litter in *Nothofagus*, kauri, broadleaf, hardwood and podocarp forests. A few specimens were found from under bark with mushroom or slime mold.

Comments. Specimens of *S. convexa* are difficult to separate from those of other species externally, but the shapes and sizes of the antennomeres, size of eye, presence or absence of hind wings, and genitalia are diagnostic. The type specimens of *S. basalis* and *S. indiscreta* share

these diagnostic characters, and these species have been collected at or near the type locality. For these reasons, I have placed *S. basalis* in synonymy with *S. indiscreta*.

***Sagola* sp. nov. 2-1**

Type Material. Holotype. New Zealand: Coromandel (CL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: CL: Coromandel Ra. nr Summit, 19 I 1972 G.W. Ramsay, Litter 7two-third5”. **Paratype (1 male). New Zealand: Bay of Plenty (BP):** ♂, Mt. Aroha, 2.5km SE Te Aroha, 390m, Tui Road at Tui Creek, Mt. Domain Track, II-15-2010, D.S. Chandler, sift rotten wood.

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; posterior frontal fovea elongate; small eye, one-fourth length of temple; hind wings well developed; shape of genitalia unique to species.

Description of male. Length 2.6–3.2 mm. Body yellowish brown and elytra, legs, maxillary palpi paler (Figure 26d). *Head.* Head as long as wide, widest across eyes (Figure 26d). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-fourth length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26d). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, bearing one branch from apical (Figure 27d). Phallobase of median lobe asymmetrical and triangular (Figure 27d). Right paramere divided into two branches from base, and minor branch divided into two branches at apex (Figure 27d).

Distribution. Bay of Plenty (BP), Coromandel (CL) (Figure 28: stars).

Habitat. Specimens of this species were collected by sifting leaf and rotten wood litter.

***Sagola* sp. nov. 2-2**

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: ND: Omahutu S.F., Kauri Res., litter 74/81 10 Oct 1974, JC Watt”.

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 3 times longer than wide; 4 antennomere elongate; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description of male. Length 3.0 mm. Body brown and elytra, legs, maxillary palpi yellowish brown (Figure 26e). *Head.* Head as long as wide, widest across eyes (Figure 26e). Antennomere 1 approximately 3 times longer than wide, 2–3 longer than wide, 4 elongate, approximately 1.5 times longer than wide, 5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching behind eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26e). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres with semicircular

apical lobe (Figure 27e). Phallobase of median lobe asymmetrical and triangular (Figure 27e). Right paramere divided into two branches from base, and minor branch divided into two long branches (Figure 27e).

Distribution. Northland (ND) (Figure 28: white circle).

Habitat. The holotype and only known specimen of this species was collected by sifting litter.

Sagola sp. nov. 2-3

Type Material. Holotype. New Zealand: Taranaki (TK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: TK: Awakina Gorge 23 I 1972, G.W. Ramsay Litter 7two-third0”.

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; 4 antennomere elongate; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description of male. Length 2.8 mm. Body yellowish brown and elytra, legs, maxillary palpi paler (Figure 26f). *Head.* Head as long as wide, widest across eyes (Figure 26f). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4 elongate, approximately 1.5 times longer than wide, 5–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26f). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres with faucet-shape apical lobe (Figure 27f). Phallobase of median lobe asymmetrical and triangular (Figure 27f). Right paramere divided into two branches, and minor branch crescent shape (Figure 27f).

Distribution. Taranaki (TK) (Figure 28: white square).

Habitat. The holotype and only known specimen of this species was collected by sifting litter.

Sagola sp. nov. 2-4

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, ND Unuwhao, 270m 25 Nov 1982 G. Kuschel”, “sifted litter and decayed wood 82/125”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 male). New Zealand: Northland (ND):** 1♂, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 3 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.4–2.7 mm. Body yellowish brown and elytra, legs, maxillary palpi paler (Figure 26g). *Head.* Head as long as wide, widest across eyes (Figure 26g). Antennomere 1 approximately 3 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small

and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26g). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe longer than parameres, bearing one branch from base (Figure 27g). Phallobase of median lobe asymmetrical and triangular (Figure 27g). Left paramere divided into two branches from base, and minor branch divided into two branched apically (Figure 27g).

Distribution. Northland (ND) (Figure 29: black circle).

Habitat. Specimens of this species were collected by sifting decayed wood litter.

Sagola sp. nov. 2-5

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: ND Waipoua State Forest, 0.8km nw Wairau Summit 350m, 27. xi. 1984 hdwd.-podocarp forest A.Newton/M.Thayer 689”, “berl., leaf & log litter, forest floor”. **Paratype (1 male). New Zealand: Auckland (AK):** ♂, Mt. Auckland, Atuanui Scenic Reserve, 250m, 2.5km NE Glorit, 2 II 2010, D.S. Chandler, sift Nikau palm litter (DSC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.4–2.7 mm. Body brown and elytra, legs, maxillary palpi yellowish brown (Figure 26h). *Head*. Head as long as wide, widest across eyes (Figure 26h). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4 longer than wide, 5–7 subquadrate, 8–10 transverse. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26h). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe longer than parameres with semicircular apical lobe (Figure 27h). Phallobase of median lobe asymmetrical and triangular (Figure 27h). Left paramere longer than right (Figure 27h).

Distribution. Auckland (AK), Northland (ND) (Figure 29: triangles).

Habitat. Specimens were collected by sifted nikau palm, hardwood and podocarp forest litter.

Sagola sp. nov. 2-6

Type Material. Holotype. New Zealand: Coromandel (CL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, CL Cuvier I., Old Radar Station, 180m, 10-18.xi.1999, J.W. Early, S.E. Thorpe”, “In forest, Yellow pan trap, L8170”, “AMNZ 30285 AUCKLAND MUSEUM NEW ZEALAND”. **Paratypes (n=3; 2 males; 1 female). New Zealand: Coromandel (CL):** 1♂, Great Barrier I, Little Windy Hill, 220m, 22 V–7 VII 2002, P. Sutton, forest edge malaise trap (AMNZ); 1♂, Great Barrier I, Mt. Hobson, 500m, pitfall trap, 9 XI–17 XII 2003, J. W. Early (AMNZ); 1♀, slide-mounted, Great Barrier I, Little Windy Hill, 20 XI–19 XII 2002, K. Parsons, in forest pitfall trap (AMNZ).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 3 times longer than wide; 4 antennomere elongate, approximately 1.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.7–3.2 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26i). *Head.* Head as long as wide, widest across eyes (Figure 26i). Antennomere 1 approximately 3 times longer than wide, 2–3 subquadrate, 4 elongate, 5–6 longer than wide, 7–9 subquadrate, 10 transverse. Frontal sulcus deep and reaching behind eye from end of frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and oval. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26i). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse, reaching middle, patches of microtrichia. *Aedeagus.* Median lobe longer than parameres with semicircular apical lobe (Figure 27i). Phallobase of median lobe asymmetrical and triangular (Figure 27i). Left paramere divided into two branches from base, and minor branch divided into two branched apically (Figure 27i).

Distribution. Coromandel (CL) (Figure 29: black squares).

Habitat. Specimens were collected using yellow pan, malaise, and pitfall traps.

Sagola sp. nov. 2-7

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND, Omahutu S.F. 22 Apr 1975 J.S. Dugdale”, “Liverworts & mosses 75/141”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 male). New Zealand: Northland (ND):** ♂, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 3 times longer than wide; 4–5 antennomeres elongate, approximately 1.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.4–3.2 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26j). *Head.* Head as long as wide, widest across eyes (Figure 26j). Antennomere 1 approximately 3 times longer than wide, 2–3 longer than wide, 4–5 elongate, 6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26j). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres with semicircular apical lobe, bearing small branch from base (Figure 27j). Phallobase of median lobe asymmetrical and triangular (Figure 27j). Right paramere divided into two branches from base, and minor branch divided into two branched apically (Figure 27j).

Distribution. Northland (ND) (Figure 29: star).

Habitat. Specimens of this species were collected by sifting liverwort and moss litter.

Sagola sp. nov. 3

Type Material. Holotype. New Zealand: Northland (ND): ♂, “NEW ZEALAND: ND: Waipoua SF, Waikohatu Br. 290m, 11-14.iv.80 *Agathis*-podocarp-broadlf. A. Newton, M. Thayer”, “berl. leaf & log litter, forest floor”. **Paratypes (n= 7; 6 males; 1 female). New Zealand: Northland (ND):** 1♂ (slide-mounted), Waipoua Forest, Waipoua Stream, 70m, 16–21 II 1978, berl. litter, kauri forest, S. Peck, J. Peck (FMNH); 1♂, Waipoua State Forest, Toronui Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 685 (DSC); 1♂, Waipoua State Forest, Kauri Ricker Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 684 (FMNH); 1♂, Waipoua State Forest, 0.9km e Forest Headquarters, 120m, 26 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 686 (DSC); 1♂, Waipoua S.F., Te Matua Ngahere, 4 II 1975, J.C. Watt, litter 75/94 (NZAC); Waipoua S.F., Lookout, 29 XI 1980, G. Kuschel, moss 80/99 (NZAC); 1♀, Waipoua Stream, 100m, 19 III 1978, S. B. Peck, litter (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: smaller body size, 2.1–2.6 mm; antennomere 1 elongate, approximately 2.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.1–2.6 mm. Body yellowish brown and elytra, legs, maxillary palpi paler (Figure 26k). *Head.* Head as long as wide, widest across eyes (Figure 26k). Antennomere 1 approximately 2.5 times longer than wide, 2 subquadrate, 3 longer than wide, 4 elongate, 5–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching behind eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26k). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres (Figure 27k). Phallobase of median lobe asymmetrical and triangular (Figure 27k). Right paramere divided into two branches from base, and a minor, slender branch bearing setae (Figure 27k).

Distribution. ND (Northland) (Figure 29: white circle).

Habitat. Specimens of this species were collected by sifting leaf or log litter in kauri, broadleaf, hardwood, *Agathis* and podocarp forests.

Sagola sp. nov. 3-1

Type Material. Holotype. New Zealand: Auckland (AK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: AK: Aunua Ra., Kohukohunui, 550m, 30III1974 G. Kuschel, litter 74/19”. **Paratype (1 female). New Zealand:** 1♀, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; posterior frontal fovea elongate; eye small, one-third length of temple; hind wings reduced to small pads; shape of genitalia unique to species.

Description. Length 2.5–2.9 mm. Body brown and elytra, legs, maxillary palpi yellowish brown (Figure 26l). *Head.* Head as long as wide, widest across eyes (Figure 26l). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching behind eye from end of frontal rostral lobes.

Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26l). Hind wings absent. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV without microtrichia. *Aedeagus*. Median lobe longer than parameres, apical lobe bird head shaped (Figure 27l). Phallobase of median lobe asymmetrical and triangular (Figure 27l). Left paramere elongate and right paramere short and rounded (Figure 27l).

Distribution. Auckland (AK) (Figure 29: white square).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 24

Type Material. Holotype. New Zealand: Waikato (WO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, "NEW ZEALAND WO Hapuakohe Ra Maungakawa, 500m 3 Jan 1984 J.C. Watt", "Sifted wood mould 84/3", "N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand". **Paratypes (n=5; 1 male; 4 females). New Zealand: Waikato (WO):** 1♂4♀♀ (1♀ slide-mounted), same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; posterior frontal fovea oval; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description. Length 2.7–3.3 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26m). *Head*. Head as long as wide, widest across eyes (Figure 26m). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26m). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe longer than parameres, bearing small process from apex (Figure 27m). Phallobase of median lobe asymmetrical and triangular (Figure 27m). Right paramere divided into two branches and an additional minor branch divided into two branched apically (Figure 27m).

Distribution. Waikato (WO) (Figure 30: black circle).

Habitat. Specimens of this species were collected by sifting wood litter.

Sagola sp. nov. 26-1

Type Material. Holotype. New Zealand: Gisborne (GB): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, "New Zealand: GB: Lake Waikaremoana 17 I 1972, G.W. Ramsay Litter 72/20". **Paratype (1 male). New Zealand: Waikato (WO):** ♂, Okauia, 28 XII 1947, Leaf-mould, A. E. Brookes (NZAC).

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: smaller body size, 2.0–2.5 mm; antennomere 1 elongate, approximately 2 times longer than wide; 4–5 antennomeres subquadrate, approximately 1.5 times longer than wide; posterior frontal oval; eye large, as long as temple; hind wings well developed; mid-femur with semicircular depression; mid-tibia bent; shape of genitalia unique to species.

Description of male. Length 2.0–2.5 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26n). *Head.* Head as long as wide, widest across eyes (Figure 26n). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and oval. Eye large and prominent, as long as temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular and at least 1.5 times longer than wide (Figure 26n). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. Mid-femur with semicircular depression. Mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres (Figure 27n). Phallobase of median lobe asymmetrical and triangular (Figure 27n). Left paramere L-shaped and longer than right. Right paramere divided into three branches from base (Figure 27n).

Distribution. Gisborne (GB), Waikato (WO) (Figure 30: triangles).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 27-2

Type Material. Holotype. New Zealand: Taranaki (TK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: TK: Waitaanga Forest Campsite 38°56S 174°47E, Punky wood, berlese, 11 Mar 2000 C. Carlton, A Weir, #039”.

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: antennomere 1 elongate, approximately 2.5 times longer than wide; 4 antennomere elongate, approximately 1.5 times longer than wide; posterior frontal fovea oval; eye small, one-third length of temple; hind wings well developed; shape of genitalia unique to species.

Description of male. Length 3.0 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26o). *Head.* Head as long as wide, widest across eyes (Figure 26o). Antennomere 1 approximately 2.5 times longer than wide, 2 subquadrate, 3 longer than wide, 4 elongate, 5–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and oval. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26o). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, bearing one branch from apical (Figure 27o). Phallobase of median lobe asymmetrical and triangular (Figure 27o). Left paramere divided into two branches from base, and minor branch divided into two branches apically (Figure 27o). Right paramere L-shaped and longer than left (Figure 27o).

Distribution. Taranaki (TK) (Figure 30: black square).

Habitat. Specimens of this species were collected by sifting punky wood litter.

Sagola sp. nov. 51-2

Type Material. Holotype. New Zealand: Waikato (WO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Fairburn mt. Te aroha 30-3-51”, “A.E.Brookes Collection”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from other species of group 1 by the following combination of characters: smaller body size, 2.4 mm; antennomere 1 elongate, approximately 2 times longer than wide; 2–10 antennomeres subquadrate; posterior frontal oval; eye large, one-half length of temple; hind wings reduced to small pads; mid-tibia bent; shape of genitalia unique to species.

Description of male. Length 2.4 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 26p). *Head.* Head as long as wide, widest across eyes (Figure 26p). Antennomere 1 approximately 2 times longer than wide, 2–10 subquadrate. Frontal sulcus deep and reaching hind point of eye from end of frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and oval. Eye large and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at one-thirds length of prosternum. Elytra rectangular (Figure 26p). Hind wings absent. Meso- and metathorax trapezoidal, as long as wide. Mid-tibia bent. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe longer than parameres. Phallobase of median lobe asymmetrical and triangular (Figure 27p). Left paramere divided into two branches from base, and minor branch long and bent (Figure 27p). Right paramere L-shaped and as long as left (Figure 27p).

Distribution. Waikato (WO) (Figure 30: star).

Habitat. Unknown.

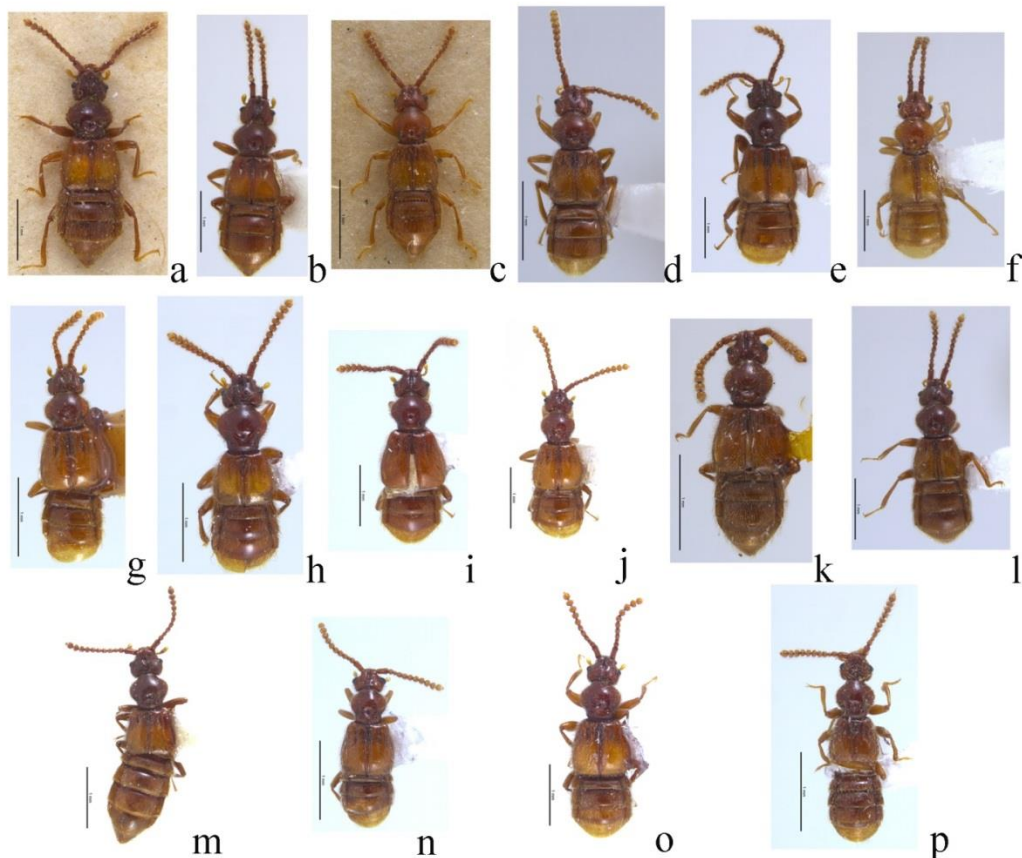


Figure 26. Habitus of group 1, dorsal views. a) *Sagola hirtalis* Broun; b) *S. terricola* Broun; c) *S. convexa* Broun; d) *S. sp. nov.* 2-1; e) *S. sp. nov.* 2-2; f) *S. sp. nov.* 2-3; g) *S. sp. nov.* 2-4; h) *S. sp. nov.* 2-5; i) *S. sp. nov.* 2-6; j) *S. sp. nov.* 2-7; k) *S. sp. nov.* 3; l) *S. sp. nov.* 3-1; m) *S. sp. nov.* 24; n) *S. sp. nov.* 26-1; o) *S. sp. nov.* 27-2; p) *S. sp. nov.* 51-2; Scale bars = 1 mm.

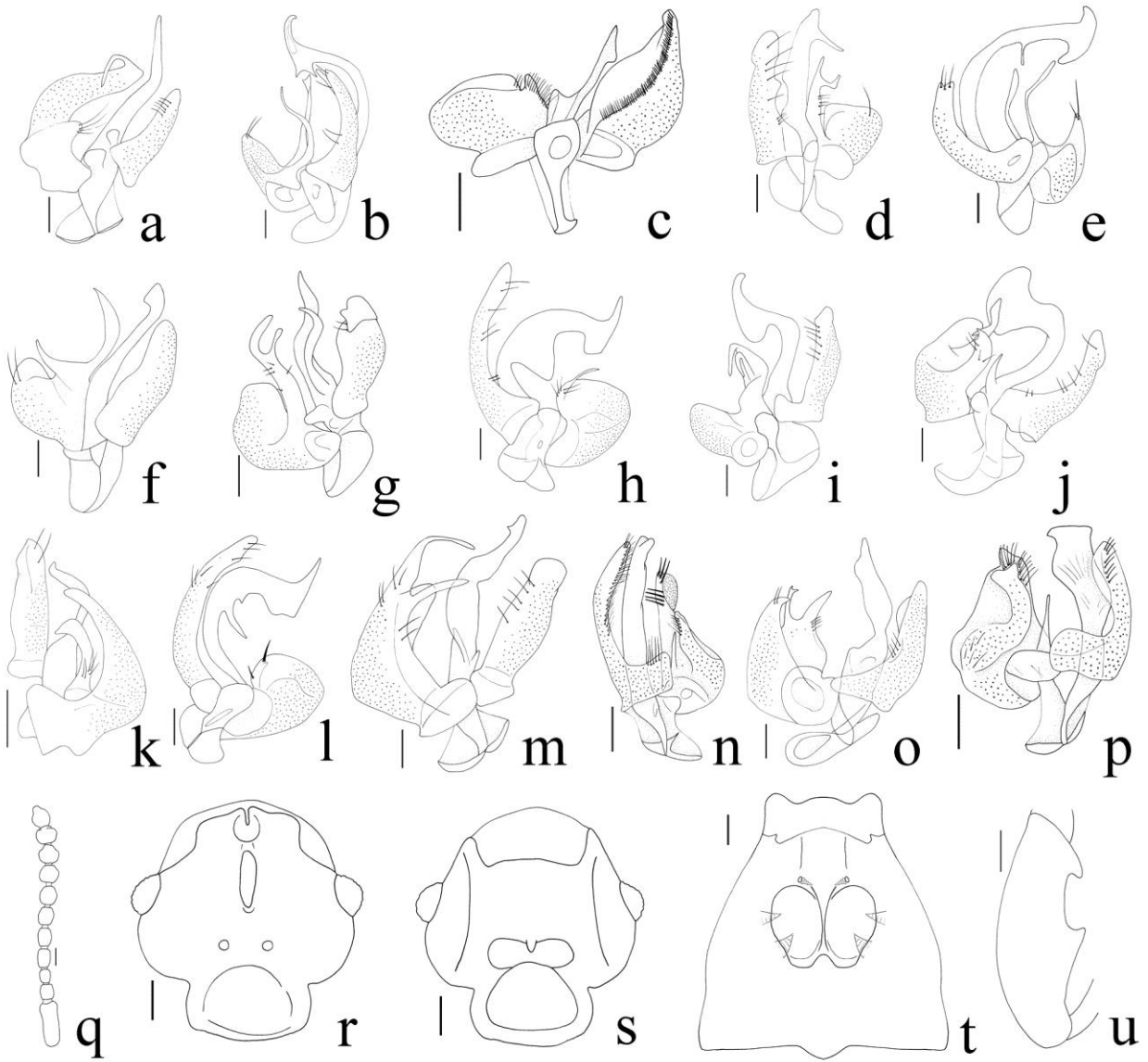


Figure 27. Aedeagus of group 1, dorsal view. a) *Sagola hirtalis* Broun; b) *S. terricola* Broun; c) *S. convexa* Broun; d) *S. sp. nov.* 2-1; e) *S. sp. nov.* 2-2; f) *S. sp. nov.* 2-3; g) *S. sp. nov.* 2-4; h) *S. sp. nov.* 2-5; i) *S. sp. nov.* 2-6; j) *S. sp. nov.* 2-7; k) *S. sp. nov.* 3; l) *S. sp. nov.* 3-1; m) *S. sp. nov.* 24; n) *S. sp. nov.* 26-1; o) *S. sp. nov.* 27-2; p) *S. sp. nov.* 51-2; q) antenna of *S. hirtalis* Broun; r) dorsal head of *S. hirtalis* Broun; s) ventral head of *S. hirtalis* Broun; t) meso- and metaventrite of *S. terricola* Broun; u) fore-femur of *S. terricola* Broun; Scale bars = 0.1 mm.

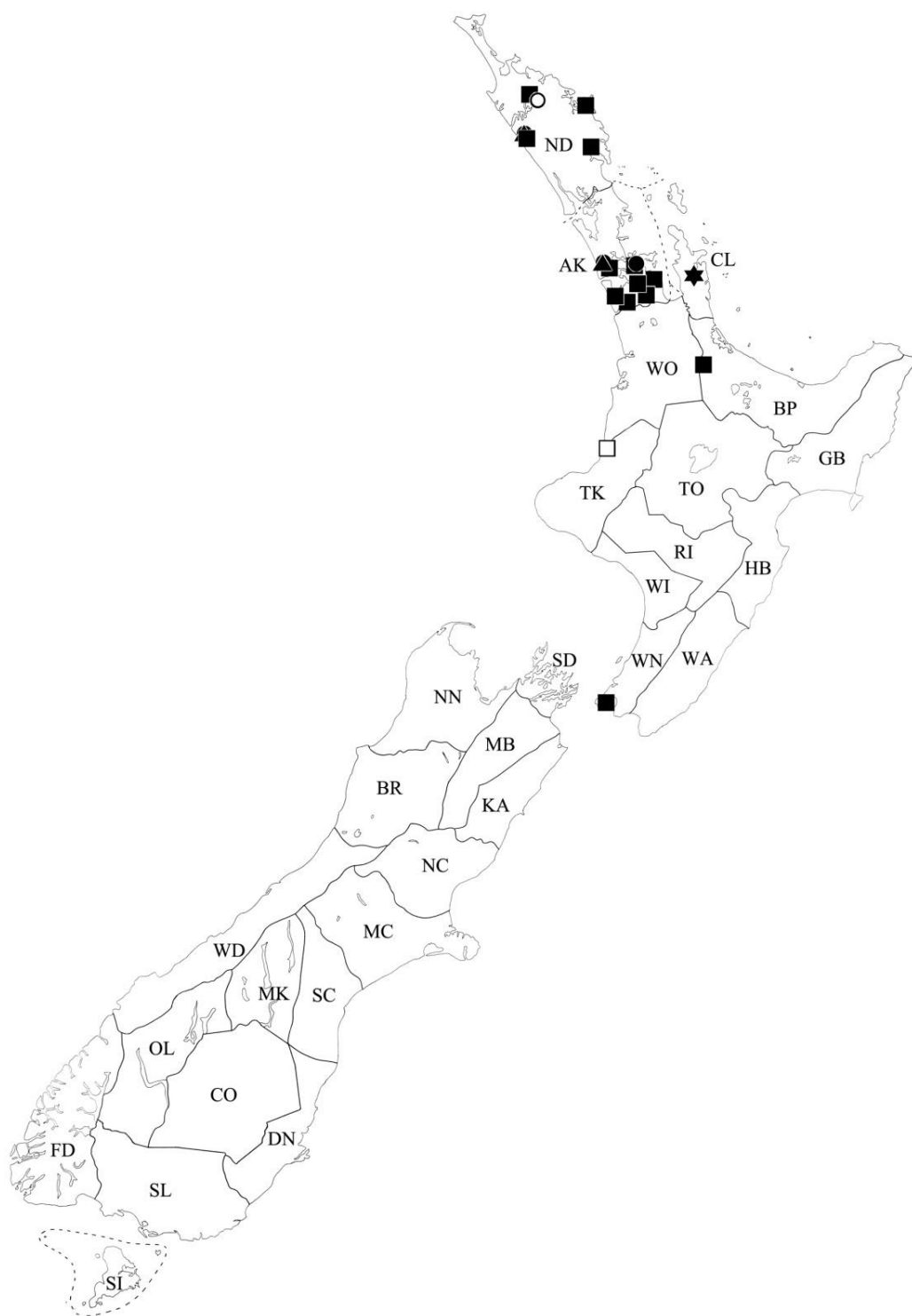


Figure 28. Locations where *Sagola hirtalis*, *S. terricola*, *S. convexa*, *S. sp. nov. 2-1*, *S. sp. nov. 2-2* and *S. sp. nov. 2-3* specimens have been collected in New Zealand. *S. hirtalis*: black circles; *S. terricola*: triangles; *S. convexa*: black squares; *S. sp. nov. 2-1*: star; *S. sp. nov. 2-2*: white circle; *S. sp. nov. 2-3*: white square.

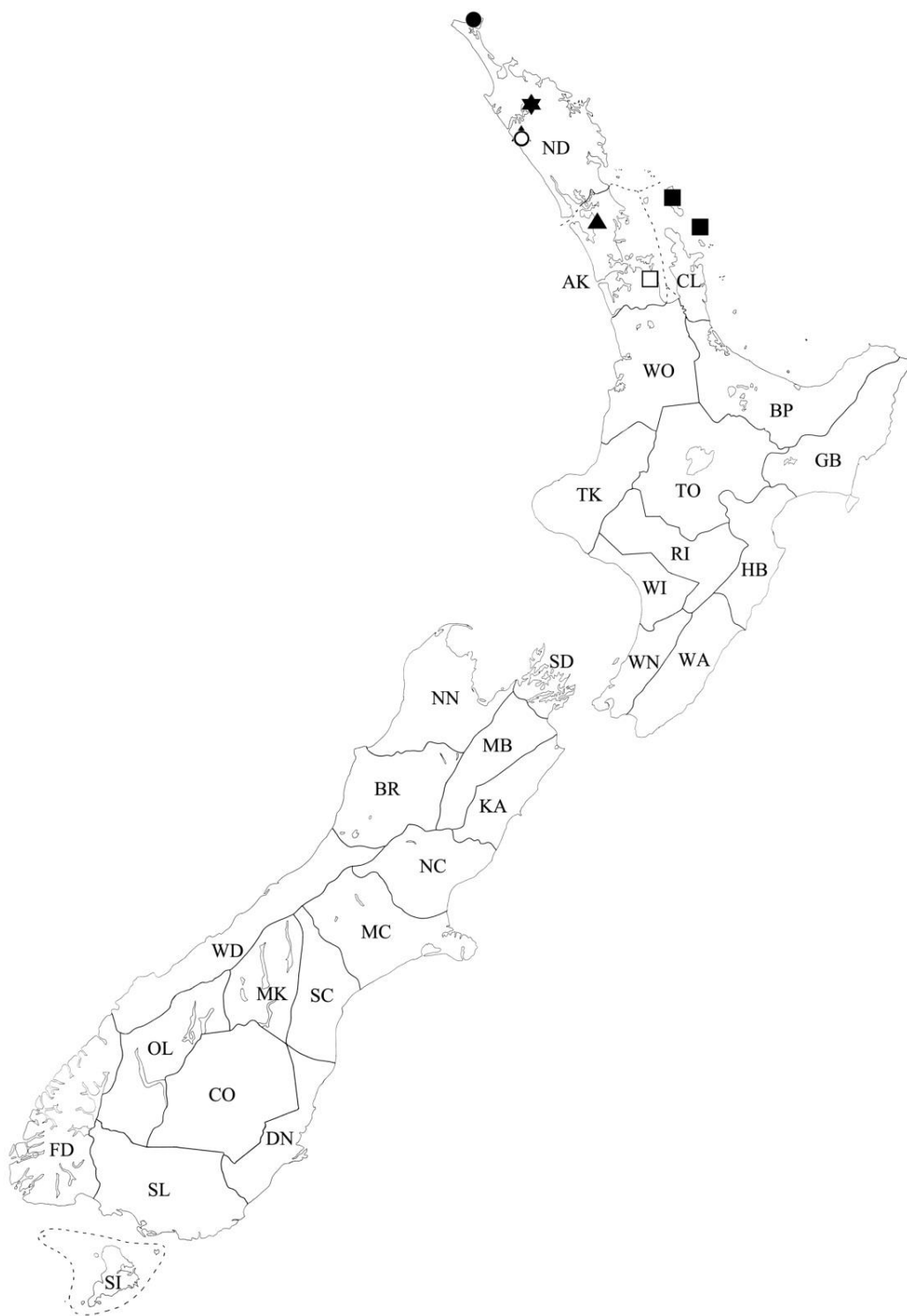


Figure 29. Locations where *Sagola* sp. nov. 2-4, *S. sp. nov. 2-5*, *S. sp. nov. 2-6*, *S. sp. nov. 2-7*, *S. sp. nov. 3* and *S. sp. nov. 3-1* specimens have been collected in New Zealand. *S. sp. nov. 2-4*: black circle; *S. sp. nov. 2-5*: triangles; *S. sp. nov. 2-6*: black squares; *S. sp. nov. 2-7*: star; *S. sp. nov. 3*: white circle; *S. sp. nov. 3-1*: white square.

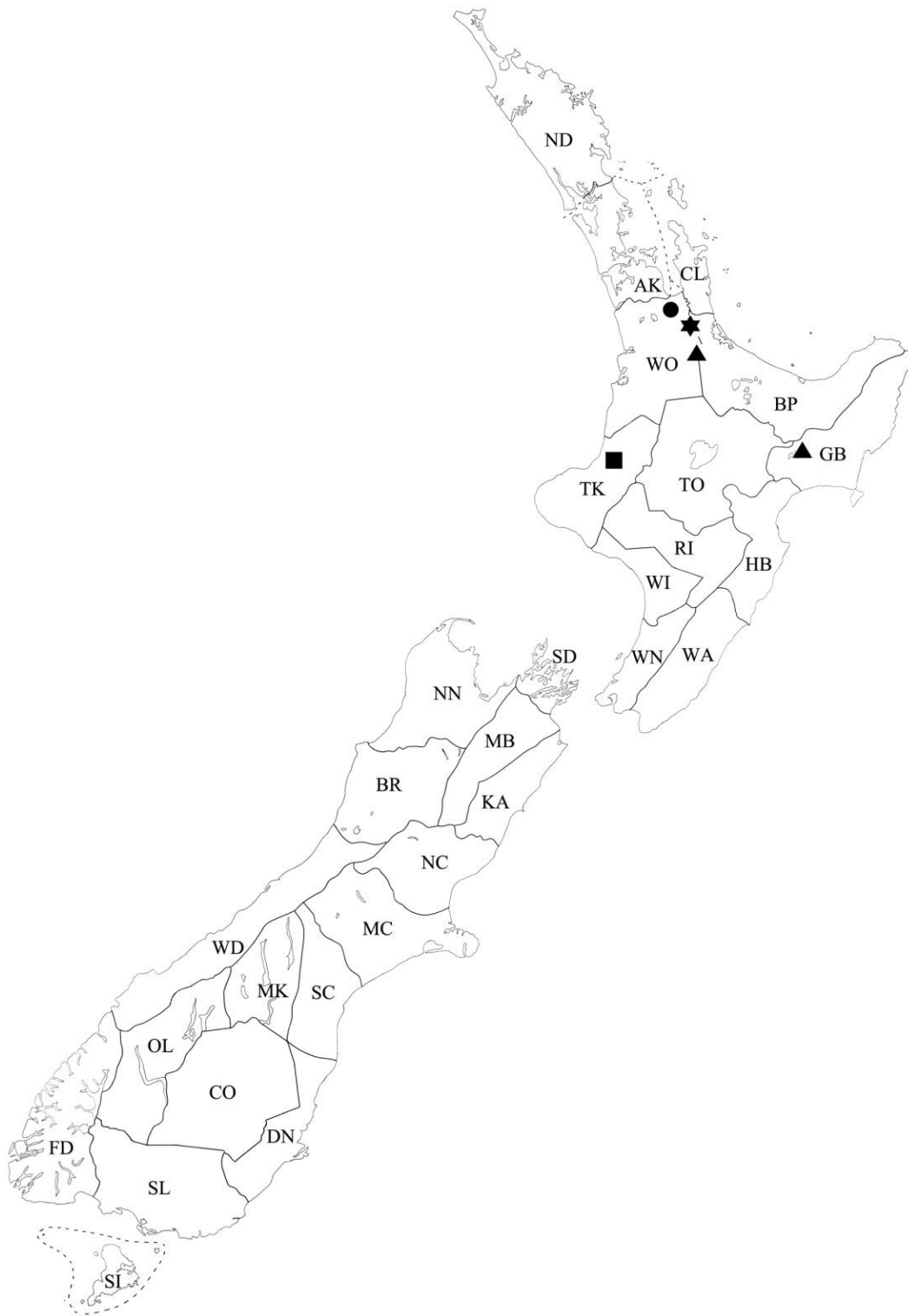


Figure 30. Locations where *Sagola* sp. nov. 24, *S. sp. nov. 26-1*, *S. sp. nov. 27-2* and *S. sp. nov. 51-2* specimens have been collected in New Zealand. *S. sp. nov. 24*: black circle; *S. sp. nov. 26-1*: triangles; *S. sp. nov. 27-2*: black square; *S. sp. nov. 51-2*: star.

Group 2 (4 species)

Key to species of *Sagola* group 2

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Body large, length 3.0–3.4 mm; weakly transverse head; frontal rostrum with distinctive punctures; densely setose around posterior frontal fovea.....*Sagola* sp. nov. 4-1
- 1'. Body smaller, length 2.1–2.6 mm; head as long as wide; not densely setose around posterior frontal fovea; frontal rostrum without punctures.....2
- 2 (1). Antennomeres 4–8 longer than wide; major process of median lobe of genitalia slender.....3
- 2'. Antennomeres 4–8 subquadrate; major process of median lobe of genitalia broad and rectangular (Figure 31h).....*S.* sp. nov. 4-2
- 3 (2). Apical major process of median lobe of genitalia arrow head-shaped (Figure 31f).....*S.* sp. nov. 4
- 3'. Apical major process of median lobe of genitalia triangle (Figure 31e).....*S. rugifrons* Broun

Diagnosis. The members of group 2 may be separated from other *Sagola* groups by the following combination of characters: body length 2.1–3.4 mm; antennomere 1 at least 2 times longer than wide with dull surface; gular of male head with bean-shaped opening, and transversely open inside (Figure 31j); ventral surface of male head with a pair of short carinae from posterior margin of eyes, as long as eye (Figure 31j); male fore-femur with semicircular depression; male mid-femur with shallow depression; male mid-tibia bent; abdominal tergites IV–VI with discal carinae; present on North Island, not known from South Island (Figures 32–33).

Sagola rugifrons Broun

Sagola rugifrons Broun, 1895: 73. Raffray, 1904: 498; 1911: 6; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola puncticeps Broun, 1911: 489. Hudson, 1923: 365; 1923: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Type Material Examined. Lectotype of *Sagola rugifrons*: New Zealand: Waikato (WO): ♂, glued on rectangular card, “Type” [red label, printed]; “2722.♂” [white label, printed]; “Waikato” [white label]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola rugifrons*” [white label, handwritten]. **Paratype:** ♀, glued on rectangular card, “Type” [red label, printed]; “2722.♀” [white label, printed]; “Waikato” [white label]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola rugifrons*” [white label, handwritten].

Additional Material (n= 23; 14 males, 9 female). New Zealand: Auckland (AK):

1♂2♀♀, Hunua Range, Vining Reserve, Mangatangi Tr., 240m, 37°07.747'S, 175°13.024'E, 17 XI 2005, *Nothofagus-Agathis-Phyllocladus trichomomoides*, etc, FMHD#2005-008, berl., leaf & log litter, A. Newton, S. Solodovnikov, et al., ANMT site 1141; 1♂, Waitakere Ra., Cascade-Kauri Park, Anderson Tr., 85m, 23 XI 1984, hdwd, -podocarp, A. Newton, M. Thayer 681; 1♂, Bethells, Matuku Res., 25 II 1992, G. Hall, litter 92/5; 1♂, Mt. Dome, 15 III 1978, S.B. Peck, litter; 1♀, Kirks Bush, Papakura, 26 V 1992, J. Nunn; **Bay of Plenty (BP):** 1♂, Okauia, 30 X 1921, A.E. Brookes collection; 1♂, Mt. Te Aroha, 2.5km SE Te Aroha, 390m, Tui Rd. at Tui

Creek, Mt. Domain Tr., 15 II 2010, D.S. Chandler, sift forest leaf litter; **Northland (ND)**: 2♂♂ (1♂, slide-mounted), Mangamuka Walk, 28 VII–1 VIII 1998, R. Leschen, R. Hoare, FIT 223, 36°11'S, 173°28'E; 1♂, Mangamuka Gorge SR, 6.6km nw Mangamuka, 70m, 25 XI–5 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 682, window trap; 1♂, Puketo Forest, 18 XII 1951, moss; 1♀, Tangihua Range, 17 X 1936, F. Fairburn; 1♀, Waipoua SF, Yakas Tree tr., 350m, 11–14 IV 1980, broadleaf.-podocarp, A. Newton, M. Thayer, berl, litter at bases of *Metrosideros robusta* trunks; 1♀, Mangamuka Summit, 386m, 13 XII 1976, V.A. May, litter 76/109; 1♀, Waipoua SF, 1km E Headquarters, 90m, 15 IV 1980, J.C. Watt, litter80/50; **Waikato (WO)**: 1♂, Pirongia Forest Park, Tirohanga Tr. (above end Corcoran rd.), 500m, 37°58.409'S 175°07.173'E, 20 XI 2005, broadleaf forest, FMHD#2005-015, berl., forest litter, D. Clarke, A. Solodovnikov, ANMT site 1146; 1♂, Piripiri Caves Reserve, 25 V 1986, C.L. Lyal, leaf litter CL 480; 1♂, Mt. Karioi near base, II X 1981, C.F. Butcher, litter 81/96; 1♂, Waitomo, Maori Tumutumu Rd., 24 V 1983, J.C. Watt, litter and soil 83/60; 1♀, Te Mata Bridal, Veil Falls, 19 IX 1981, C.F. Butcher, litter 81/88; 1♀, Hapuakohe Ra., 29 I 1984, J.C. Watt, sieved leaf litter 84/8.

Diagnosis. This species is separated from other species of group 2 by the following combination of characters: smaller body, length 2.3–2.6 mm; frontal rostrum with distinctive punctures; antennomere 1 approximately 2.5 times longer than wide, 2–8 longer than wide; posterior frontal fovea surrounded by dense setae; ventral surface of male head with weak a pair of short carinae behind eyes; shaped of genitalia unique to species.

Redescription. Length 2.3–2.6 mm. Body brown, antennae, legs, maxillary palpi paler (Figure 31a). *Head.* head round, widest across eyes (Figure 31a). Frontal rostrum with distinctive punctures. Ventral surface of male head with weak a pair of short carinae behind eyes. Antennomere 1 approximately 2.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and oval. Posterior frontal fovea present and round. Male eye large and prominent, two-third length of temple. Female eye small one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular in male (Figure 31a), triangular in female. Hind wings well developed in male, reduced to small pads in female. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median deeply divided in two lobes (Figure 31e). Phallobase of median lobe approximately symmetrical and rounded (Figure 31e). Right paramere broader than left (Figure 31e).

Type locality. Mount Pirongia (WO), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Northland (ND), Waikato (WO) (Figure 32: black circles).

Habitat. Most specimens of this species were collected flight intercept trap, sifting leaf litter or log in broadleaf, hardwood, *Nothofagus* or podocarp forests.

Comments. Specimens of *S. rugifrons* can be separated from other species externally by frontal rostrum with distinctive punctures; female hind wings reduced to small pads; female eye and antenna size and shape. The type specimens of *S. puncticeps* share these diagnostic characters, and these species have been collected at or near the type locality. For these reasons, I have placed these species in synonymy with *S. rugifrons*.

Sagola sp. nov. 4

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: ND: Waipoua SF, Yakas Tree Tr. 350m 11-14.iv.1980 broadlf.-podocarp A. Newton, M. Thayer”, “berl, litter at bases of *Metrosideros rubusta* trunks”. **Paratypes (n= 11; 9 males, 2 female). New Zealand: Auckland (AK):** 1♂, Whangateau, 27 XII 1951, P625; **Northland (ND):** 5♂♂1♀, Waipoua SF, Toronui Tr., 150m, 13 IV 1980, kauri-podocarp-broadlf.-nikau palm forest, A. Newton, M. Thayer, berl., leaf & log litter, forest floor (2♂♂, DSC; 3♂♂1♀, FMNH; 1♂, Waipoua SF, 0.9km e Forest hqtrs., 120m, 26 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 686, leaf & log litter, forest floor (DSC); 1♂ (slide-mounted), Waipoua SF, 0.9km e forest hqtrs., 120m, 26 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 686, FIT & window trap; 1♂, Waipoua SF, 1.7km nw Waikohatu Stream Bridge, 380m, 28 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 691, FIT, window trap (DSC); 1♂, Waipoua SF, Kauri Ricker Track, 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 684, berl., leaf & log litter, forest floor (FMNH); 1♀, Waipoua SF, kauri Ricker Tr., 100m, 11–15 IV 1980, kauri-podocarp-broadleaf, A. Newton, M. Thayer, berl., leaf & log litter, forest floor (FMNH).

Diagnosis. This species is separated from other species of group 2 by the following combination of characters: smaller body, length 2.1–2.6 mm; frontal rostrum with distinctive punctures; antennomere 1 approximately 2.5 times longer than wide, 4–8 longer than wide; round posterior frontal fovea without dense hair around; ventral surface of male head with distinctive a pair of short carinae behind eyes; shape of genitalia unique to species.

Description. Length 2.1–2.6 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 31b). *Head.* Head as long as wide, widest across eyes (Figure 31i). Frontal rostrum with distinctive punctures. Ventral surface of male head with distinctive a pair of short carinae behind eyes (Figure 31j). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and round. Eye small and prominent, one-half length of temple. Female eye small one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular in male (Figure 31b), subquadrate in female. Hind wings present in male, absent in female. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe shorter than parameres, divided in two lobes. Apical lobe of major lobe triangular (Figure 31f). Minor lobe slender and forked into three branches (Figure 31f). Phallobase of median lobe approximately symmetrical and rounded (Figure 31f).

Distribution. Auckland (AK), Northland (ND) (Figure 33: black circles).

Habitat. Specimens of this species were collected using window and flight intercept traps, or by sifting leaf and log litter in kauri, broadleaf, hardwood, nikau palm and podocarp forests.

Sagola sp. nov. 4-1

Type Material. Holotype. New Zealand: Auckland (AK): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “19.ix.51 La Roy’s Bush Birkenhead N.I. P282”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 male). New Zealand: Coromandel (CL):** 1♂, Little Barrier Island, 31 XII 1951, rotten wood, P622 (NZAC).

Diagnosis. This species is separated from other species of group 2 by the following combination of characters: larger body, length 3.0–3.4 mm; weakly transverse head; antennomere 1 approximately 2.5 times longer than wide, 2–7 subquadrate, 8–10 transverse; elongate posterior frontal fovea with dense hair around; ventral surface of male head with weak a pair of short carinae behind eyes; shape of genitalia unique to species.

Description of male. Length 3.0–3.4 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 31c). *Head.* Head slightly transverse, widest across eyes (Figure 31c). Ventral surface of male head with weak a pair of short carinae behind eyes. Antennomere 1 approximately 2.5 times longer than wide, 2–7 subquadrate, 8–10 transverse. Frontal sulcus deep and reaching hind point of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate, with hair around. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at mid length of prosternum. Elytra rectangular (Figure 31c). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, forked into three lobes, major apical lobe bulbed with nine branched (Figure 31g). Phallobase of median lobe symmetrical and rounded (Figure 31g).

Distribution. Auckland (AK) (Figure 33; triangles).

Habitat. Specimens of this species were collected by sifting rotten wood litter.

Sagola sp. nov. 4-2

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: BP: Ikitiki Stream Mamaku Plateau Horohoro S.F. 24 VII 1976, J.S. Dugdale Litter 76/48”. **Paratypes (4 males).** New Zealand: Bay of Plenty (BP): 2♂♂, same data as holotype (NZAC); 1♂, Tapapa, 300m, 25 III 1978, S.B. Peck, litter (NZAC); **Waikato (WO):** 1♂, Kaimai Ranges, Matamata, A. E. Brookes, V 1920 (NZAC).

Diagnosis. This species is separated from other species of group 2 by the following combination of characters: smaller body, length 2.1–2.6 mm; frontal rostrum with distinctive punctures; antennomere 1 approximately 2 times longer than wide, 2–8 subquadrate, 9–10 transverse; round posterior frontal fovea not surrounded by dense setae; ventral surface of male head with weak a pair of short carinae behind eyes; shape of genitalia unique to species.

Description of male. Length 2.1–2.6 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 31d). *Head.* Head as long as wide, widest across eyes (Figure 31d). Frontal rostrum with distinctive punctures. Ventral surface of male head with weak a pair of short carinae behind eyes. Antennomere 1 approximately 2 times longer than wide, 2–8 subquadrate, 9–10 transverse. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and round. Eye small and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 31d). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres and divided, major lobe rectangular (Figure 31h). Phallobase of median lobe slightly symmetrical and rounded (Figure 31h).

Distribution. Bay of Plenty (BP), Waikato (WO) (Figure 33: black squares).

Habitat. Specimens of this species were collected by sifting leaf litter.

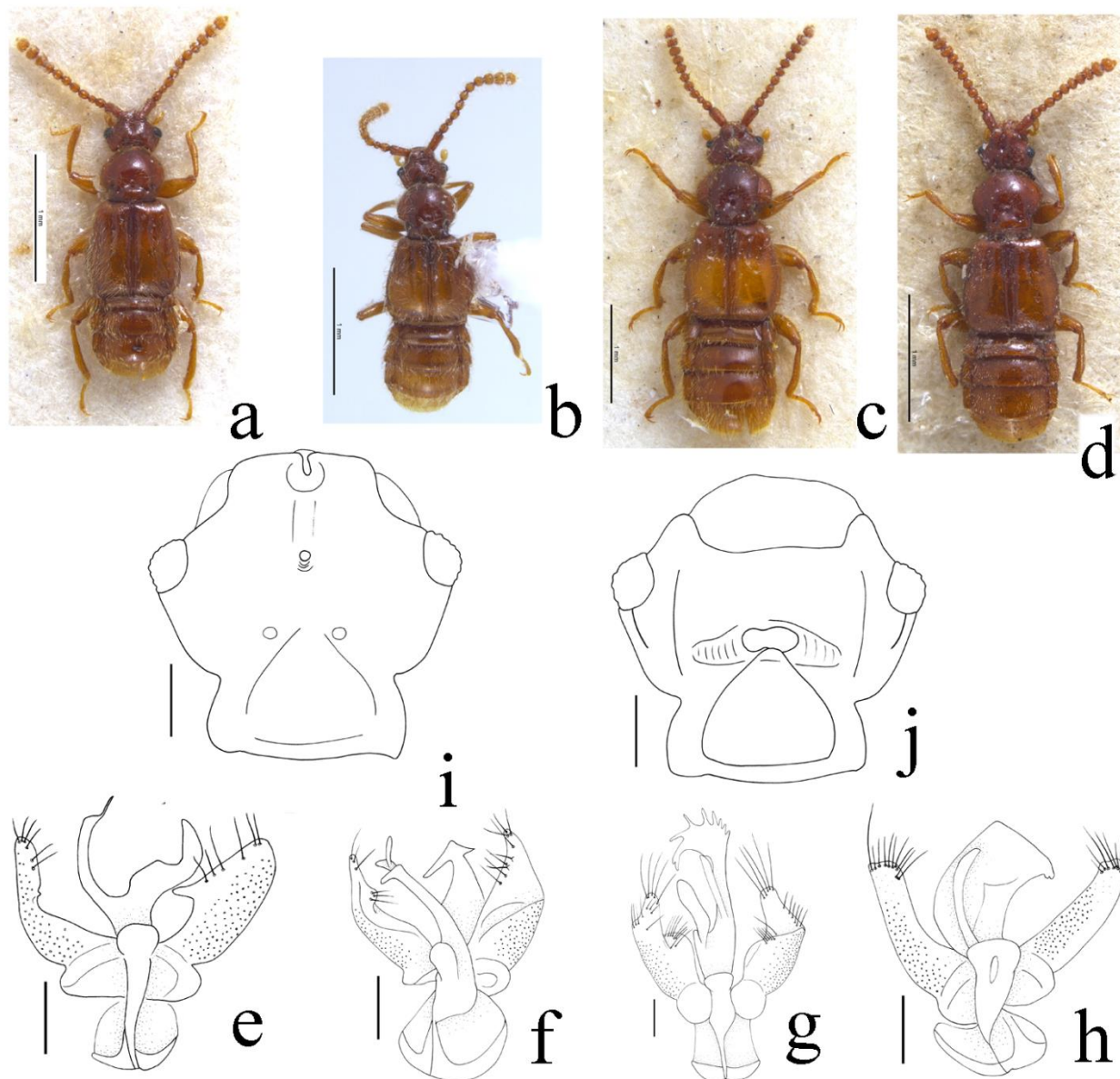


Figure 31. Habitus of group 2, dorsal views. a) *Sagola rugifrons* Broun; b) *S. sp. nov. 4*; c) *S. sp. nov. 4-1*; d) *S. sp. nov. 4-2*; Scale bars = 1 mm. Aedeagus, dorsal views. e) *S. rugifrons* Broun; f) *S. sp. nov. 4*; g) *S. sp. nov. 4-1*; h) *S. sp. nov. 4-2*; Scale bars = 0.1 mm. Head of *S. sp. nov. 4*. i) dorsal view ; j) ventral view; Scale bars = 0.1 mm.

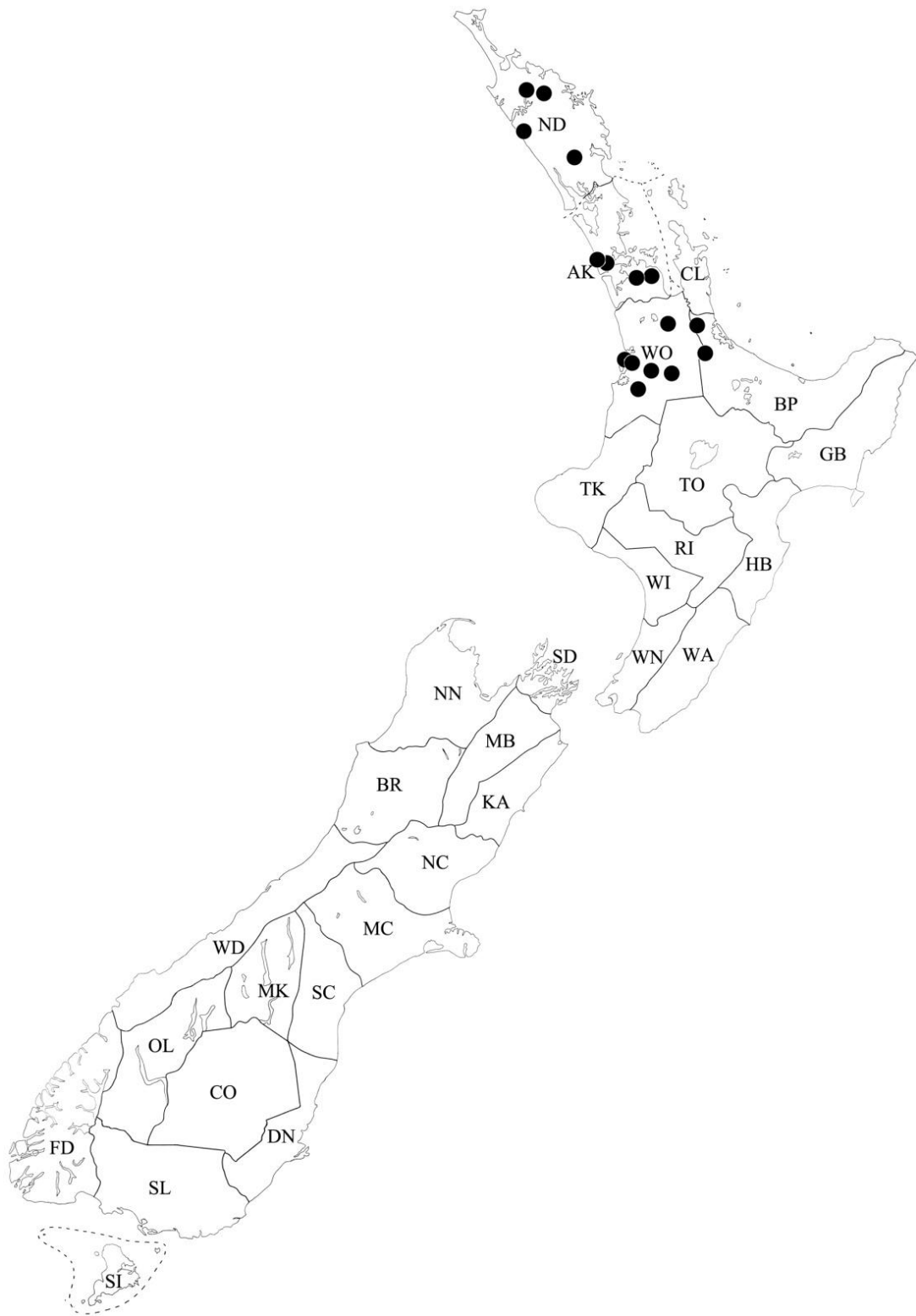


Figure 32. Locations where *Sagola rugifrons* specimens have been collected in New Zealand (black circles).

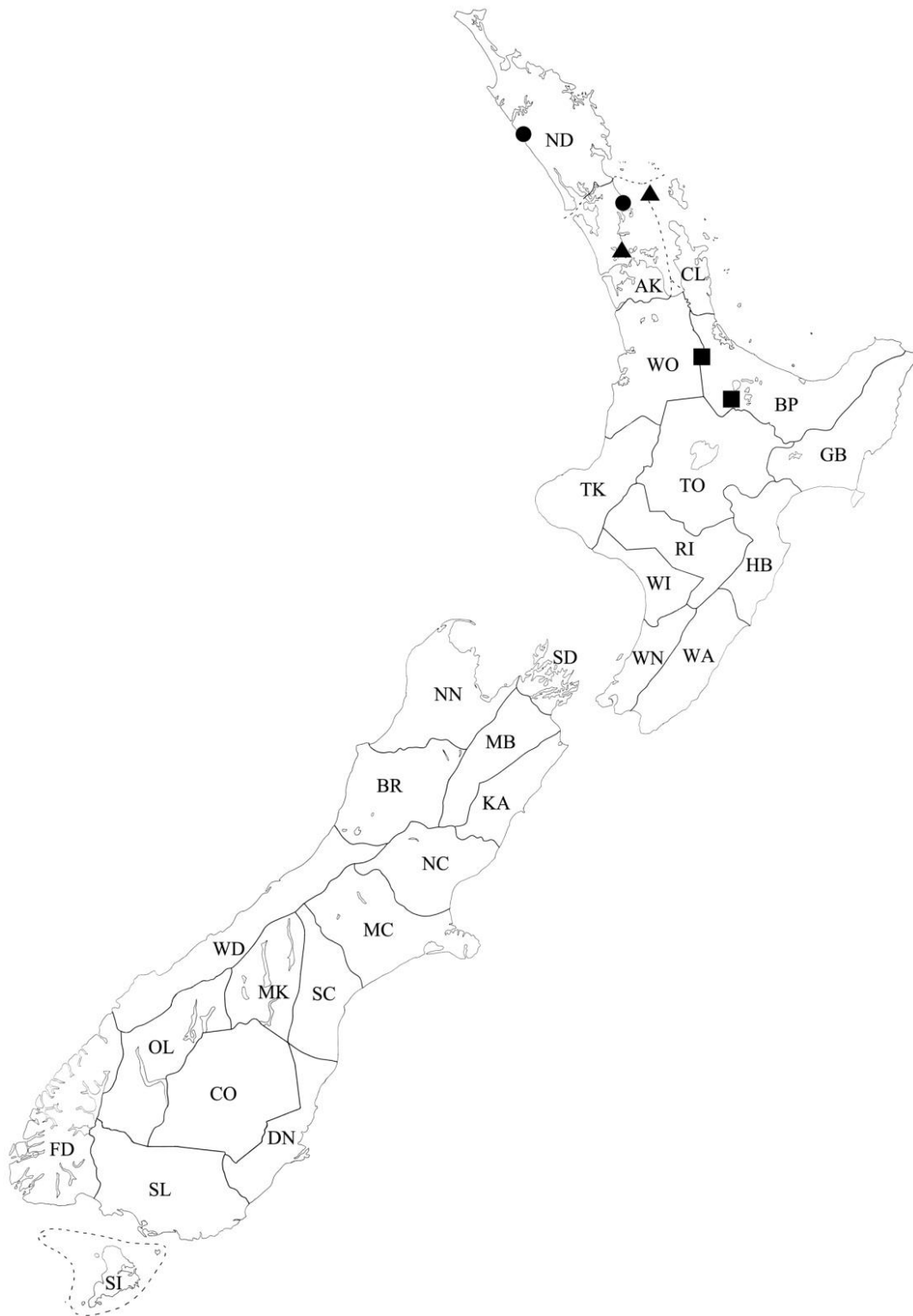


Figure 33. Locations where *Sagola* sp. nov. 4, *S. sp. nov. 4-1*, *S. sp. nov. 4-2* specimens have been collected in New Zealand. *S. sp. nov. 4*: black circles; *S. sp. nov. 4-1*: triangles; *S. sp. nov. 4-2*: black squares.

Group 3 (11 species)

Key to species of *Sagola* group 3

The key is based on genitalia because most specimens are indistinguishable based on external morphology.

1. Median lobe of genitalia deeply divided, major lobe broad and cover minor (Figure 35f).....*Sagola* sp. nov.5-4
- 1'. Median lobe of genitalia not divided.....2
- 2 (1). Median lobe of genitalia shorter than both parameres; right paramere twisted.....3
- 2'. Median lobe of genitalia longer than at least one of parameres; right paramere not twisted.....4
- 3 (2). Apical of right paramere broad (Figure 35c).....*S. sp. nov.*5
- 3'. Apical of right paramere simple (Figure 35a).....*S. bifida* Broun
- 4 (2). Right paramere with long minor branch.....5
- 4'. Right paramere without branch.....7
- 5 (4). Apical lobe of genitalia bent ventrally (Figure 35d).....*S. sp. nov.*5-2
- 5'. Apical lobe of genitalia straight.....6
- 6 (5). Median lobe of genitalia cylindrical, longer than right paramere (Figure 35b).....*S. latistriata* Broun
- 6'. Median lobe of genitalia broad vertically, shorter than right paramere (Figure 35e).....*S. sp. nov.*5-3
- 7 (4). Left paramere with U-shaped depression at tip (Fig 35g).....*S. sp. nov.*5-7
- 7'. Left paramere without depression.....8
- 8 (7). Median lobe of genitalia shorter than left paramere with simple apical lobe (Figure i).....*S. sp. nov.*5-9
- 8'. Median lobe of genitalia longer than parameres with modified apical lobe.....9
- 9 (8). Apical lobe of genitalia broad with point branch (Figure 35h).....*S. sp. nov.*5-8
- 9'. Apical lobe of genitalia round and blunt.....10
- 10 (9). Apical lobe of genitalia with semicircular depression; phallobase of genitalia transverse (Figure 35k).....*S. sp. nov.*5-11
- 10'. Apical lobe of genitalia with branch; phallobase of genitalia as long as wide (Figure 35j).....*S. sp. nov.*5-10

Diagnosis. The members of group 3 may be separated from other *Sagola* groups by the following combination of characters: body length 2.4–3.2 mm; antennomere 1 approximately 2 times longer than wide with dull surface; male surface of ventral surface of male head depressed transversely, at least on-half covered with tubular structures on each side (Figure 35m), with dense setae along edge; hind wings reduced to small pads; male fore-femur with semicircular depression; male mid-femur with shallow depression (Figure 35n); male mid-tibia bent (Figure 35o); abdominal tergites IV–VI with discal carinae; present on North Island, not known from South Island (Figures 36–37).

Sagola bifida Broun

Sagola bifida Broun, 1915: 290. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. Holotype. New Zealand: Auckland (AK): 1 ♀, glued on rectangular card, “Type” [red label, printed]; “3706.♂.” [white label, handwritten]; “New Zealand Broun

Coll. Brit. Mus. 1922–482.” [white label, printed]; “Woodhill Waikakerei.” [white label, printed]; “*Sagola bifida*.♂.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (4 males). **New Zealand: Auckland (AK):** 2♂♂, Mt. Auckland, Atuanui Scenic Reserve, 250m, 2.5km NE Glorit, 2 II 2010, D.S. Chandler, sift Nikau palm litter; 1♂, Waitakere Ranges Pk., Upper Huia Reser. Tr., 28 II 2010, 4.3km SW Waiatarua, 277m, D.S. Chandler, sift leaf litter at base of *Cyathea*; 1♂, Ahuroa, 240m, nr Woodcicks, 5 I 1983, J.C. Watt, litter 83/6.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Redescription. Length 2.6–3.2 mm. Body brown, antennae, legs, maxillary palpi paler, elytra yellowish brown (Figure 34a). *Head.* Head as long as wide, widest across eyes (Figure 34a). Antennomere 1 approximately 2 times longer than wide, 2–4 longer than wide, 5–8 subquadrate, 9–10 weakly transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without microtrichial patch. *Aedeagus.* Median lobe shorter than parameres, apical lobe simple (Figure 35a). Phallobase of median lobe asymmetrical and triangular (Figure 35a). Paramere asymmetrical, right paramere twisted (Figure 35a).

Type locality. Woodhill, Kaipara Railway (AK), New Zealand.

Distribution. Auckland (AK) (Figure 36: black circles).

Habitat. Specimens of this species were collected by sifting leaf and nikau palm tree litter.

Sagola latistriata Broun

Sagola latistriata Broun, 1911: 495. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. **New Zealand: Auckland (AK):** 1♀, glued on rectangular card, “Type” [red label, printed]; “3367.♂.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Ligar’s Bush. Papakura.” [white label, printed]; “*Sagola latistriata*.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (2 males). **New Zealand: Auckland (AK):** 1♂, Kohukohunui, Hunua Ra., 600m, 30 III 1974, G. Kuschel, litter 74/20; 1♂, Kohukohunui, Hunua Ra., 550m, 30 III 1974, G. Kuschel, 74/19.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Redescription. Length 2.4–2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34b). *Head.* Head as long as wide, widest across eyes (Figure 34b). Antennomere 1 approximately 2 times longer than wide, 2–8 subquadrate, 9–10 weakly transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34b). Meso- and

metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe longer than parameres, apical lobe simple (Figure 35b). Phallobase of median lobe asymmetrical and triangular (Figure 35b). Paramere asymmetrical, right paramere divided, minor lobe slender with setae (Figure 35b).

Type locality. Ligar's Bush, Papakura (AK), New Zealand.

Distribution. Auckland (AK) (Figure 36: triangles).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 5

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, "NEW ZEALAND ND Waipoua SF Tanemahuta 29 Oct 1985 R.C.Craw &", "C.Lyal Sifted litter 85/48", "N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand". **Paratypes (n=3; 3 males, 1 female). New Zealand: Northland (ND):** 1♂, Waipoua SF, 0.9km e Forest hqtrs., 120m, 26 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 686, leaf & log litter, forest floor (DSC); 1♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 689, berl., leaf & log litter, forest floor (FMNH); 1♂, Waipoua SF, Four Sisters, 4 II 1975, S.E. Nicols, litter 75/93(NZAC); 1♀, Waipoua SF, 1.7km nw Waikohatu Stream Bridge, 380m, 28 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer, FIT & window trap (FMNH).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 2.6–3.0 mm. Body brown and elytra, legs, maxillary palpi paler (Figure 34c). *Head*. Head as long as wide, widest across eyes (Figure 34c). Antennomere 1 approximately 2 times longer than wide, 2–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe shorter than parameres, apical lobe simple (Figure 35c). Phallobase of median lobe asymmetrical and triangular (Figure 35c). Paramere asymmetrical, right paramere twisted, broad at tip (Figure 35c).

Distribution. Northland (ND) (Figure 36: black square).

Habitat. Specimens of this species were collected using window and flight intercept traps, or by sifting leaf and log litter in hardwood and podocarp forests.

Sagola sp. nov. 5-2

Type Material. Holotype. New Zealand: Coromandel (CL): 1♂, "NEW ZEALAND CL Great Barrier I Mt. Hobson, 500m pitfall trap 9.xi.-17.xii.2003 J.W. Early", "AMNZ86364 AUCKLAND MUSEUM NEW ZEALAND". **Paratypes (n=4; 2 males, 2 females). New Zealand: Coromandel (CL):** 2♂♂2♀ (1♂, slide-mounted), same data as holotype (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 2.7–3.0 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34d). *Head*. Head as long as wide, widest across eyes (Figure

34d). Antennomere 1 approximately 2 times longer than wide, 2–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34d). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe longer than parameres, apical lobe bent to ventral (Figure 35d). Phallobase of median lobe asymmetrical and triangular (Figure 35d). Paramere asymmetrical, right paramere divided, minor lobe slender with setae (Figure 35d).

Distribution. Coromandel (CL) (Figure 36: star).

Habitat. Specimens of this species were collected by pitfall traps.

Sagola sp. nov. 5-3

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, BP Orete Forest Te Puia Hut 230m NZMS 260 Y 14 484819 29.I.1993 R.M. Emberson”, “EAST CAPE INSECT SURVEY 199two-third”, “ex litter from upland broadleaf/podocarp forest LCNZ 93/4”. **Paratypes (2 males). New Zealand: Bay of Plenty (BP):** 1♂, Orete Forest, Te Puia Hut, 13 IV 1992, G. Hall, litter 92/43 (NZAC); 1♂, Motu River, V 1920, A.E. Brookes (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description of male. Length 2.5–2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34e). *Head*. Head as long as wide, widest across eyes (Figure 34e). Antennomere 1 approximately 2 times longer than wide, 2–7 subquadrate, 8–10 weakly transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34e). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe shorter than right paramere, apical lobe blunt (Figure 35e). Phallobase of median lobe asymmetrical and triangular (Figure 35e). Paramere asymmetrical, right paramere divided, minor lobe with setae (Figure 35e).

Distribution. Bay of Plenty (BP) (Figure 36: white circle).

Habitat. Specimens of this species were collected by sifting leaf litter in broadleaf and podocarp forests.

Sagola sp. nov. 5-4

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND BP Kaimai Ra 427m Leyland Tramline 22 Sep 1981 B.M. May”, “Litter 81/92”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (5 males). New Zealand: Bay of Plenty (BP):** 2♂♂, Kaimai, 4 XII 1941, A.E. Brookes (NZAC); **Coromandel (CL):** 1♂, Coromandel Ra., nr Summit, 19 I 1972, G.W. Ramsay, litter 7two-third6 (NZAC); 1♂, Kirikiri Saddle, 488m, 21 X 1976, J.S. Dugdale, litter 76/82 (NZAC); 1♂, Kopu Rd., 27 IX 1967, R.A. Cumber, leaf litter (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description of male. Length 2.8–3.2 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34f). *Head.* Head as long as wide, widest across eyes (Figure 34f). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34f). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without microtrichial patch. *Aedeagus.* Median lobe longer than parameres, divided from base, major lobe broad and cover minor lobe (Figure 35f). Phallobase of median lobe asymmetrical and triangular (Figure 35f). Paramere asymmetrical, right paramere with setae (Figure 35f).

Distribution. Bay of Plenty (BP), Coromandel (CL) (Figure 36: white squares).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 5-7

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: ND: North Cape Area Taputaputa Bay 30IV1968, J.L. Bertrand”. **Paratype (1 female). New Zealand: Northland (ND):** 1♀, same data as holotype (AMNZ).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 2.4–2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34g). *Head.* Head as long as wide, widest across eyes (Figure 34g). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34g). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without microtrichial patch. *Aedeagus.* Median lobe weakly bent and longer than left paramere (Figure 35g). Phallobase of median lobe asymmetrical and triangular (Figure 35g). Paramere asymmetrical, left paramere approximately twice larger than right, divided apically (Figure 35g).

Distribution. Northland (ND) (Figure 37: black circle).

Habitat. Unknown.

Sagola sp. nov. 5-8

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Mair Park Whangarei 17 Aug 1977 G. Kuschel”, “Litter+wood”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description of male. Length 2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34h). *Head.* Head as long as wide, widest across eyes (Figure 34h). Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3–7 subquadrate, 8–10 weakly transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34h). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without microtrichial patch. *Aedeagus.* Median lobe longer than parameres, apical lobe blunt with sharp branch (Figure 35h). Phallobase of median lobe asymmetrical and triangular (Figure 35h). Paramere asymmetrical, left paramere triangular and right round (Figure 35h).

Distribution. Northland (ND) (Figure 37: triangles).

Habitat. Specimens of this species were collected by sifting leaf and wood litter.

Sagola sp. nov. 5-9

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, BP Te Koau, 140m Twin Puriri’s 31 Jan 1993 J.S. Dugdale”, “Litter 93/10”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 female). New Zealand: Bay of Plenty (BP):** 1♀, same data as holotype (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 2.5–2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34i). *Head.* Head as long as wide, widest across eyes (Figure 34i). Antennomere 1 approximately 2 times longer than wide, 2–4 subquadrate, 5–10 transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34i). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without microtrichial patch. *Aedeagus.* Median lobe shorter than left paramere, apical lobe simple (Figure 35i). Phallobase of median lobe asymmetrical and triangular (Figure 35i). Paramere asymmetrical, left paramere triangular, right broad and round depression apico-laterally (Figure 35i).

Distribution. Bay of Plenty (BP) (Figure 37: black square).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 5-10

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, ND Te Paki Trig 23 Nov 1982 G.Kuschel”, “Sifted litter and decayed wood 82/116”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description of male. Length 2.8 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 34j). *Head.* Head as long as wide, widest across eyes (Figure 34j). Antennomere 1 approximately 2 times longer than wide, 2–8 subquadrate, 9–10

weakly transverse. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34j). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe longer than parameres, apical lobe bent with branch from apical (Figure 35j). Phallobase of median lobe asymmetrical and triangular (Figure 35j). Paramere asymmetrical, left paramere long and bent, right paramere diamond shaped (Figure 35j).

Distribution. Northland (ND) (Figure 37: star).

Habitat. Specimens of this species were collected by sifting decayed wood litter.

Sagola sp. nov. 5-11

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Tangihua Range N. Auckland. 1800’-2000’”. “Coll. E. Fairburn 27.10.1926”, “A.E. Brookes Collection”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 females). New Zealand: Northland (ND):** 1♀, same data as holotype (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 2.7 mm. Body brown, antenna, elytra, maxillary palpi, and legs yellowish brown (Figure 34k). *Head*. Head as long as wide, widest across eyes (Figure 34k). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching hind-point of eye from frontal rostral lobes. Anterior frontal fovea present and inverted triangular. Posterior frontal fovea present and elongate. Eye prominent, one-half length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 34k). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV without microtrichial patch. *Aedeagus*. Median lobe longer than parameres with semicircular depression (Figure 35k). Phallobase of median lobe asymmetrical and triangular (Figure 35k). Paramere asymmetrical, left paramere blunt and right triangular (Figure 35k).

Distribution. Northland (ND) (Figure 37: white circle).

Habitat. Unknown.

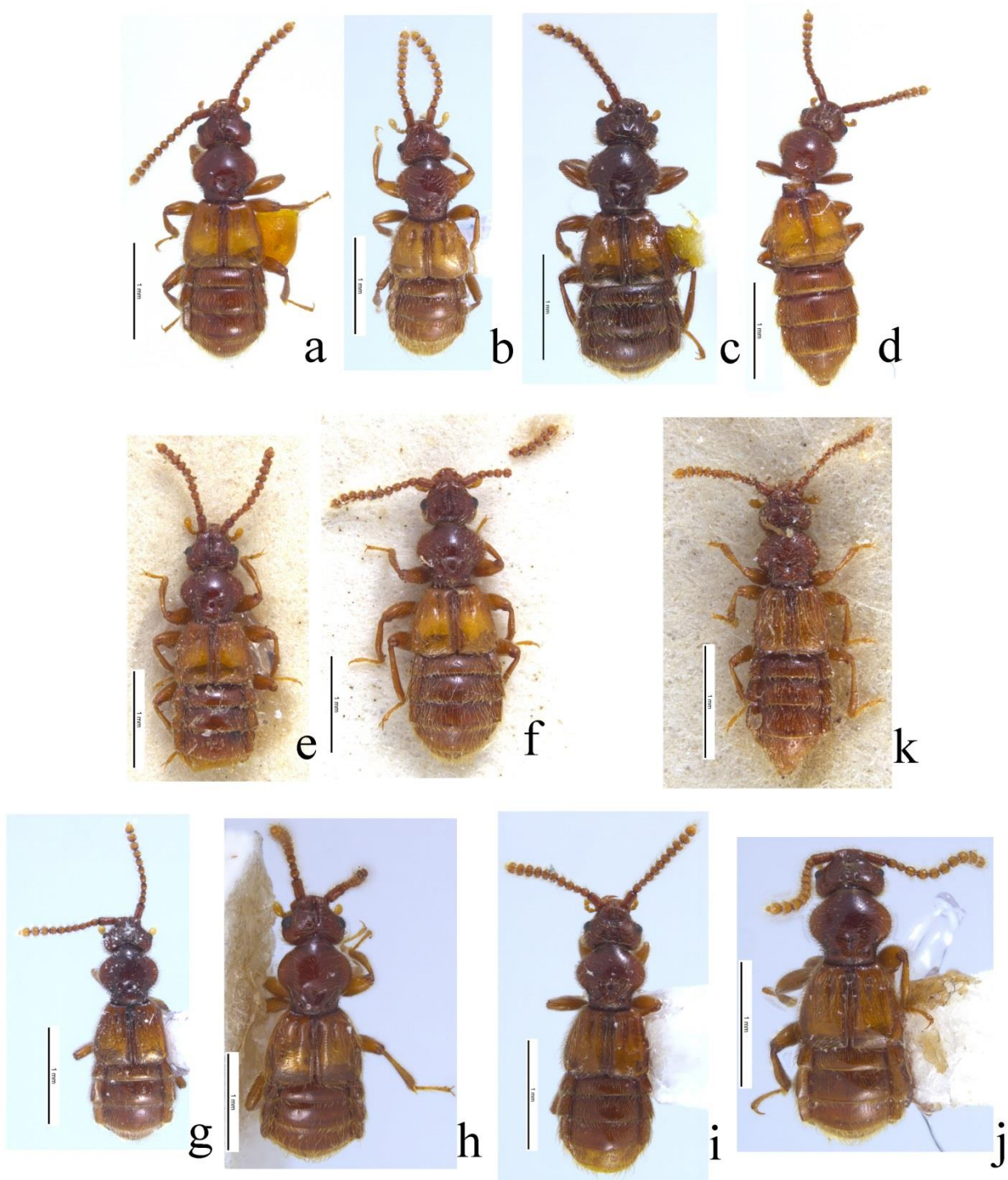


Figure 34. Habitus of group 3, dorsal views. a) *Sagola bifida* Broun; b) *S. latistriata* Broun; c) *S. sp. nov. 5*; d) *S. sp. nov. 5-2*; e) *S. sp. nov. 5-3*; f) *S. sp. nov. 5-4*; g) *S. sp. nov. 5-7*; h) *S. sp. nov. 5-8*; i) *S. sp. nov. 5-9*; j) *S. sp. nov. 5-10*; k) *S. sp. nov. 5-11*; Scale bars = 1 mm.

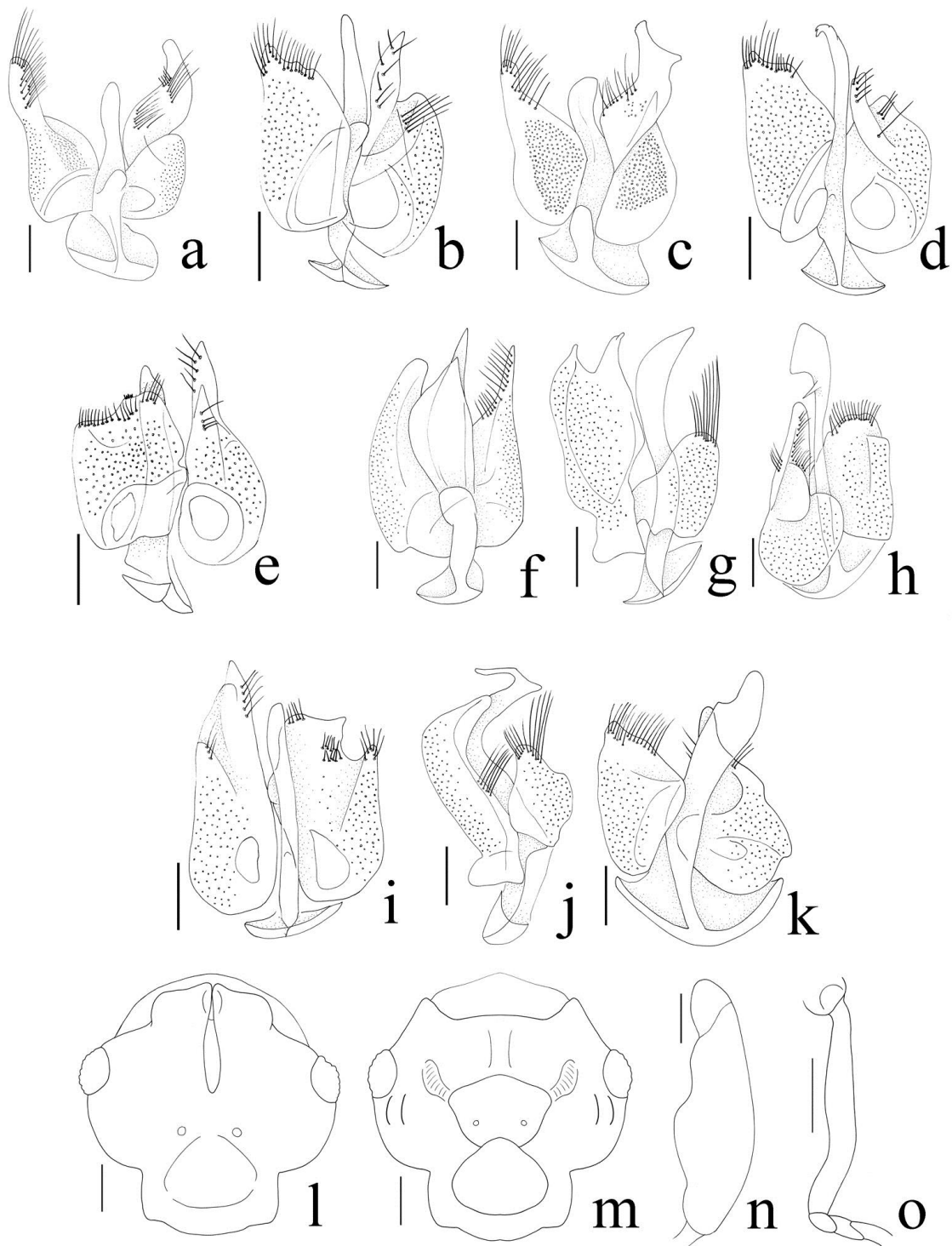


Figure 35. Aedeagus of group 3, dorsal view. a) *Sagola bifida* Broun; b) *S. latistriata* Broun; c) *S. sp. nov. 5*; d) *S. sp. nov. 5-2*; e) *S. sp. nov. 5-3*; f) *S. sp. nov. 5-4*; g) *S. sp. nov. 5-7*; h) *S. sp. nov. 5-8*; i) *S. sp. nov. 5-9*; j) *S. sp. nov. 5-10*; k) *S. sp. nov. 5-11*. Male *S. latistriata* Broun. l) dorsal head; m) ventral head; n) mid-femur, lateral view; o) mid-tibia, lateral view; Scale bars = 0.1 mm.

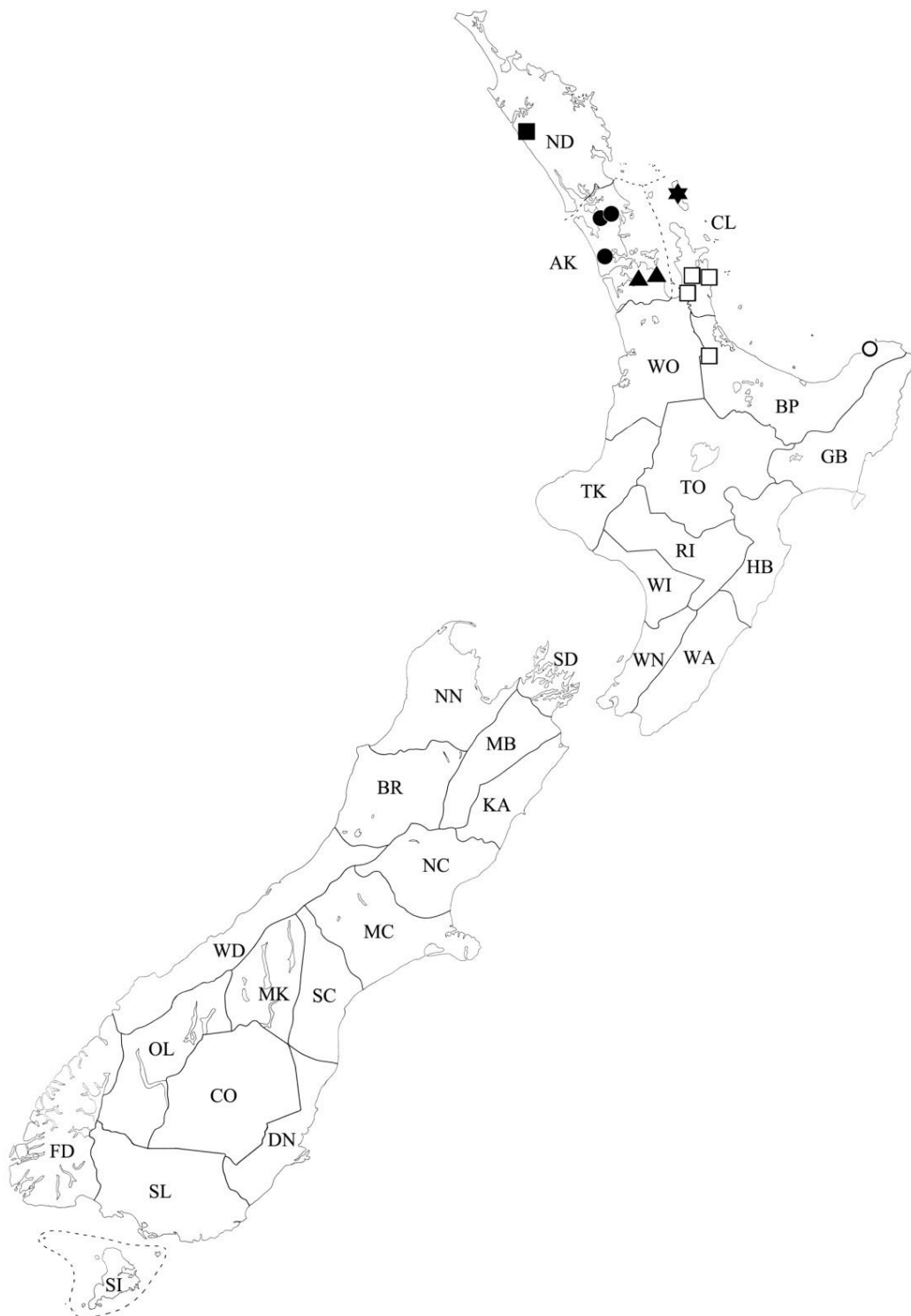


Figure 36. Locations where *Sagola bifida*, *S. latistriata*, *S. sp. nov. 5*, *S. sp. nov. 5-2*, *S. sp. nov. 5-3* and *S. sp. nov. 5-4* specimens have been collected in New Zealand. *S. bifida*: black circles; *S. latistriata*: triangles; *S. sp. nov. 5*: black square; *S. sp. nov. 5-2*: star; *S. sp. nov. 5-3*: white circle; *S. sp. nov. 5-4*: white squares.

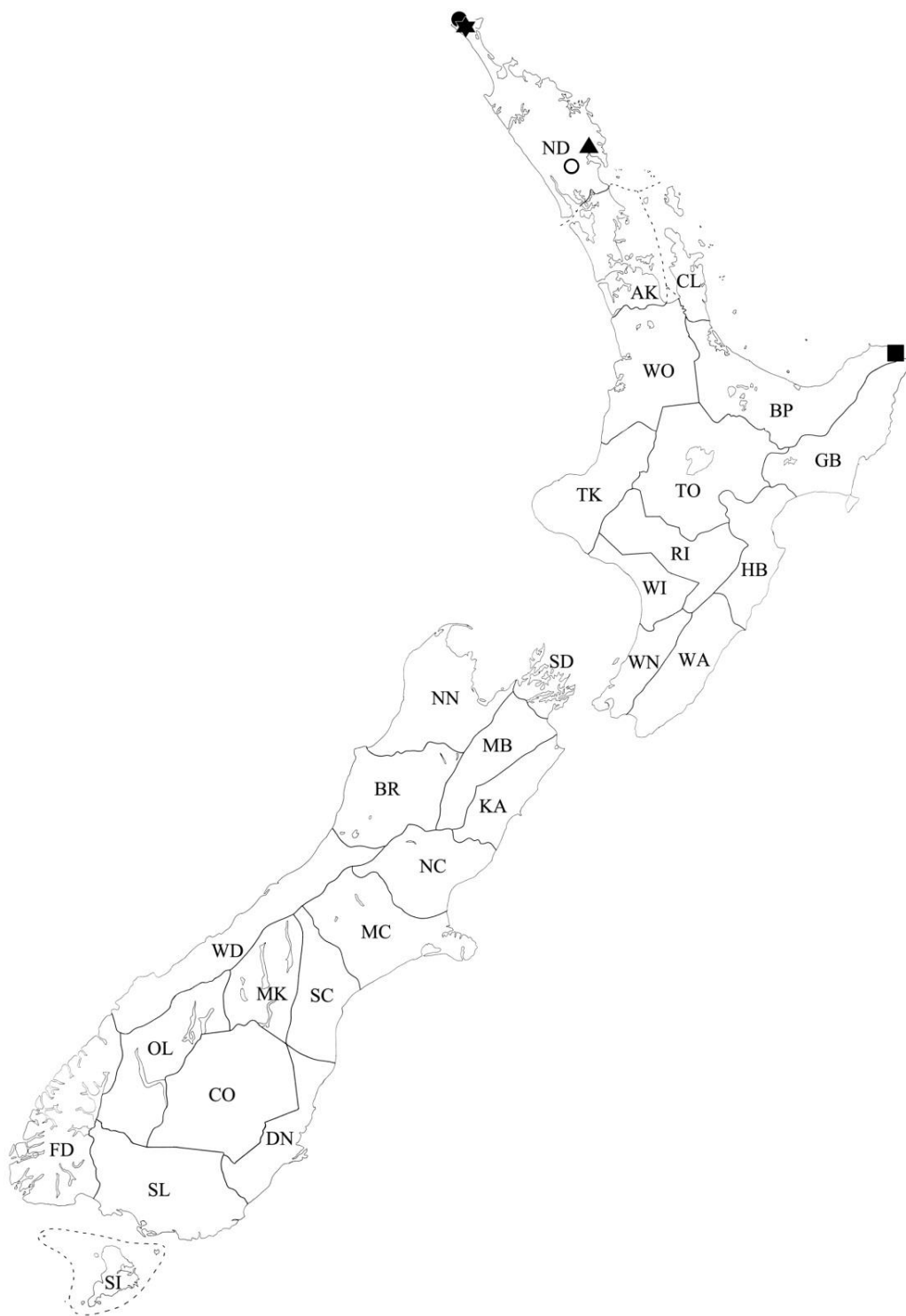


Figure 37. Locations where *Sagola* sp. nov. 5-7, *S. sp. nov. 5-8*, *S. sp. nov. 5-9*, *S. sp. nov. 5-10* and *S. sp. nov. 5-11* specimens have been collected in New Zealand. *S. sp. nov. 5-7*: black circle; *S. sp. nov. 5-8*: triangle; *S. sp. nov. 5-9*: black square; *S. sp. nov. 5-10*: star; *S. sp. nov. 5-11*: white circle.

Group 4 (7 species)

Key to species of *Sagola* group 4

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Body large, >2.9 mm; mid-tibia not bent; median lobe of genitalia S-shaped (Figure 39a).....*Sagola* sp. nov.7
- 1'. Body smaller, <2.8 mm; mid-tibia bent; median lobe of genitalia straight or bent as 90°.....2
- 2 (1). Antennomeres 4–11 bearing tubercles; fore-tibia with semicircular depression...*S.* sp. nov.8
- 2'. Antennomeres without tubercles; fore-tibia without depression.....3
- 3 (2). Apical lobe of genitalia bird head or umbrella-shaped.....4
- 3'. Apical lobe of genitalia blunt.....5
- 4 (3). Apical lobe of genitalia bird head-shaped; right paramere without minor lobe (Figure 39d).....*S.* sp. nov.27-1
- 4'. Apical lobe of genitalia umbrella-shaped; right paramere with minor lobe (Figure 39e).....*S.* sp. nov.27-3
- 5 (3). Median lobe slender, approximately 3 times longer than wide; left paramere U-shaped (Figure g).....*S.* sp. nov.27-5
- 5'. Median lobe slender, at least 4 times longer than wide; left paramere L-shaped.....6
- 6 (5). Right paramere with two acute lobes (Figure 39c).....*S.* sp. nov.27
- 6'. Right paramere with arm shaped lobe and two acute lobes (Figure 39f).....*S.* sp. nov.27-4

Diagnosis. The members of group 4 may be separated from other *Sagola* groups by the following combination of characters: body length 2.2–3.1 mm; antennomere 1 approximately 2 times longer than wide with dull surface; gular of male head with transverse depression with blunt process in middle (Figure 39i); fore-femur with semicircular depression; abdominal tergites IV–VI with discal carinae; present on North Island, not known from South Island (Figures 40–41).

Sagola sp. nov. 7

Type Material. Holotype. New Zealand: Northland (ND): 1♂, “NEW ZEALAND: ND: Mangataipa Scen. Res., near Mangamuka Bridge, 20m, 29 xi-5 xii 1984, mixed hardwood forest, A. Newton/M. Thayer 695, berl., leaf & log litter, forest floor”. **Paratypes (n=11; 8 males, 3 female).** **New Zealand: Northland (ND):** 2♂♂1♀ (1♂1♀, slide-mounted), Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 683, window trap, FIT (FMNH); Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 683, carrion (squid) trap (FMNH); 2♂♂1♀, Waipoua SF, 100m, 17 III 1978, S. Peck, J. Peck, under *Agathis* log on bark (NZAC); 3♂♂, Waipoua SF, Waipoua Stream, 16–21 III 1978, 70m, S. Peck, J. Peck, Kauri forest, frass under bark (FMNH); 3♂♂, Te Paki Trig, 23 XI 1982, G. Kuschel, sifted litter and decayed wood 82/116 (NZAC); 1♂, Waipoua SF, Wairau Summit, 40m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 687, FIT & window trap (FMNH); 1♂, Waipoua SF, Kauri Ricker tr. 100m, 11–15 IV 1980, kauri-podocarp-broadleaf, A. Newton, M. Thayer, pyrethrin-fogging fungusy log (FMNH).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: larger body, length 2.9–3.1 mm; antennomeres 4–10 with tubercles;

triangular head with plat ventral temporal lobe; shapes of antennomeres and genitalia unique to species.

Description. Length 2.9–3.1 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 38a). *Head.* Male head triangular, widest across temples (Figure 38a), temple of male head lobed and flat ventrally. Female head rectangular, widest across eyes. Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3 subquadrate, 4 elongate, 5–10 subquadrate, 4–10 with tubercles. Frontal sulcus reaching midpoint of eye from frontal fovea. Anterior frontal fovea present and round. Posterior frontal fovea present and round. Eye small and prominent, one-third in male, one-fourth in female length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38a). Meso- and metathorax trapezoidal, longer than wide. Hind wings well developed. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, bent into S-shaped (Figure 39a). Phallobase of median lobe symmetrical and rectangular (Figure 39a). Paramere asymmetrical, right paramere elongate (Figure 39a).

Distribution. Northland (ND) (Figure 40: black circles).

Habitat. Most specimens of this species were collected using window and flight intercept traps, or by sifting leaf and log litter in kauri, broadleaf, hardwood and podocarp forests. One specimen collected using a carrion (squid) trap.

Sagola sp. nov. 8

Type Material. Holotype. New Zealand: Auckland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: ND: Omahutu S.F., Kauri Res. 10 X 1974, J.C. Watt litter 74/81”. **Paratypes (n=33; 22 males, 11 females). New Zealand: Northland (ND):** 2♂♂, Waipoua SF, Kauri Ricker Tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 684, berl., leaf & log litter, forest floor (FMNH, DSC); 1♂, Waipoua SF, Kauri Ricker Tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 684, berl., FIT & window trap (FMNH); 1♂1♀, Waipoua SF, 1.7km nw Waikohatu Stream bridge, 380m, 28 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer (FMNH); 1♂, Waipoua SF, Wairau Summit 400m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer, FIT & window trap (FMNH); 1♀, Waipoua SF, Toronui Tr., 150m, 13 IV 1980, kauri-podocarp-broadf.-nikau palm forest, A. Newton, M. Thayer, berl., leaf & log litter, forest floor (FMNH); 2♂♂, Te Pahi Trig, 23 XI 1982, G. Kuschel, sifted litter and decayed wood 82/116 (NZAC); 1♂, Waipoua SF, Wairau Stm, 390m, 15 IV 1980, J.C. Watt, sifted litter 80/51 (NZAC); 1♂, Waipoua Stm, 100m, 19 III 1978, S.B. Peck, litter (NZAC); 1♂, Waipoua SF, Toronui Tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd., A. Newton, M. Thayer 685, berl., leaf & log litter, forest floor (DSC); 1♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 689, FIT & window trap (FMNH); 1♂, Waipoua SF, Wairau Summit, 387m, 11–14 IV 1980, podocarp-broadleaf, A. Newton, M. Thayer, pitfall trap (FMNH); 1♂, Waipoua SF, Toatoa Tr., 270m, 12–15 IV 1980, toatoa-kauri-podocarp-broadf., A. Newton, M. Thayer, berl., leaf & log litter, forest floor (FMNH); 1♂, Mangamuka Walk, 28 VII–1 VIII 1998, R. Leschen, R. Hoare, FIT 223, 36°11'S, 173°28'E (NZAC); 1♂, Above Hihi, 6 I 1969, K. Wise, juvenile Kahikatea (NZAC); 1♂, Puketi SF, 21 I 1972, G.W. Ramsay, litter 72/56 (NZAC); 1♂, Waipoua SF, 7 XII 1961, G. Kuschel, litter 61/13 (NZAC). **Auckland (AK):** 1♂, Waitakere Range, 260m, Nohoanga Scenic Reserve, 23 XI–8 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 679, FIT & window trap (FMNH); 1♂2♀♀

(1♀, slide-mounted), Waitakere Range, 260m, Nohoanga Scenic Reserve, 8 XII 1984–25 I 1985, hdwd.-podocarp forest, A. Newton, M. Thayer 679, FIT & window trap (1♂1♀, FMNH; 1♀, DSC); 1♀, Waitakere Range, 260m, Nohoanga Scenic Reserve, 23 XI 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 679, berl., leaf & log litter, forest floor (FMNH); 3♀♀, Waitakere Range, Cascade-Kauri Park, up. Kauri Tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd., A. Newton, M. Thayer, FIT & window trap (FMNH); 1♂, Huia, 150m, Twin Peaks Ridge, 1 V 1981, B.M. May, at roots of *Metrosideros robusta* (NZAC); 1♂, Goldie Bush Scenic Res., Mokoroa Falls Tr., 6km W Waitakere, 28 III 2010, 106m, D.S. Chandler, kauri & podocarp leaf litter (DSC); 1♂, Kohukohunui, Hunua Ra, 600m, 30 III 1974, G. Kuschel, litter 74/20 (NZAC); 1♀, Waitakere Ra., Nohoanga Scenic Res., 260m, 36.57°S, 174.35°E, 23 II 1987, hardwood-podocarp forest, A. Newton, M. Thayer 836, FMHD#87-271, berl., frond litter at base of tree ferns (FMNH); **Waikato (WO):** 1♀ (slide-mounted), Pirongia Forest Park, Mahaukura Track (above end Grey Rd.), 270m, 37°58.218'S, 175°06.523'E, 18 XI–27 XII 2005, mixed broadleaf forest, FMHD#2005-009, FIT, A. Newton, M. Thayer, et al., ANMT site 1142 (FMNH); 1♀, Waitomo, Maori L, Tumutumu Rd, 24 V 1983, J.C. Watt, litter and soil 83/60 (NZAC).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.2–2.5 mm; antennomeres 4–10 with tubercles; male head bluntly triangular, ventral surface of head with short carinae from posterior point of eyes; male fore-tibia with semicircular depression and mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description. Length 2.2–2.5 mm. Body brown, antenna and maxillary palpi paler, legs and elytra yellowish brown (Figure 38b). *Head.* Male head as long as wide, widest across eyes, ventral surface of head with short carina from hind point of eyes, as long as eye (Figure 39h). Antennomere 1 approximately 2 times longer than wide, 2 –3 transverse, 4 longer than wide, 5 subquadrate, 9–10 transverse, 4–10 with tubercles. Frontal sulcus deep, reaching beyond eye from frontal fovea (Figure 39h). Anterior frontal fovea present and round (Figure 39h). Posterior frontal fovea present and elongate (Figure 39h). Eye large and prominent, one-half temple in male (Figure 39h), one-third length of temple in female. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male fore-tibia with semicircular depression. Elytra rectangular (Figure 38b). Meso- and metathorax trapezoidal, longer than wide. Hind wings well developed. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe divided deeply (Figure 39b). Phallobase of median lobe asymmetrical and triangular (Figure 39b). Paramere asymmetrical, right paramere larger than left (Figure 39b).

Distribution. Auckland (AK), Northland (ND), Waikato (WO) (Figure 40: triangles).

Habitat. Most specimens of this species were collected using window, flight intercept, and pitfall traps or by sifting leaf and log litter in kauri, broadleaf, hardwood and podocarp forests. A few specimens were found at the bases of *Metrosideros robusta* and tree ferns.

Sagola sp. nov. 27

Type Material. Holotype. New Zealand: Taupo (TO): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New ZEALAND TO Waituhi Saddle 16 Nov 1983 C.F. Butcher”, “Leaf litter, moss and rotten wood 83/112”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 male). New Zealand: Gisborne (GB):** 1♂, Urewera N.P., Waikaremoana Rd., S end Matanunui Ridge, 720m, 38°44.404'S,

177°05.806'E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-118, berl., leaf & log litter, M. Thayer, A. Solodovnikov, ANMT site 1149 (FMNH).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.3–2.8 mm; male head bluntly triangular, widest across temples, ventral temporal lobe flat; male mid-femur weakly depressed at base and mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.3–2.8 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 38c). *Head.* Head bluntly triangular, widest across temples, ventral temporal lobe flat (Figure 38c). Antennomere 1 approximately 2 times longer than wide, 2–7 subquadrate, 8–10 weakly transverse. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38c). Meso- and metathorax trapezoidal, longer than wide. Male mid-femur weakly depressed at base. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus.* Median lobe blunt (Figure 39c). Phallobase of median lobe asymmetrical and triangular (Figure 39c). Paramere asymmetrical, left paramere L-shaped, right paramere with thick setae at tip (Figure 39c).

Distribution. Gisborne (GB), Taupo (TO) (Figure 40: black squares).

Habitat. Specimens of this species were collected by sifting leaf, moss, rotten wood and log litter in broadleaf and podocarp forests.

Sagola sp. nov. 27-1

Type Material. Holotype. New Zealand: Taupo (TO): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND TO Waituhi Saddle 16 Nov 1983 C.F. Butcher”, “Leaf litter, moss and rotten wood 83/112”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 male). New Zealand: Gisborne (GB):** 1♂, Urewera NP, Waikaremoana Rd., 4 end Matanunui Ridge, 720m, 38°44.404'S. 177°05.806'E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, FIT, M. Thayer, A. Solodovnikov, ANMT site 1149 (NZAC).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.4–2.7 mm; male head bluntly triangular, widest across temples, ventral temporal lobe flat; male mid-femur weakly depressed at base and mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.4–2.7 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 38d). *Head.* Head bluntly triangular, widest across temples, ventral temporal lobe flat (Figure 38d). Antennomere 1 approximately 2.5 times longer than wide, 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38d). Meso- and metathorax trapezoidal, longer than wide. Male mid-femur weakly depressed at base. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, with bird head like apical lobe (Figure 39d). Phallobase of median lobe asymmetrical and elongate (Figure 39d). Paramere asymmetrical, left paramere elongate, right paramere blunt (Figure 39d).

Distribution. Gisborne (GB), Taupo (TO) (Figure 40: stars).

Habitat. Specimens of this species were collected using flight intercept traps or by sifting leaf, moss, rotten wood litter in broadleaf and podocarp forests.

Sagola sp. nov. 27-3

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Whangae Stm Kawakawa, 14.11.94” The original label does not mention who collected this specimen, but the collector is J.T. Nunn. **Paratypes (2 males). New Zealand: Northland (ND):** 1♂, Waipoua SF, Four Sister, 4 II 1975, S.E. Nicols, litter 75/93 (NZAC); 1♂, Waima Forest, Hauturu Tr., 220–360m, 25 III 1993, J.W. Early, kauri-broadleaf-nikau forest, screen sweep (AMNZ).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.5–2.8 mm; male head bluntly triangular, widest across eyes, ventral surface of head with short carina from hind point of eyes; male mid-femur weakly depressed at base and mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.5–2.8 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 38e). *Head.* Head as long as wide, widest across eyes, ventral head with short carina from hind point of eyes, as long as eye (Figure 38e). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4 elongate, 5–9 longer than wide, 9–10 subquadrate. Frontal sulcus reaching midpoint of eye from end of frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and elongate. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38e). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. Male mid-femur weakly depressed at base. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe elongate with acute minor lobe at base (Figure 39e). Apical lobe of genitalia umbrella shaped (Figure 39e). Phallobase of median lobe asymmetrical and triangular. Paramere asymmetrical, right paramere with minor lobe at tip (Figure 39e).

Distribution. Northland (ND) (Figure 41: black circles).

Habitat. Specimens of this species were collected by sweeping and sifting leaf litter in kauri, broadleaf and nikau forests.

Sagola sp. nov. 27-4

Type Material. Holotype. New Zealand: Waikato (WO): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND WO Mt Karioi near base 11 Oct 1981 C.F. Butcher”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”, “Litter 81-96”. **Paratype (1 male). New Zealand: Auckland (AK):** 1♂, Hunua Range reg. Park, Kohukohunui Tr. nr Mine Rd., 475m, 37°02.396’S 175°11.251’E, 17 XI–28 XII 2005, broadleaf-podocarp forest, numerous tree fern, FMHD#2005-001, FIT, A. Newton, M. Thayer et al., ANMT site 1140 (FMNH).

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.4–2.7 mm; male head bluntly triangular, widest across eyes, ventral surface of head with a pair of short carinae on temple; male mid-femur weakly depressed at base; mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.4–2.7 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 38f). *Head.* Head as long as wide, widest across eyes (Figure 38f), ventral surface of head with a pair of short carinae on temple. Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and oval. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38f). Meso- and metathorax trapezoidal, longer than wide. Male mid-femur weakly depressed at base. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus.* Median lobe blunt (Figure 39f). Phallobase of median lobe asymmetrical and triangular (Figure 39f). Paramere asymmetrical, left paramere L-shaped, right paramere 3 lobes with thick setae at tip (Figure 39f).

Distribution. Waikato (WO) (Figure 41: triangles).

Habitat. Specimens of this species collected using flight intercept traps or by sifting litter in broadleaf and podocarp forests with tree ferns.

Sagola sp. nov. 27-5

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Maraenui Bay of Plenty.”, “Coll. A.E.Brookes. May1928.”, “A.E.Brookes Collection”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from other species of group 4 by the following combination of characters: smaller body, length 2.4 mm; male head triangular, widest across temples, ventral temporal lobe flat; male mid-femur weakly depressed at base and mid-tibia bent; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.4 mm. Body brown and antenna, elytra, legs, maxillary palpi yellowish brown (Figure 38g). *Head.* Head triangular, widest across temples, ventral temporal lobe flat (Figure 38g). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–8 subquadrate, 9–10 weakly transverse. Frontal sulcus deep and reaching midpoint of eye from frontal rostral lobes. Anterior frontal fovea present and round. Posterior frontal fovea present and oval. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 38g). Meso- and metathorax trapezoidal, longer than wide. Male mid-femur weakly depressed at base. Male mid-tibia bent. *Abdomen.* Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus.* Median lobe rectangular and blunt (Figure 39g). Phallobase of median lobe asymmetrical and triangular (Figure 39g). Paramere asymmetrical, left paramere U-shaped, right paramere divided, minor lobe with tubercle and thick setae at tip (Figure 39g).

Distribution. Bay of Plenty (BP) (Figure 41: black square).

Habitat. Unknown.

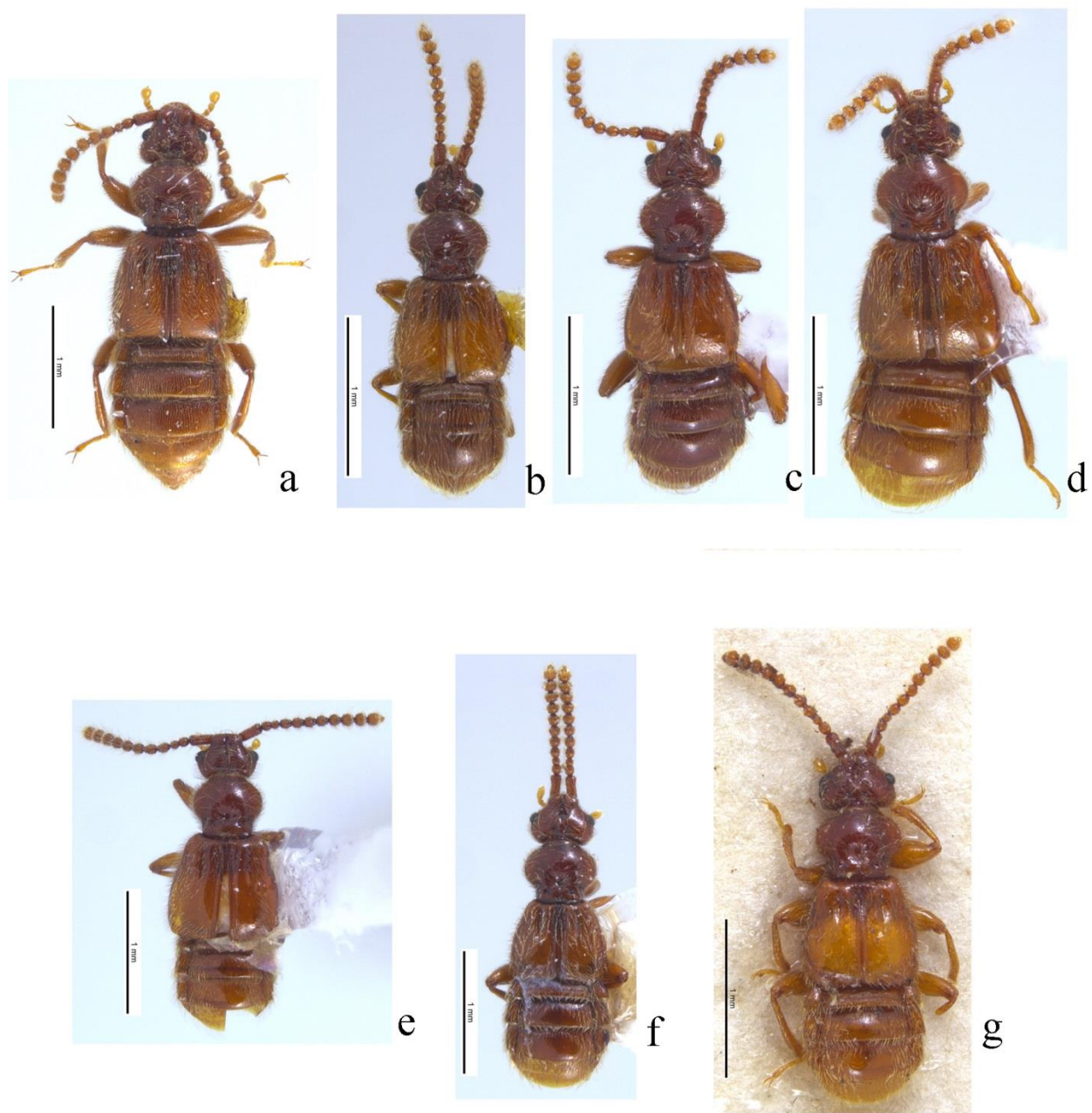


Figure 38. Habitus of group 4, dorsal views. a) *Sagola* sp. nov. 7; b) *S. sp. nov.* 8; c) *S. sp. nov.* 27; d) *S. sp. nov.* 27-1; e) *S. sp. nov.* 27-3; f) *S. sp. nov.* 27-4; g) *S. sp. nov.* 27-5; Scale bars = 1 mm.

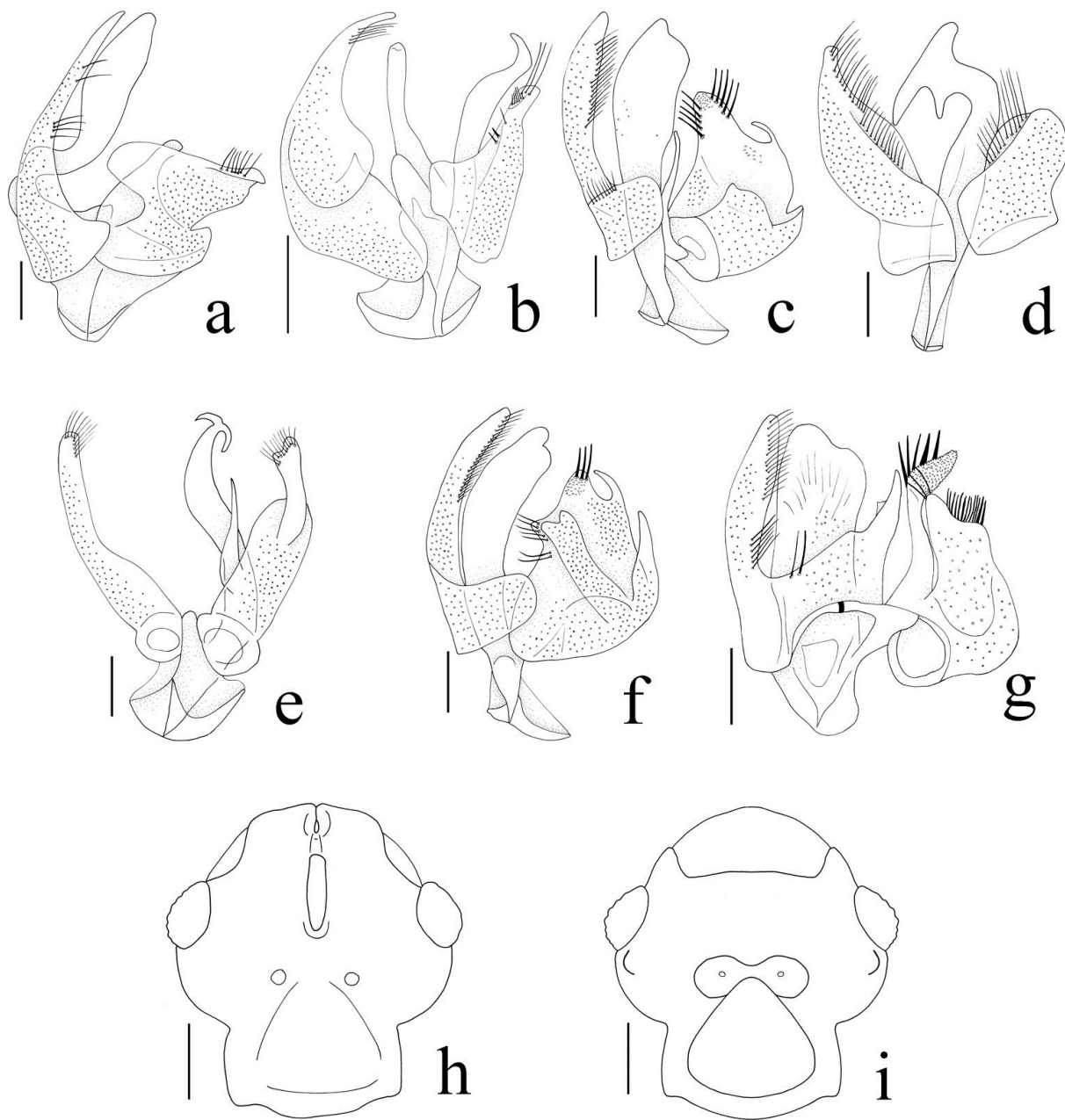


Figure 39. Aedeagus of group 4, dorsal view. a) *Sagola sp. nov. 7*; b) *S. sp. nov. 8*; c) *S. sp. nov. 27*; d) *S. sp. nov. 27-1*; e) *S. sp. nov. 27-3*; f) *S. sp. nov. 27-4*; g) *S. sp. nov. 27-5*. Scale bars = 0.1 mm. *S. sp. nov. 8*. h) dorsal head; i) ventral head; Scale bars = 0.1 mm.

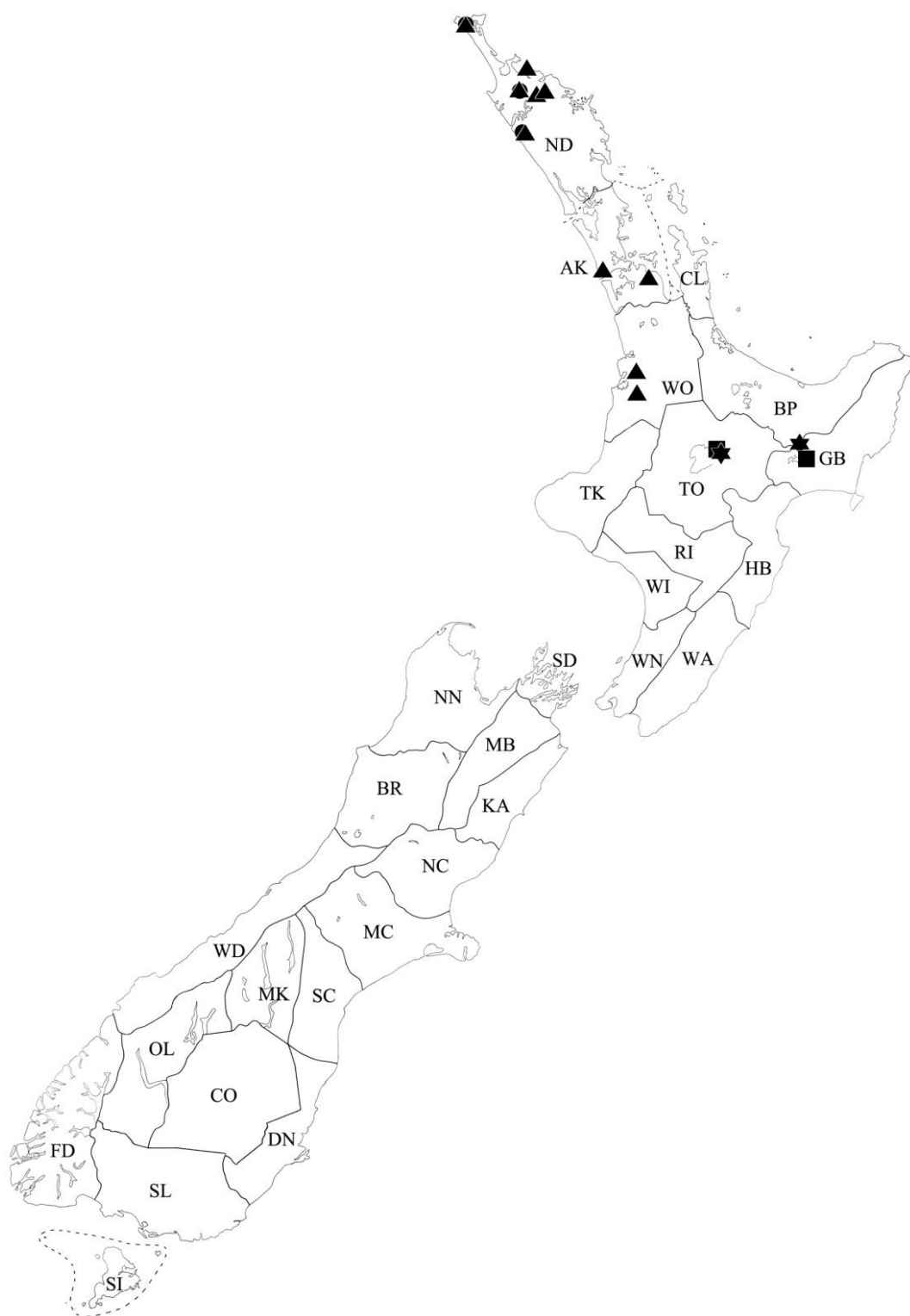


Figure 40. Locations where *Sagola* sp. nov. 7, *S. sp. nov. 8*, *S. sp. nov. 27* and *S. sp. nov. 27-1* specimens have been collected in New Zealand. *S. sp. nov. 7*: black circles; *S. sp. nov. 8*: triangles; *S. sp. nov. 27*: black square; *S. sp. nov. 27-1*: stars.

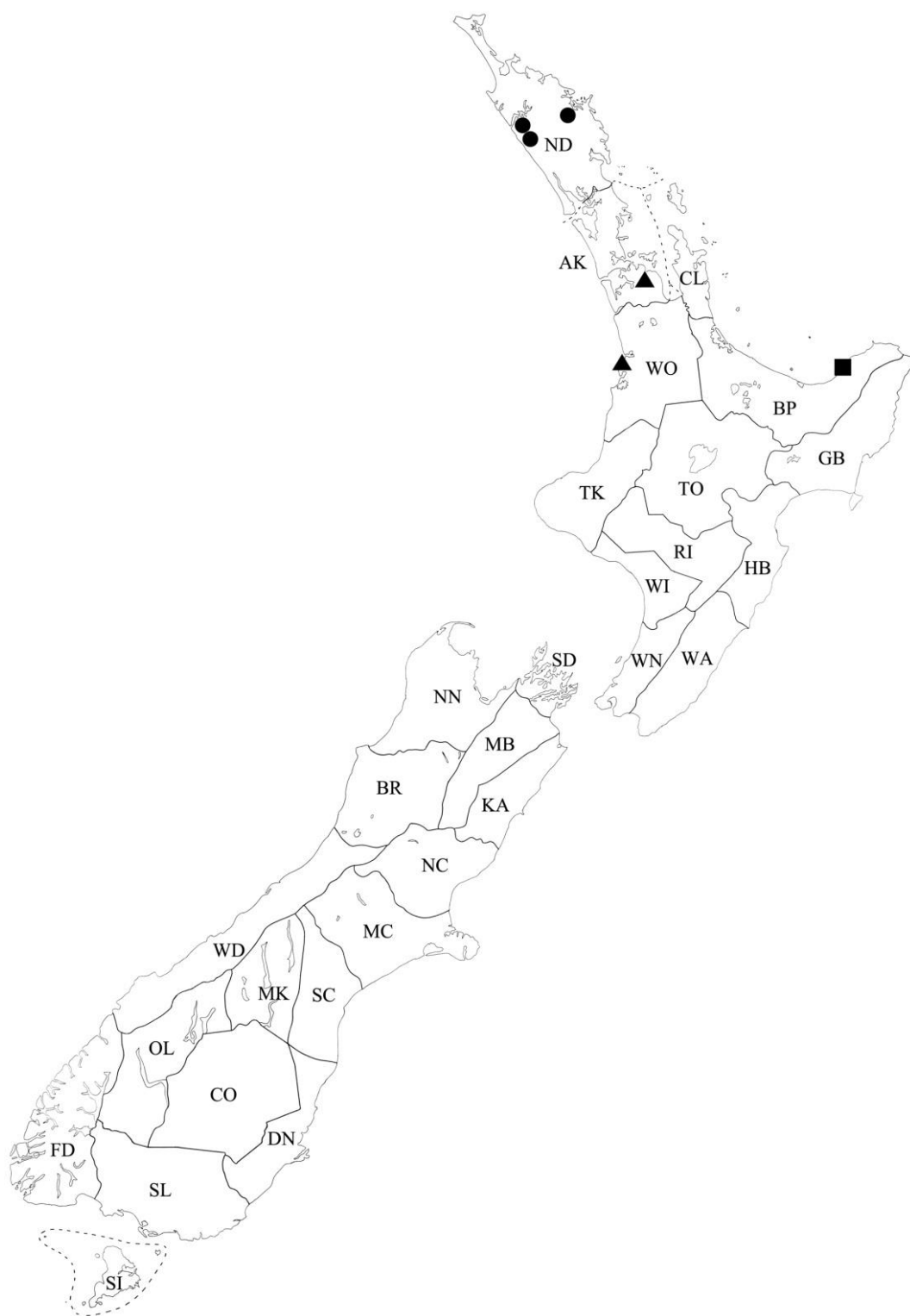


Figure 41. Locations where *Sagola* sp. nov. 27-3, *S. sp. nov. 27-4* and *S. sp. nov. 27-5* specimens have been collected in New Zealand. *Sagola* sp. nov. 27-3: black circles; *S. sp. nov. 27-4*: triangles; *S. sp. nov. 27-5*: black square.

Group 5 (4 species)

Key to species of *Sagola* group 5

The key is based on genitalia because most specimens are indistinguishable based on external morphology.

- 1. Median lobe of genitalia without minor lobe; broader paramere without branch from base (Figure 42e).....*Sagola pulchra* Broun
- 1'. Median lobe of genitalia with minor lobe; broader paramere with one or two branches from base.....2
- 2 (1). Branches of apical lobe of genitalia approximately equal.....3
- 2'. Apical lobe of genitalia with longer major branch and shorter minor branch (Figure 42h).....*S. sp. nov.* 25-3
- 3 (2). Apical lobe of genitalia with U-shaped emargination; right paramere with 2 branches from base (Figure 42f).....*S. sp. nov.* 25-1
- 3'. Apical lobe of genitalia with V-shaped emargination; left paramere with 1 branch from base (Figure 42g).....*S. sp. nov.* 25-2

Diagnosis. The members of group 5 may be separated from other *Sagola* groups by the following combination of characters: large body length 3.2–4.2 mm; antennomere 1 approximately 2.5 times longer than wide with dull surface; gular of male head with transverse depression (Figure 42j); ventral surface of male head with a pair of processes laterally (Figure 42j); hind wings reduced to small pads; fore- and mid-femur with semicircular depression (Figure 42k); male mid-femur at least twice broader than tibia (Figure 42k); male abdominal tergite IV without microtrichial patch; abdominal tergites IV–VI with discal carinae; female abdominal ventrite VIII triangularly produced posteriorly (Figure 42l), ventrite IX deeply emarginate posteriorly (Figure 42m); present on North Island, not known from South Island.

Sagola pulchra Broun

Sagola pulcher Broun, 1880: 137. Schaufuss, 1888: 85. Raffray, 1893: 31; 1904: 497; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola robusta Broun, 1893b: 1420. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Type Material Examined. Holotype: New Zealand: Coromandel (CL): ♀, glued on rectangular card, “Type” [red label, printed]; “250” [white label, printed]; “Tairua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola pulcher*. ♂.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola robusta*: New Zealand: Auckland (AK):** 1♂, glued on rectangular card, “2468. ♂” [white label, handwritten]; “Hunua” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*sagola robusta*. ♂” [white label, handwritten].

Additional Material (n= 16; 7 males; 9 female). New Zealand: Bay of Plenty (BP): 1♂, Mt. Te Aroha, 2.5km SE Te Aroha, 390m, Tui Road at Tui Creek, Mt. Domain Tr., 25 II 2010, D.S. Chandler, sift forest litter & old epiphyte clumps; 1♂, Mt. Te Aroha, 500–1000m, 14 X 1979, J.S. Dugdale; 2♂♂, Kaimai, 18 I 1931, A.E. Brookes collection; 1♂5♀♀, Tapapa Tukorehe Res., 300m, 25 III 1978, S. Peck, J. Peck, berl., litter; 1♀, Waiaroho, 17 IX 1992, G.

Hall, R.C. Henderson, sifted rotten wood 92/54; 1♀, Waenga, NZMS 260 Y14 652913, 28 I 1993, R.M. Emberson, mixed broadleaf nikau forest litter LCNZ 93/3; 1♀, Waioeka Gorge, 14 IV 1987, J. Nunn, with *Mesoponera*; **Coromandel (CL)**: 1♀, Coromandel, 350m, 23 III 1977, G. Kuschel, decayed wood; **Waikato (WO)**: 1♂, Maungatautari, 17 XII 2007–20 I 2008, D.H. Watts, Pitfall trap.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Redescription. Length 3.5–4.1 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 42a). *Head.* head transverse, widest across temples (Figure 42a). Antennomere 1 approximately 2.5 times longer than wide, 2–3 longer than wide, 4–5 elongate, 6–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep and wide, reaching midpoint of eye from frontal fovea. Anterior frontal fovea present and extremely small. Posterior frontal fovea present and round. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 42a). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe longer than parameres (Figure 42e). Phallobase of median lobe symmetrical and rectangular (Figure 42e). Paramere asymmetrical, right paramere broader and with slender branch at tip (Figure 42e).

Type locality. Tairua (CL), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Waikato (WO) (Figure 43: black circles).

Habitat. Most specimens of this species were collected using pitfall traps or by sifting leaf litter or rotten wood in kauri or broadleaf forests. One specimen collected with mesoponeran ants.

Comments. Specimens of *S. pulchra* are difficult to separate from those of other species externally, but the shapes and sizes of the antennomeres and genitalia are diagnostic. The type specimens of *S. robusta* share these diagnostic characters, and these species have been collected at or near the type locality. For these reasons, I have placed *S. robusta* in synonymy with *S. pulchra*.

Sagola sp. nov. 25-1

Type Material. Holotype. New Zealand: Bay of Plenty (BP): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, BP Te Koau, 120m 29 Apr 1993 J.S. Dugdale Litter 93/101”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=8; 5 males, 3 females). New Zealand: Bay of Plenty (BP):** 1♂, Te Koau, Hovells, Watching Dog, 240m, 24 X 1992, J.S. Dugdale, litter 92/78 (slide mounted, NZAC); 1♂, Hicks Bay, 20 IX 1992, G.M. Barker, J.S. Dugdale, under rotten logs and stones (NZAC); 1♂, Lottin Pt Rd., Waemga Bush, 16 IX 1992, R.C. Henderson, sifted litter 92/51 (NZAC); 1♀ (slide-mounted), Lottin Pr Rd., Waenga Bush, 29 I 1993, J.I. Townsend, sifted litter 93/7 (NZAC); 1♂, Te Araroa, 28 III 1991, J. Nunn (JTN); 1♀, Te Koau, Te Araroa, 4 II 1993, J.I. Townsend, J. Nunn (JTN); 1♀, Te Koau, Hovells, Watching Dog tr., 260m, 31 I 1993, J.S. Dugdale, litter 93/11 (NZAC); 1♂, Te Koau, tract to Hovells Watching dog, 160m, 31 I–4 II 1993, J.W. Early, Puriri/nikau forest, yellow pan trap (AMNZ).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 3.2–3.5 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 42b). *Head.* head transverse, widest across temples (Figure 42i).

Antennomere 1 approximately 2.5 times longer than wide, 2–3 longer than wide, 4–5 elongate, 6–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep and wide, reaching midpoint of eye from frontal fovea (Figure 42i). Anterior frontal fovea present and extremely small (Figure 42i). Posterior frontal fovea present and round (Figure 42i). Eye small and prominent, one-third length of temple (Figure 42i). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 42b). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus*. Apical lobe of genitalia U-shaped (Figure 42f). Phallobase of median lobe symmetrical and rectangular (Figure 42f). Paramere asymmetrical, right paramere with 3 branches, 2 from base, 1 at tip (Figure 42f).

Distribution. Bay of Plenty (BP) (Figure 43: triangles).

Habitat. Most specimens of this species were collected using yellow pan traps, or by sifting leaf and log litter or from under long and stones. One specimen was found with ants.

Sagola sp. nov. 25-2

Type Material. Holotype. New Zealand: Gisborne (GB): 1♂, “New Zealand: GB: Lake Waikaremoana 17 I 1972, G.W. Ramsay Litter 72/17”. **Paratypes (3 males). New Zealand: Gisborne (GB):** 3♂♂, same data as holotype (NZAC).

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 3.2–3.5 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 42c). *Head*. head transverse, widest across temples (Figure 42c). Antennomere 1 approximately 2.5 times longer than wide, 2–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep and wide, reaching midpoint of eye from frontal fovea. Fore Anterior frontal fovea present and extremely small. Posterior frontal fovea present and round. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 42c). Meso- and metaventrite trapezoidal, as long as wide. *Aedeagus*. Apical lobe of genitalia V-shaped (Figure 42g). Phallobase of median lobe symmetrical and rectangular (Figure 42g). Paramere asymmetrical, left paramere with 2 branches, from apex and base (Figure 42g).

Distribution. Gisborne (GB) (Figure 43: black square).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 25-3

Type Material. Holotype. New Zealand: Gisborne (GB): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, GB Hikurangi Hut, 260m 4.v.1996 P.Poortman L4459”, “AMNZ 35222 AUCKLAND MUSEUM NEW ZEALAND”.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description. Length 3.2–3.5 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 42d). *Head*. head transverse, widest across temples (Figure 42d). Antennomere 1 approximately 2.5 times longer than wide, 2–3 longer than wide, 4 elongate, 5–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep and wide, reaching midpoint of eye from frontal fovea. Anterior frontal fovea present and extremely small. Posterior frontal fovea present and round. Eye small and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 42d). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus*. Median lobe with blunt lobe at

middle (Figure 42h). Phallobase of median lobe symmetrical and rectangular (Figure 42h). Paramere asymmetrical, right paramere with one branch from base (Figure 42h).

Distribution. Gisborne (GB) (Figure 4: star).

Habitat. Unknown.

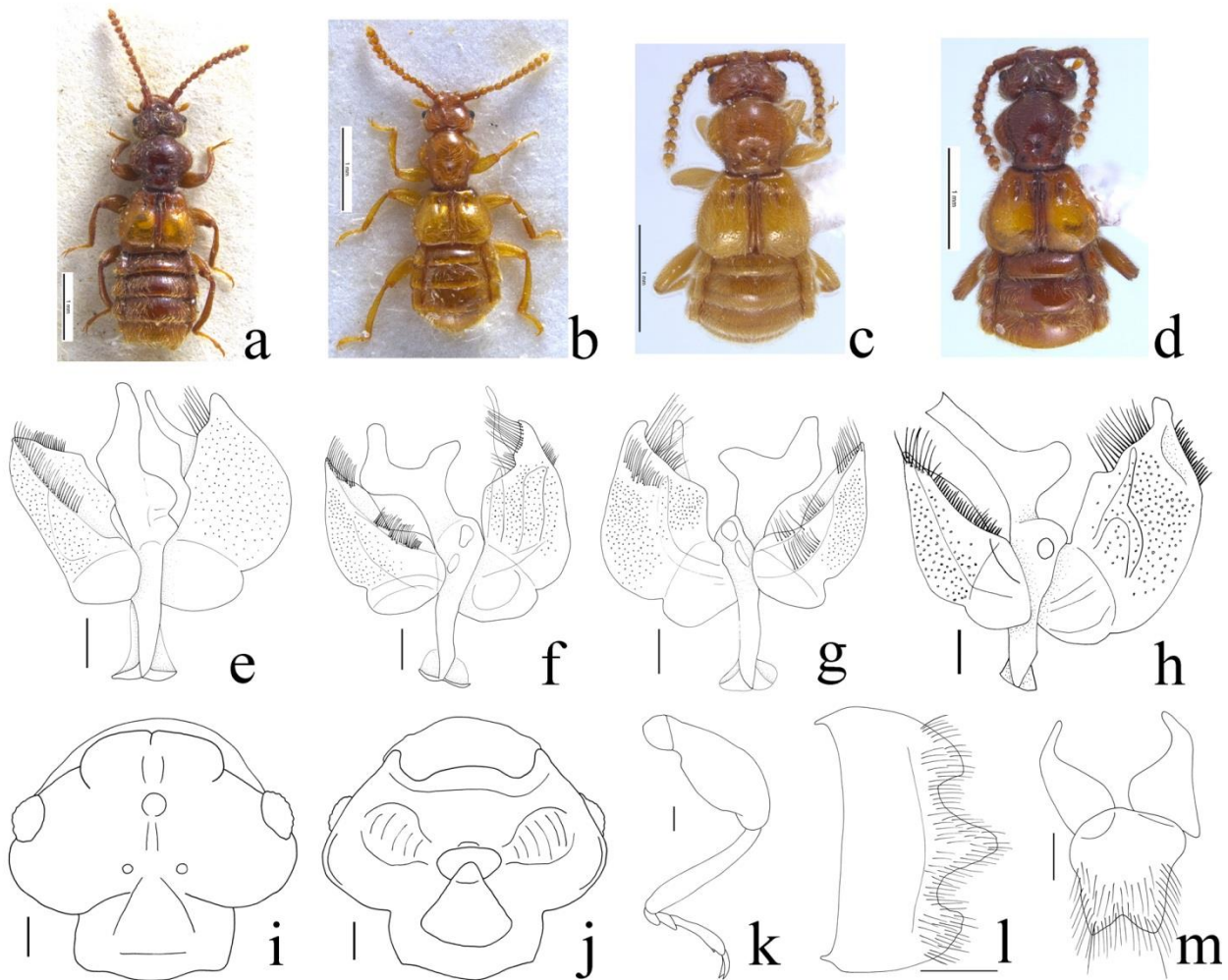


Figure 42. Habitus of group 5, dorsal views. a) *Sagola pulchra* Broun; b) *S. sp. nov. 25-1*; c) *S. sp. nov. 25-2*; d) *S. sp. nov. 25-3*; Scale bars = 1 mm. Aedeagus, dorsal view. e) *S. pulchra*; f) *S. sp. nov. 25-1*; g) *S. sp. nov. 25-2*; h) *S. sp. nov. 25-3*; Scale bars = 0.1 mm. *S. sp. nov. 25-1*. i) dorsal head; j) ventral head; k) mid-leg, lateral view; Scale bars = 0.1 mm. *S. pulchra*. l) female ventrite VII, ventral view; m) female ventrite IX, ventral view; Scale bars = 0.1 mm.

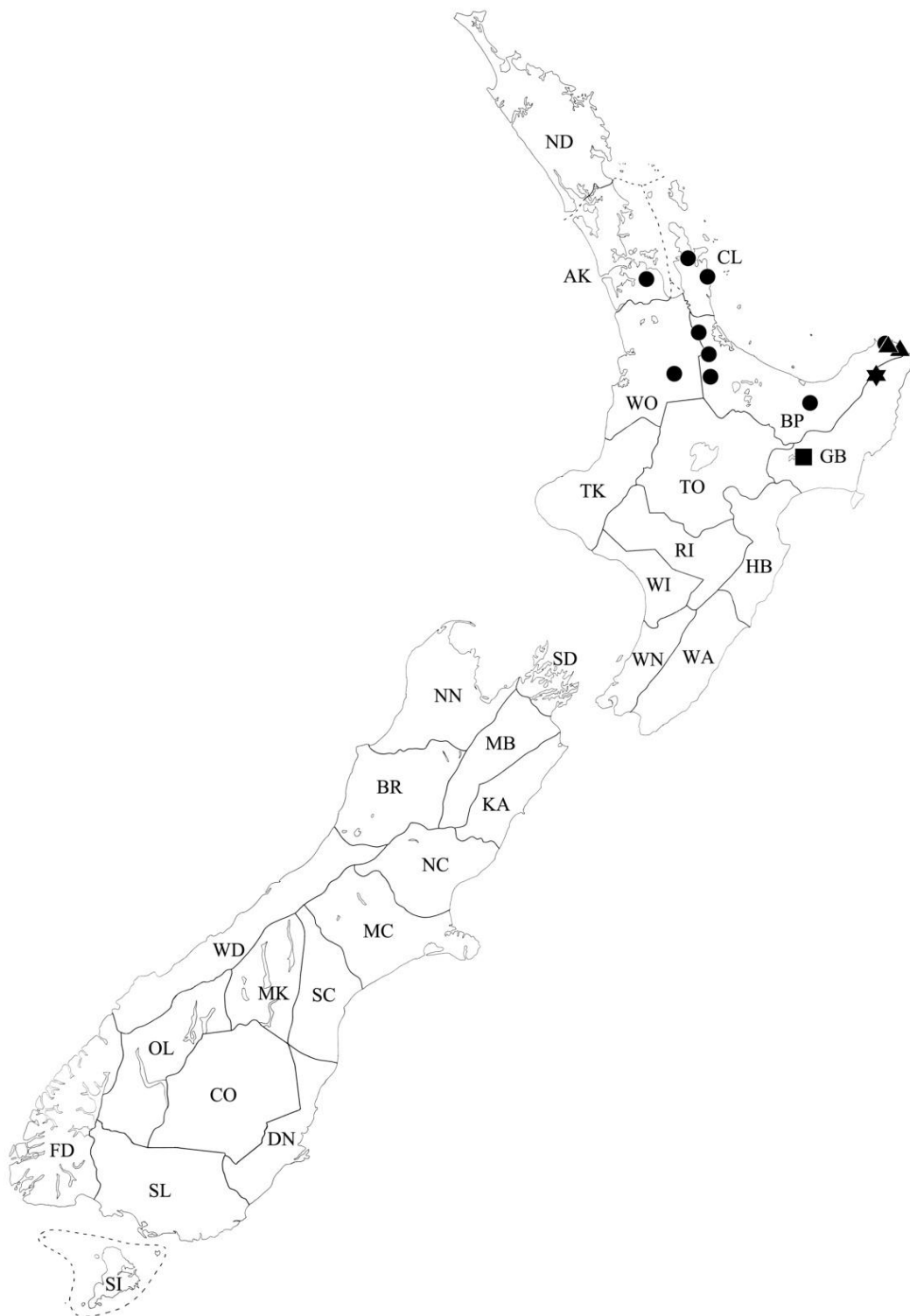


Figure 43. Locations where *Sagola pulchra*, *S. sp. nov. 25-1*, *S. sp. nov. 25-2* and *S. sp. nov. 25-3* specimens have been collected in New Zealand. *S. pulchra*: black circles; *S. sp. nov. 25-1*: triangles; *S. sp. nov. 25-2*: black square; *S. sp. nov. 25-3*: star.

Group 6 (2 species)

Key to species of *Sagola* group 6

1. Head blunt triangular with large eye (Figure 44f); male antennomeres 5–6 enlarged without tubercles.....*Sagola parva* Sharp
1'. Head transverse with small eye (Figure 44b); male antennomeres 4–6 enlarged with distinctive tubercles.....*S. denticollis* Broun

Diagnosis. The members of group 6 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–3.8 mm; antennomere 1 approximately 2.5 times longer than wide with dull surface, male 5–6 enlarged (Figure 44e); gular of male head with round depression (Figure 44g); hind wings well developed; fore-femur with semicircular depression; abdominal tergites IV–VI with discal carinae; present on North Island, not known from South Island (Figure 45).

Sagola parva Sharp

Sagola parva Sharp, 1874: 508. Broun, 1880: 136. Schaufuss, 1888: 85. Raffray, 1893: 25; 1904: 498; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola brevicornis Raffray, 1893: 27; 1893: 6; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Sagola concolorata Broun, 1915: 292. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Sagola fovealis Broun, 1886: 886. Raffray, 1893: 37; 1904: 498; 1911: 6; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Sagola insolens Broun, 1893b: 1051. Raffray, 1904: 498; 1911: 6. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Sagola punctata Broun, 1893b: 1052. Raffray, 1904: 498; 1911: 6; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Sagola rectipes Broun, 1893b: 1051. Raffray, 1904: 498; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Sagola rotundiceps Broun, 1915: 289. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Type Material Examined. Holotype of *Sagola parva*: New Zealand: ♀, glued on rectangular card, “249” [green label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola parva* Cotype. Sharp.” [white label, handwritten]. **Holotype of *Sagola concolorata*: New Zealand: Coromandel (CL):** ♀, glued on rectangular card, “Type” [red label, printed]; “3709. ♂” [white label, handwritten]; “Tairua. Auckland.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♂ *concolorata*.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola fovealis*: New Zealand: Auckland (AK):** 1 ♂, glued on rectangular card, “Type” [red label, printed]; “1577. ♂” [white label, handwritten]; “Waitakerei” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*sagola* ♂ *fovealis*.” [white label, handwritten]. **Syntypes of *Sagola insolens*: New Zealand:**

Auckland (AK): 1♀, glued on rectangular card, “Type” [red label, printed]; “1879” [white label, handwritten]; “♀” [white label, handwritten]; “Howick” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola insolens*” [white label, handwritten]. 1♂, glued on rectangular card, “1879.” [white label, handwritten]; “♂” [white label, handwritten]; “Howick” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola insolens*” [white label, handwritten]. **Holotype of *Sagola punctata*: New Zealand: Coromandel (CL):** 1♀, glued on rectangular card, “Type” [red label, printed]; “1880.” [white label, handwritten]; “Tairua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola punctata*.” [white label, handwritten]. **Holotype of *Sagola rectipes*: New Zealand: Coromandel (CL):** 1♀, glued on rectangular card, “Type” [red label, printed]; “1878.” [white label, handwritten]; “Tairua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola rectipes*” [white label, handwritten]. **Holotype of *Sagola rotundiceps*: New Zealand: Taranaki (TK):** 1♀, glued on rectangular card, “Type” [red label, printed]; “3704.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Stratford. Taranaki.” [white label, handwritten]; “*Sagola* ♂ *rotundiceps*.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (n= 88; 50 males; 38 female). New Zealand: Auckland (AK): 1♂3♀♀, Clevedon Scenic Res., 0.5km N Clevedon, 20m, 19 III 2010, D.S. Chandler, sift forest litter by stream; 1♀, Manurewa, Murphy’s Bush, 2 III 1981, G. Kuschel, rotten wood 81/59; 1♀, Grafton, Gulley, 6 III 2002, J. Nunn; 1♀, Riverhead SF Res., 17–26 XI 1983, P.A. Maddison, Malaise trap; 1♀, Waitakere Ra., Cascade-Kauri Park, up. Kauri tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd., A. Newton, M. Thayer 680, FIT&window trap; 1♂, Symond St. Cemetery, Auckland, 40m, 2–6 IV 2010, L. Masner, yellow pan traps; 1♂, Matuku Res., 45m, 6.5km W Waitakere end of Jonker’s rd., 2–5 IV 2010, L. Masner, yellow pen traps; 1♂, Symonds St. Cemetery, Auckland, 40m, 23 II 2010, D.S. Chandler, sift leaf litter in ravine; 1♂, Hunua Ranges Reg. Park, 7km W Kaiaua Workman Tr., 116m, 27 III 2010, D.S. Chandler, sift leaf litter by stream; 1♂, Auckland, 40m, Auckland Domain, 25 III 2001, S.E. Thorpe, on underside of logs in bush; 1♂, Waikowai, Captains bush, 10 II 1992, G. Hall; 1♂, Bethells, Matuku Res., 23 VI 1987, R.C. Craw, sifted rotten wood 87/9; 1♂, Symond St. Cemetery, 8 II 2004, J. Nunn; 1♂, The Dome, 270m, nr Warkworth, 7 I 1983, J.C. Watt, wood mould 83/8; 1♂, Waitakere Ranges, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd.-podocarp forest, A. Newton, M. Thayer 679, FIT&Window trap; 1♂, Symond St. Cemetery, Auckland, 40m, 24–25 III 2010, yellow pan traps, L. Masner; 1♂, Mt. Auckland, Atuanui Scenic Res., 250m, 2.5km NE Glorit, 2 II 2010, D.S. Chandler, sift rotten wood; 1♂, Mt. Auckland, Atuanui Scenic Res., 250m, 2.5km NE Glorit, 2 II 2010, D.S. Chandler, sift fallen epiphyte mass; **Bay of Plenty (BP):** 2♀♀, Tapapa, 300m, 25 III 1978, S.B. Peck, litter; 1♀, Mt. Te Aroha, 2.5km SE Te Aroha, 390m, Tui rd. at Tui Creek, Mt. Domain tr., 15 II 2010, D.S. Chandler, sift rotten wood; 1♂, Tapapa Tukorehe Res., 300m, 25 III 1978, S. Peck, J. Peck, berl., litter; 1♂, Tapapa Tukorehe Res., 25–29 III 1978, S. Peck, J. Peck, 300m, bait (carrion) trap; 1♂, Lottin Pt Rd, Waenga Buh, 16 IX 1992, G. Hall, Wood mould 92/52; 1♂, Lake Okataina, 9 X 1995, M.C. Lariviere, A. Larochelle, litter 95/12; 1♂, Papatea, 26 IV 1993, J.S. Dugdale, litter 93/94; **Coromandel (CL):** 1♂1♀, Great Barrier I, Little Windy Hill, 13 XII 2002–17 I 2003, P. Sutton, forest edge malaise trap; 1♀, Great Barrier I, Little Windy Hill, 17 I–27 II 2003, K. Parsons, forest edge Malaise trap; **Northland (ND):** 4♂♂4♀♀ (1♂1♀, slide-mounted), Waipoua State Forest, 0.9km e Forest hqtrs., 120m, 26 XI–4 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 686,

FIT&window trap; 4♂♂1♀, Waipoua SF, Toronui Tr., 150m, 13 IV 1980, kauri-podocarp-broadleaf-nikau palm forest, A. Newton, M. Thayer, pyrethrin fogging fungusy logs; 1♂2♀♀, Waipoua State Forest, 0.8km nw Wairau Summit, 350m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 689, FIT&window trap; 1♂, Waipoua State Forest, Wairau Summit, 400m, 27 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 687, FIT&window trap; 1♂1♀, Waipoua SF, 0.8km s Waikohatu Stream bridge, 27m, 28 XI–6 XII 1984, hdwd.-podocarp forest, A. Newton, M. Thayer 692, FIT&window trap; 1♀, Waipoua F, Te Matua Ngahere, 400m, 19 II 1978, berl., under bark of falleo tree with mushroom, S. Peck; 2♂♂, Waipoua SF, 24 XI 1980, G. Kuschel, on *Agathis australis* log; 1♂, Waipoua SF, 25 XI 1980, G. Kuschel, decayed wood 8/120; 1♂, Waipoua SF, Waipoua Stm, 70m, 16–21 III 1978, S. Peck, J. Peck, malaise trap in forest clearing; **Wellington (WN):** 2♂♂, Tinakori Hill, Wellington, 1 VIII 1991, J. Nunn, in decayed wood; 1♂, 4km S of Levin, 30m, 8 III 1978, S. Peck, J. Peck, litter; 1♀, Kaitoke Regional Park, Pakuratahi Forks, 15 IV 2005, R. Leschen, C. McGuiness, leaf litter; 2♀♀ (1♀, slide-mounted), Wilton's Bush, 110m, 41°15.963'S 175°45.159'E, 24 XI 2005, mixed broadleaf-podocarp forest, FMHD#2005-030, berl., leaf & log litter, M. Thayer, A. Newton, ANMT site 1150; 1♂, Tinakori Hill, 1 VI 1991, J. Nunn, decaying wood; 1♂1♀, Tinakori Hill, 1 VI 1991, J. Nunn, decaying wood; 2♂♂1♀, Tinakori Hill, 5 VI 1991, J. Nunn, decaying wood with *Mesoponera* ants; 1♂, Tinakori Hill, 10 VIII 1991, J. Nunn, in soggy decaying wood; 2♀♀, Tinakori Hill, 1 IX 1991, J. Nunn, in partly humified log; 1♀, Manawatu Gorge, 17 XI 1991, J. Nunn; 1♀, Tinakori Hill, 15 XII 1991, J. Nunn, in cut glass; 1♂, Tinakori Hill, 21 IV 1986, J. Nunn, with *Mesopenera* ants; 1♂, Johnson's Hill, Karori, 17 VII 1988, J. Nunn; 1♀, Tinakori Hill, 14 IV 1992, J. Nunn, in rotten wood; 4♂♂2♀♀, East bourne, 22 VIII 1993, J. Nunn, in decayed wood; 1♀, Tinakori Hill, 11 IX 1993, J. Nunn, in decaying wood; 1♀, Klevin Tr., Manawatu Gorge, 16 VII 1994, J. Nunn, in decaying wood; 1♂1♀, Karori Res., 25 II 1995, J. Nunn, in twiggy streamside debris; 1♀, Tinakori Hill, 8 VII 1996, J. Nunn, under plank beneath pines; 1♂, Keith George Res., Silverstream, 27 XII 1996, J. Nunn, in pulpy decayed wood with *Ganoderma funfus*.

Diagnosis. This species can be separated from *Sagola denticollis* by the bluntly triangular head, larger eye, enlarged 5–6 male antennomeres lacking distinctive tubercles and unique shape of the genitalia.

Redescription. Length 2.3–3.8 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 44a). *Head.* head bluntly triangular with prominent frontal rostrum (Figure 44a). Male antennomeres 2–10 subquadrate, 5–6 enlarged, 5 largest. Female antennomeres 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye from frontal fovea. Anterior frontal fovea present and oval, open anteriorly posterior frontal fovea present and round. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 44a). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Abdominal tergite IV with a pair of transverse, reaching middle, patches of microtrichia. *Aedeagus.* Median lobe with minor lobe bearing from base (Figure 44c). Phallobase of median lobe asymmetrical and rounded (Figure 44c). Paramere asymmetrical, left paramere longer than right with two slender branches at tip (Figure 44c).

Type locality. New Zealand (unknown specific locality).

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Northland (ND), Taranaki (TK), Wellington (WN) (Figure 45: black circles).

Habitat. Most specimens of this species were collected using yellow pan, malaise traps or by sifting leaf litter or rotten wood in hardwood or podocarp forests. Some specimens collected with mesoponeran ants, and one specimen collected from a carrion bait trap.

Comments. Specimens of *S. parva* are easily to separate from other species externally by the enlarged male antennomeres 5–6; large eye, approximately 1.5 times shorter than temple; prominent frontal rostrum; shallow frontal sulcus; oval and anteriorly open anterior frontal fovea. The type specimens of *S. brevicornis*, *S. concolorata*, *S. fovealis*, *S. insolens*, *S. punctata*, *S. rectipes* and *S. rotundiceps* share these diagnostic characters. For these reasons, I have placed these species in synonymy with *S. parva*.

***Sagola denticollis* Broun**

Sagola denticollis Broun, 1880: 138. Schaufuss, 1888: 84. Raffray, 1893: 33; 1904: 498; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola elevata Broun, 1886: 886. Raffray, 1893: 38; 1904: 498; 1911: 6; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Type Material Examined. Holotype of *Sagola denticollis*: New Zealand: Coromandel (CL): ♀, glued on rectangular card, “253” [green label, printed]; “Type” [red label, printed]; “Tairua” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola denticollis*.” [white label, handwritten]. **Syntypes of *Sagola elevata*: New Zealand: Auckland (AK):** 1 ♀, glued on rectangular card, “Type” [red label, printed]; “1578.” [white label, handwritten]; “Woodhill” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola elevata*.” [white label, handwritten]. 1 ♀, glued on rectangular card, “1578.” [white label, handwritten]; “Woodhill” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed].

Additional Material (n= 18; 9 males; 9 female). New Zealand: Auckland (AK): 1♂1♀, Bethells Matuku FS, 36°53S 174°28E, under bark #157, 29 I 1998, C. Carlton, R. Leschen; 1 ♀, Waitakere R., Cascade-Kauri Park, up. kauri tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap; 1 ♀, Matakana nr Warkworth, 27 XI 1995, J. Nunn, in decayed wood from bush remnant; **Coromandel (CL):** 5♂♂, Little Barrier Island, 7 I 1952, rotten wood; 2♀♀, Little Barrier Island, 6 I 1952, rotten wood; 1 ♀, Great Barrier Island, Little Windy Hill, 13 XII 2002–17 I 2003, P. Sutton, forest edge malaise trap; 1 ♀, Little Barrier Island, 17 XII 1983, J. Playlair; **Northland (ND):** 3♂♂2♀♀ (1♂, slide-mounted), Parua, 4 XI 1981, G. Kuschel, litter and decayed wood 81/125;

Diagnosis. This species can be separated from *Sagola parva* by the transverse head, eye small, enlarged 4–6 male antennomeres with distinctive tubercles and genitalia.

Redescription. Length 2.5–3.5 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 44b). *Head.* head transverse, widest across eyes, frontal rostrum prominent (Figure 44b). Male antennomeres 2–3 subquadrate, 4–6 enlarged, 6 largest, 7–10 subquadrate, 3–10 with distinctive tubercles. Female antennomeres 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching hind-point of eye from frontal fovea. Anterior frontal fovea present and oval. Posterior frontal fovea present and with setae around. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 44b). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Abdominal tergite IV with a pair of transverse, reaching

middle, patches of microtrichia. *Aedeagus*. Median lobe with triangular lobe at midpoint (Figure 44d). Phallobase of median lobe symmetrical and rectangular (Figure 44d). Paramere asymmetrical, left paramere shorter than right, right divided anteriorly (Figure 44d).

Type locality. Tairua (CL), New Zealand.

Distribution. Auckland (AK), Coromandel (CL), Northland (ND) (Figure 45: triangles).

Habitat. Specimens of this species were collected using window and flight intercept traps, or by sifting leaf litter or rotten wood in kauri, podocarp and hardwood forests.

Comments. Specimens of *S. denticollis* are easily to separate from other species externally by the transverse head with prominent frontal rostrum. The type specimens of *S. elevata* share these diagnostic characters. For these reasons, I have placed *S. elevata* in synonymy with *S. denticollis*.

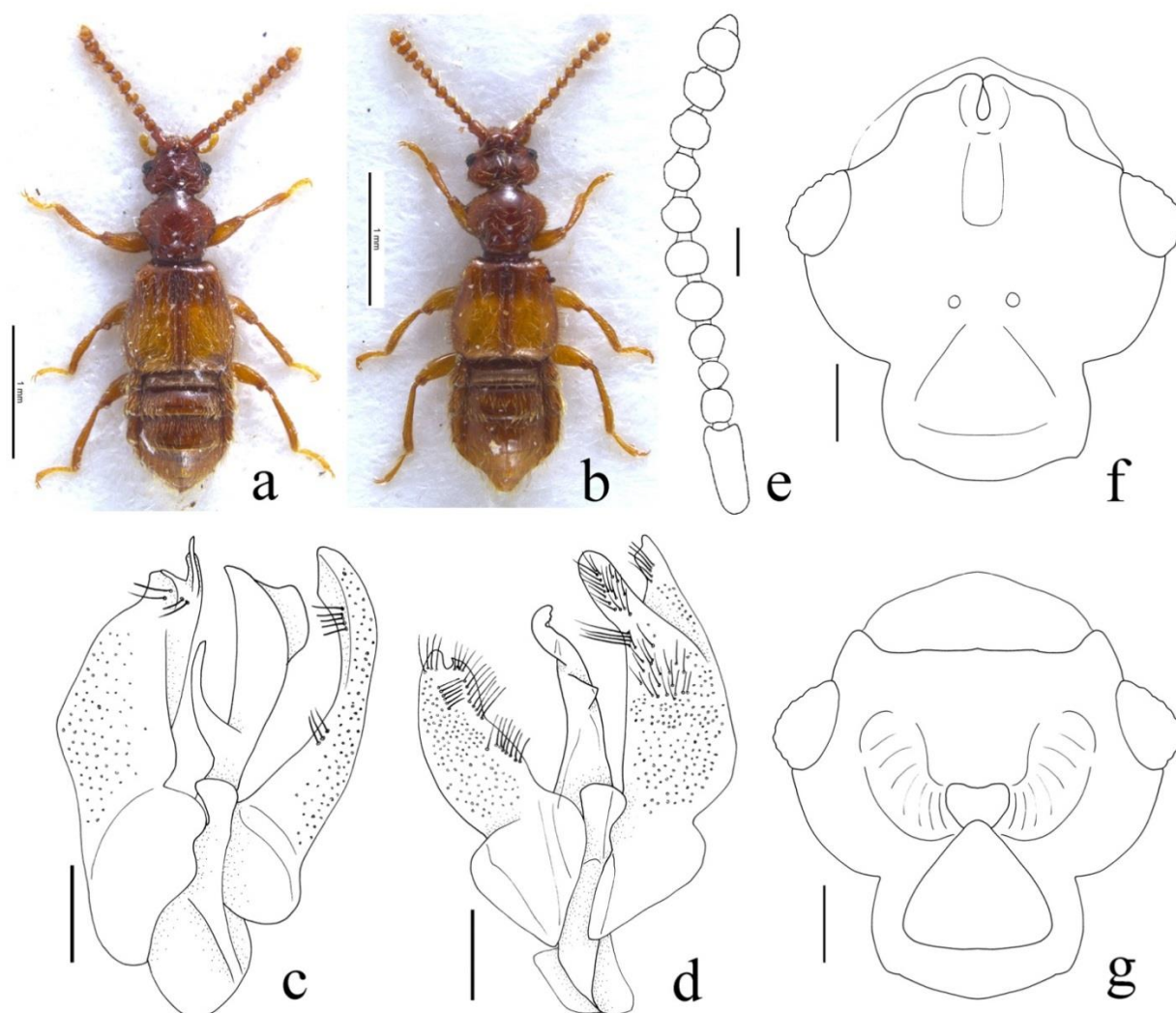


Figure 44. Habitus of group 6, dorsal views. a) *Sagola parva* Sharp; b) *S. denticollis* Broun; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S. parva*; d) *S. denticollis*; Scale bars = 0.1 mm. *S. parva*. e) antenna; f) dorsal head; g) ventral head; Scale bars = 0.1 mm.

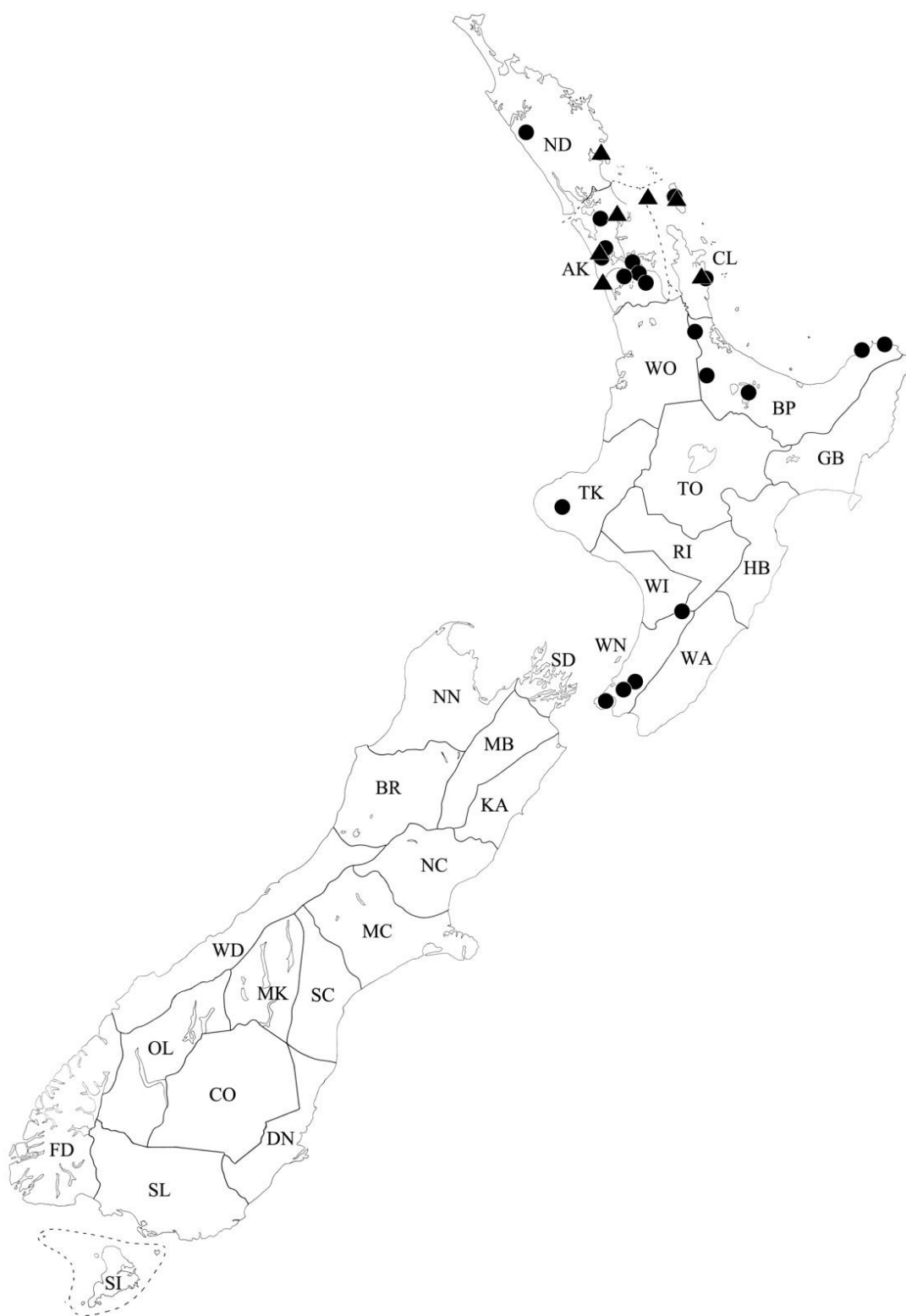


Figure 45. Locations where *Sagola parva* and *S. denticollis* specimens have been collected in New Zealand. *S. parva*: black circles; *S. denticollis*: triangles.

Group 7 (1 species)

Diagnosis. The members of group 7 may be separated from other *Sagola* groups by the following combination of characters: body length 3.0–3.5 mm; antennomere 1 approximately 2.5 times longer than wide with dull surface; anterior frontal fovea absent and posterior frontal fovea elongate (Figure 46c); gular of male head with small transverse depression (Figure 46d); eye distinctly prominent due to emarginate gena (Figure 46c–d); hind wings well developed in male, reduced to small pads in female; fore-femur with semicircular depression; abdominal tergites IV–VI with discal carinae; present on South Island, not known from North Island (Figure 47).

Sagola valida Broun

Sagola valida Broun, 1921a: 490. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Type Material Examined. Lectotype of *Sagola valida*: New Zealand: Nelson (NN): ♂, glued on rectangular card, “3998.♂” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “mt. owen. 27.12.1914” [white label, handwritten]; “*Sagola valida*.♂.” [white label, handwritten]. **Paratypes: Nelson:** 2♂♂, Woodhen near Glenhope, T. Hall.

Additional Material (n= 59; 28 males; 31 female). New Zealand: Buller (BR): 2♂♂2♀♀, Nelson Lake NP, Mt. Robert Speargrass Tr., 875m, 41°49.469'S, 172°48.311'E, 30 XI–17 XII 2005, *Nothofagus* forest, FMHD#2005-059, FIT, A. Newton, M. Thayer, ANMT site 1161; 1♂, Nelson Lake NP, Mt. Robert, Speargrass Tr., 875m, 41°49.469'S, 172°48.311'E, 17 XII 2005, *Nothofagus* forest, FMHD#2005-110, berl., leaf & log litter, A. Solodovnikov, D. Clarke, ANMT site 1161; 2♂♂1♀, Lewis Pass N.R., 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 715, berl., leaf & log litter, forest floor; 2♀♀, Lewis Pass N.R., 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 715, window trap; 1♂1♀, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, FIT&window trap; 1♂1♀, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713, FIT&window trap; 1♂, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, FIT&window trap; 1♂1♀, Mt. Robert, carpark, 9 IV 2004, R. Leschen, H. Haman, T. Buckley, litter RL864, 41.49°S, 172.48°E; 1♂, Speargrass tr., Mt. Robert, 30 XI 2005, J. Nunn; 1♂, Lewis Pass, Asa Pass, 914m, 25 IV 1996, G.W. Ramsay, moss 66/141; 1♂, Rahu Saddle, 670m, 16 X 1984, J.W. Early, moss in *Nothofagus* forest, LCNZ 84/7; 1♀, Nelson Lake NP, Lake Rotoiti, St. Arnaud tr., 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap; 1♀, Nelson Lake NP, n slope Mt. Robert, Pinchgut tr., 1290m, 18–26 XII 1984, *Noth. Sol.* elfin forest, A. Newton, M. Thayer 716, FIT&window trap; 2♀♀, Barrytown Croesus Tr., 10 XI 2005, R. Leschen, S. Nomura, litter RL1022, 42°14'S, 171°19'E; 1♀, Inland Pack tr., 1km n of Punakaiki R, 29 XII 2010, J. Nunn, sifted ground litter; **Fiordland (FD):** 1♂, Hollyford tr., #110, 44°42'S 168°08'E, *Nothofagus* coastal forest leaf litter berlese, 22 I 1998, C. Carlton, R. Leschen; **Marlborough (MB):** 1♂, Fell Pk, Hut Area, 1300m, Richmond Ra., 13 III 1969, A.C. Eyles, litter 69/109; **North Canterbury (NC):** 1♂, Arthurs Pass, Mt. Aicken, 950m, 9 II 1984, J.C. Watt, sifted litter 84/24; 1♀, 2.9km N Arthur's Pass, Bealey Valley tr., 840–950m, 42°55'S 171°33'E, #040, under bark, 11 I 1998, C. Carlton, R. Leschen; **Nelson (NN):** 2♂♂2♀♀ (1♂, slide-mounted), Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S,

172°44.456'E, 28 XI–19 XII 2005, *Nothofagus* forest, FMHD#2005-044, FIT, A. Newton, M. Thayer, ANMT site 1156; 1♂1♀, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, S. Solodovnikov, ANMT site 1159; 1♀, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-055, berl., leaf & log litter, M. Thayer, ANMT site 1159; 1♀, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, under bark small *Nothofagus* logs, M. Thayer, ANMT site 1159; 1♂1♀, Kahurangi NP, Cobb Dam Rd., Asbestos Tr., 450m, 41°06.333'S, 172°43.174'E, 29 XI–18 XII 2005, mixed broadleaf-podocarp forest, FMHD#2005-111, berl., leaf & log litter, A. Solodovnikov, D. Clarke, et al., ANMT site 1160; 2♀♀, 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717 FIT&window trap, carrion (squid) trap; 1♂1♀, Dun Mt., 31 VI 1966, A.K. Walker, litter 66/274; 1♂, Dun Mt., 762m, 13 I 1961, G. Kuschel, litter 61/1; 1♂, Karamea Bluff, 1420ft, J. Nunn; 1♂, Denniston Saddle, 10 II 1999, R. Leschen, R. Hoare, Berl., *Nothofagus* forest RL288, 41°44'S 171°48'E; 1♂, Arthur Range, w side Flora Saddle, 950m, 1 I 1985, *Nothofagus* mossy forest, A. Newton, M. Thayer 725, wet leaves & flood debris forest stream; 1♂, Kahurangi NP, Mt. Arthur tr., below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, berl., leaf litter, A. Solodovnikov, D. Clarke, ANMT site 1157; 1♂, 14 km se Reefton, 250m, 29 V 1982, FMHD#82-606, beech forest litter, S. Peck; 1♀, 30km nw Motueka, Tasman NP, 22 V 1982, FMHD#82-596, beech forest stump litter, S. Peck; 1♂, Dun Mt., 2000' 14 II 1942, E.S. Gourlay; 1♀, Punakaiki, Pororari Tr., 27 I 1996, J. Nunn, in forest litter; 1♀, Kohaihai River, Karame, West Coast, 30 V 1963, G. Kuschel, litter; 1♀, Oparara Basin, Box Canyon Cave, 200m, 27 II–1 III 2007, J.W. Early, R.F. Gilbert, *Nothofagus* podocarp forest, yellow pan trap; **Westland (WD)**: 1♀, Jackson Bay tr., 16 I 2005, R. Leschen, T. Buckley, podocarp, RL906, 43°58'S, 168.37'E; 1♂, 3.2km ne Haast, 14m, Haast River Walk, 43°52'S 169°03'E, #072, *Nothofagus*-podocarp forest leaf litter berl., 17 I 1998, C. Carlton, R. Leschen; 1♂, Frans Joseph, 24 II 1989, J. Nunn; 1♀, Bokitika R. Gorge, S Kowhitirangi, 100m, 17 III 1980, podocarp-broadleaf, A. Newton, M. Thayer, berl. leaf & log litter, forest floor; 1♀, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd.-podo-nikau forest, A. Newton, M. Thayer 719, berl., leaf & log litter, forest floor.

Diagnosis. This species can be separated from other *Sagola* species by the gular of male head with small round depression; both sexes with eye distinctly prominent due to emarginate gena.

Redescription. Length 3.0–3.5 mm. Body brown, antenna, elytra, legs, maxillary palpi pale (Figure 46a). *Head.* Head bluntly triangular, widest across eyes (Figure 46c). Male antennomeres 2–3 subquadrate, 4 longer than wide, 5–10 subquadrate. Female antennomeres 2–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching behind eye from end of frontal rostrum (Figure 46c). Anterior frontal fovea absent (Figure 46c). Posterior frontal fovea present and elongate (Figure 46c). Eye large and prominent, one-half length of temple (Figure 46c). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular in male (Figure 46a), subquadrate in female. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle in male, absent in female. *Aedeagus.* Median lobe deeply divided, minor lobe longer and narrower (Figure 46b). Phallobase of median lobe symmetrical and rounded (Figure 46b). Paramere symmetrical, ca. 8 setae at tip (Figure 46b).

Type locality. Mount Owen & Woodhen Bend, near Glenhope (NN), New Zealand.

Distribution. Buller (BR), Fiordland (FD), Marlborough (MB), NC (North Canterbury), Nelson (NN), Westland (WD) (Figure 47: black circles).

Habitat. Most specimens of this species were collected using window and flight intercept traps, or by sifting leaf litter or rotten wood in *Nothofagus* forests. Some specimens collected from carrion bait or yellow pan traps.

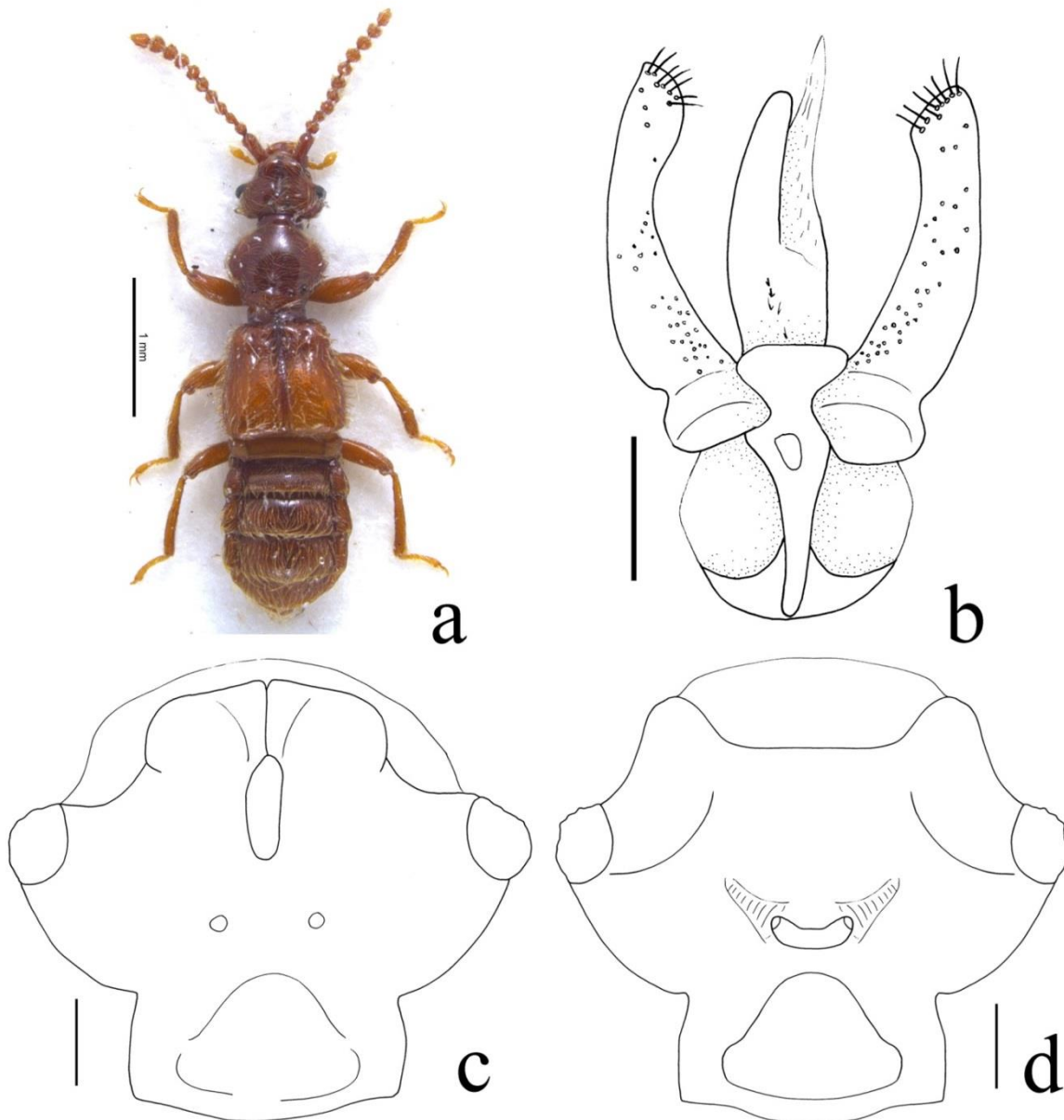


Figure 46. *Sagola valida* Broun. a) Habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) male dorsal head ; d) ventral surface of male head ; Scale bars = 0.1 mm.

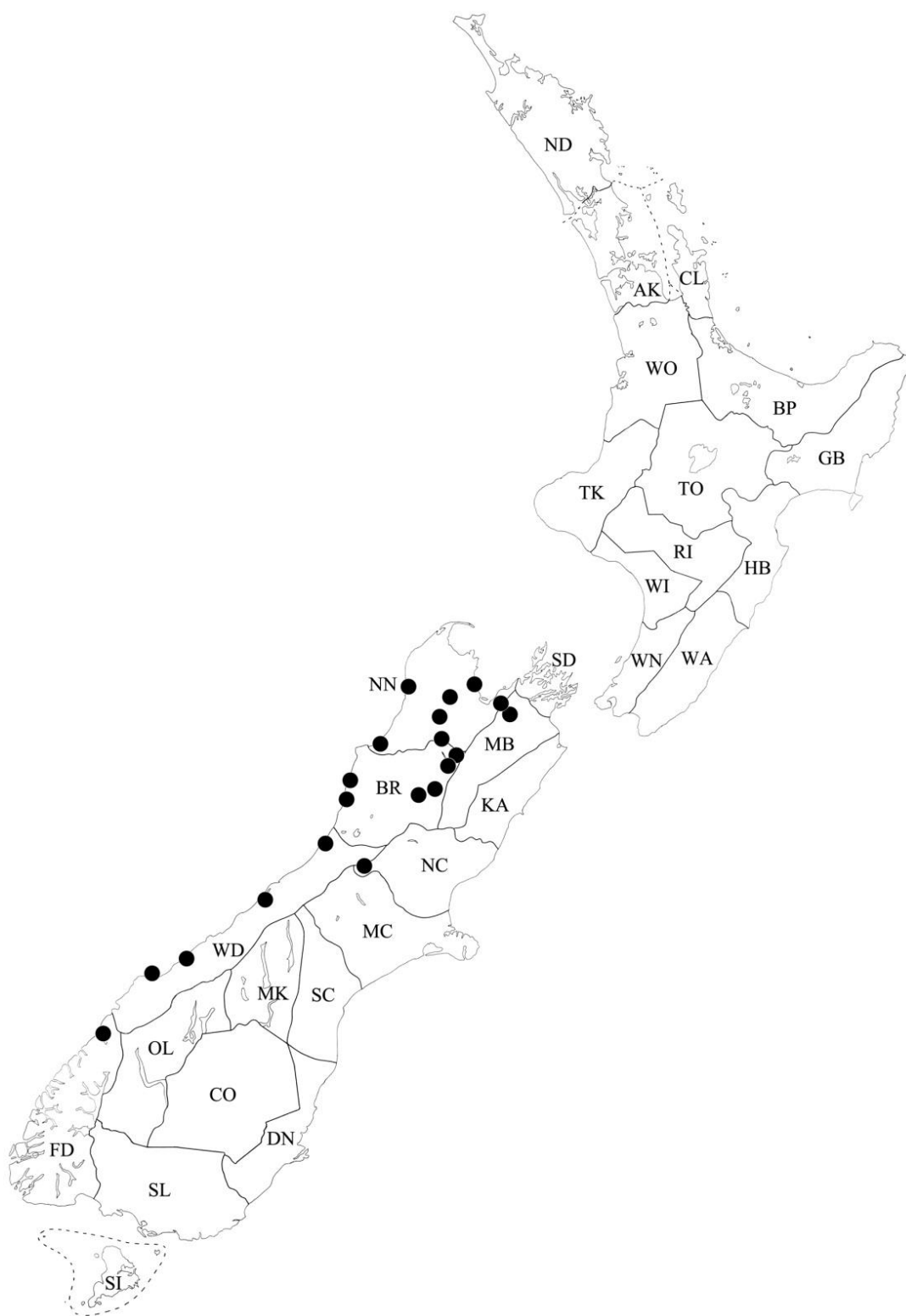


Figure 47. Locations where *Sagola valida* specimens have been collected in New Zealand (black circles).

Group 8 (3 species)

Key to species of *Sagola* group 8

The key is based on genitalia because most specimens are indistinguishable based on external morphology.

1. Median lobe of genitalia much shorter than paramere, never reaching midpoint of paramere; paramere asymmetrical (Figure 48e).....*Sagola deformipes* Broun
- 1'. Median lobe of genitalia shorter than paramere but exceed midpoint of paramere; paramere symmetrical.....2
- 2 (1). Median lobe of genitalia reaching two-third level of paramere, phallobase of genitalia rectangular (Figure 48d); only known from Three Kings Islands (Figure 49: black circles).....*S. incisa* Théry and Leschen
- 2'. Median lobe of genitalia reaching almost tip of paramere, phallobase of genitalia round (Figure 48f); only known from Northland (Figure 49: black square).....*S. sp. nov.* 69-1

Diagnosis. The members of group 8 may be separated from other *Sagola* groups by the following combination of characters: body length 2.2–2.9 mm; antennomere 1 approximately 2.5 times longer than wide with dull surface; anterior frontal fovea oval and posterior frontal fovea elongate (Figure 48g); frontal sulcus reaching length of vertexal fovea (Figure 48g); gular of male head with round depression with small process in middle (Figure 48h); hind wings well developed; fore- and mid-femur with semicircular depression; mid-tibia bent; male abdominal tergite IV with microtrichial patch covered most surface; abdominal tergites IV–VI with discal carinae; known from North Island and Three Kings Islands (Figure 49).

Sagola incisa Théry and Leschen

Sagola incisa Théry and Leschen, 2013: 42.

Type Material. Paratypes. New Zealand: Three Kings Islands (TH): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, East Sector, E.G. Turbott, 6 X 1948, A.E. Brookes collection (NZAC); 1♀, Great Island, Castaway tr., 9 XI 2008, sifting rotten wood and leaf litter, T. Buckley, R. Leschen, TH043, 34°09.369, 172°08.496 (NZAC).

Additional Material (n= 43; 21 males, 22 females). New Zealand: Three Kings Islands (TH): 3♂♂3♀♀, Summit, 275m, 23 XI 1970, G. Kuschel, litter 70/202; 1♂, Castaway Camp, 16 XI 1970, G. Kuschel, litter 70/195; 5♂♂1♀, Tasman Valley, 24 XI 1970, G. Kuschel, litter 70/211; 2♂♂, Tasman Valley, 26 XI 1970, J.C. Watt, litter 70/223; 1♂, W Summit, 240m, 26 XI 1970, J.C. Watt, moss 70/219; 1♂, Tasman Valley, 25 XI 1970, G. Kuschel, litter 70/215; 1♀, Tasman Valley, 24 XI 1970, G. Kuschel, litter 70/210l; 1♀, Castaway Camp, 16 XI 1970, G. Kuschel, litter 70/195; 2♀♀, Castaway Camp, 29 XI 1970, G.W. Ramsay, litter 70/233; 4♂♂6♀♀, Great Island, 45m, South East Bay, 1 XII 1983, J.C. Watt, litter; 2♂♂3♀♀, Tasman Valley, 2 XII 1983, J.C. Watt, litter; 1♂, Great Island, 45m, 28–30 XI 1983, C.F. Butcher, pan trap near coast; 1♀, Great Island, Tasman Bay, XII 1983, C.F. Butcher, moss; 1♀, Great Island, area below trig litter 96/21, 8 XII 1996, G.L.F. Carlin; 1♀, Great Island, Baylis stm, sifted litter 99/24, 13 IV 1999, T.K. Crosby; 2♀♀, Eastern Sector, E.G. Turbott, 6 X 1948, leaf mould, A.E. Brookes collection.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia. This species are only known from Three Kings Islands.

Redescription. Length 2.2–2.6 mm. Body brown, antenna, elytra, legs, maxillary palpi paler (Figure 48a). *Head.* Head transverse, widest across temples (Figure 48a). Antennomere 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Eye small and prominent, approximately one-third length of temple. *Thorax.* Prosternum weakly transverse, widest at midpoint of prosternum. Elytra rectangular (Figure 48a). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe slender, shorter than parameres (Figure 48d). Phallobase of median lobe asymmetrical and rectangular (Figure 48d). Paramere symmetrical with dense setae along mid line (Figure 48d).

Type locality. Great Island (Three Kings Islands), New Zealand.

Distribution. Three Kings Islands (TH) (Figure 49: black circle).

Habitat. Specimens of this species were collected by sifting leaf litter.

Comments. This species was described by Théry and Leschen (2013) with illustrations of habitus and diagnostic characters based on specimens collected only from the Three Kings Islands, an isolated archipelago ca. 60 km northwest of North Island. I also examined two paratypes to address this species.

Sagola deformipes Broun

Sagola deformipes Broun, 1880: 138. Schaufuss, 1888: 84. Raffray, 1893: 33; 1904: 497; 1911: 5. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 231. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. New Zealand: Northland (ND): 1♂, glued on rectangular card, “Type” [red label, printed]; “252” [green label, printed]; “Tairua” [white label, printed]; “252.♂.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola deformipes*” [white label, handwritten].

Additional Material (n=7; 4 males, 3 females). New Zealand: Auckland (AK): 1♀, Waitakere Rgs, 1 VI 1942, M.W. Carter; **Bay of Plenty (BP):** 1♂, Tapapa Tukorehe Res., 300m, 25 III 1978, S. Peck, J. Peck, berl., litter; **Northland (ND):** 1♂, Waipoua SF, 20 IX 1977, SH12, D.W. Helmore, rotten stumps/trees 77/102; 1♀, Waipoua SF, Taraite Stump, 15 VI 1966, J.C. Watt; 1♂, Waipoua SF, Wairau Summit, 387m, 11–14 IV 1980, podocarp-mixed broadleaf, A. Newton, M. Thayer, pyrethrin fogging *Ganoderma* sp.; 1♀, Waipoua SF, Toatoa tr., 270m, 12–15 IV 1980, toatoa-kauri-podocarp-broadlf, A. Newton, M. Thayer, berl., leaf and log litter, forest floor; **Taupo (TO):** 1♂ (slide-mounted), Pureora Forest, Rimu Walk, 30 I 2008, K. Marske, R. Leschen, T. Buckley, Sifted wood and leaf litter, S 38.33.987°, E 175.43.068°, 479 m.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Redescription. Length 2.6–2.9 mm. Body brown, antennae, legs, maxillary palpi paler, elytra yellowish brown (Figure 48b). *Head.* Head transverse, widest across temples (Figure 48b). Antennomere 2 longer than wide, 3–10 subquadrate, 5–6 weakly enlarged. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum weakly transverse, widest at midpoint of prosternum. Elytra rectangular (Figure 48b). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe slender, much shorter than parameres (Figure 48e). Phallobase of median lobe asymmetrical and rectangular (Figure 48e). Paramere asymmetrical, left longer than right with dense setae along mid line except tip (Figure 48e). Right paramere with dense setae along mid line (Figure 48e).

Type locality. Tairua (CL), New Zealand.

Distribution. Auckland (AK), Tairua (CL), Northland (ND), Taupo (TO) (Figure 49: triangles).

Habitat. Specimens of this species were collected by sifting leaf and log litter in podocarp and broadleaf forests.

***Sagola* sp. nov. 69-1**

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, ND Unuwahao, 270m, 25 Nov 1982 G. Kuschel” “sifted litter and decayed wood 82/125”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the shapes of antennae and genitalia.

Description of male. Length 2.8 mm. Body reddish brown, antenna, elytra, legs, maxillary palpi paler (Figure 48c). *Head.* Head transverse, widest across temples (Figure 48c). Antennomere 2–3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Eye small and prominent, one-third length of temple. *Thorax.* Prosternum weakly transverse, widest at midpoint of prosternum. Elytra rectangular (Figure 48c). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe slender, slightly shorter than parameres (Figure 48f). Phallobase of median lobe asymmetrical and rounded (Figure 48f). Paramere symmetrical with dense setae along mid line, thick setae at tip (Figure 48f).

Distribution. Northland (ND) (Figure 49: black square).

Habitat. The holotype and only known specimen of this species was collected by sifting leaf litter and decayed wood.

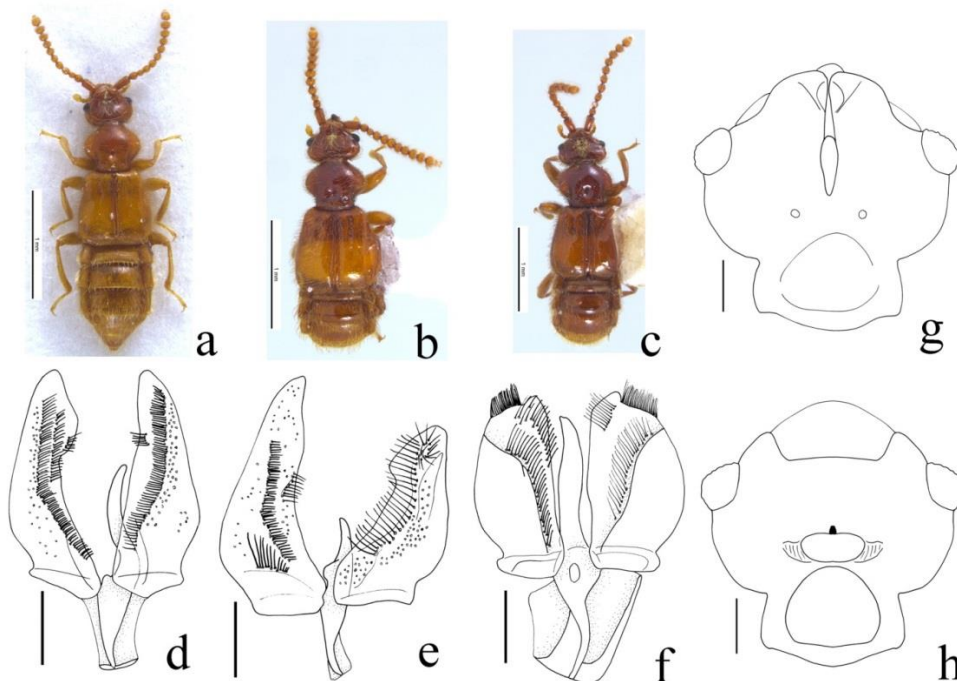


Figure 48. Habitats of group 8, dorsal views. a) *Sagola incisa* Théry and Leschen; b) *S. deformipes* Broun; c) *S. sp. nov. 69-1*; Scale bars = 1 mm. Aedeagus, dorsal view. d) *S. incisa*; e) *S. deformipes* Broun; f) *S. sp. nov. 69-1*; Scale bars = 0.1 mm. *S. deformipes*. g) male dorsal head; h) ventral surface of male head; Scale bars = 0.1 mm.

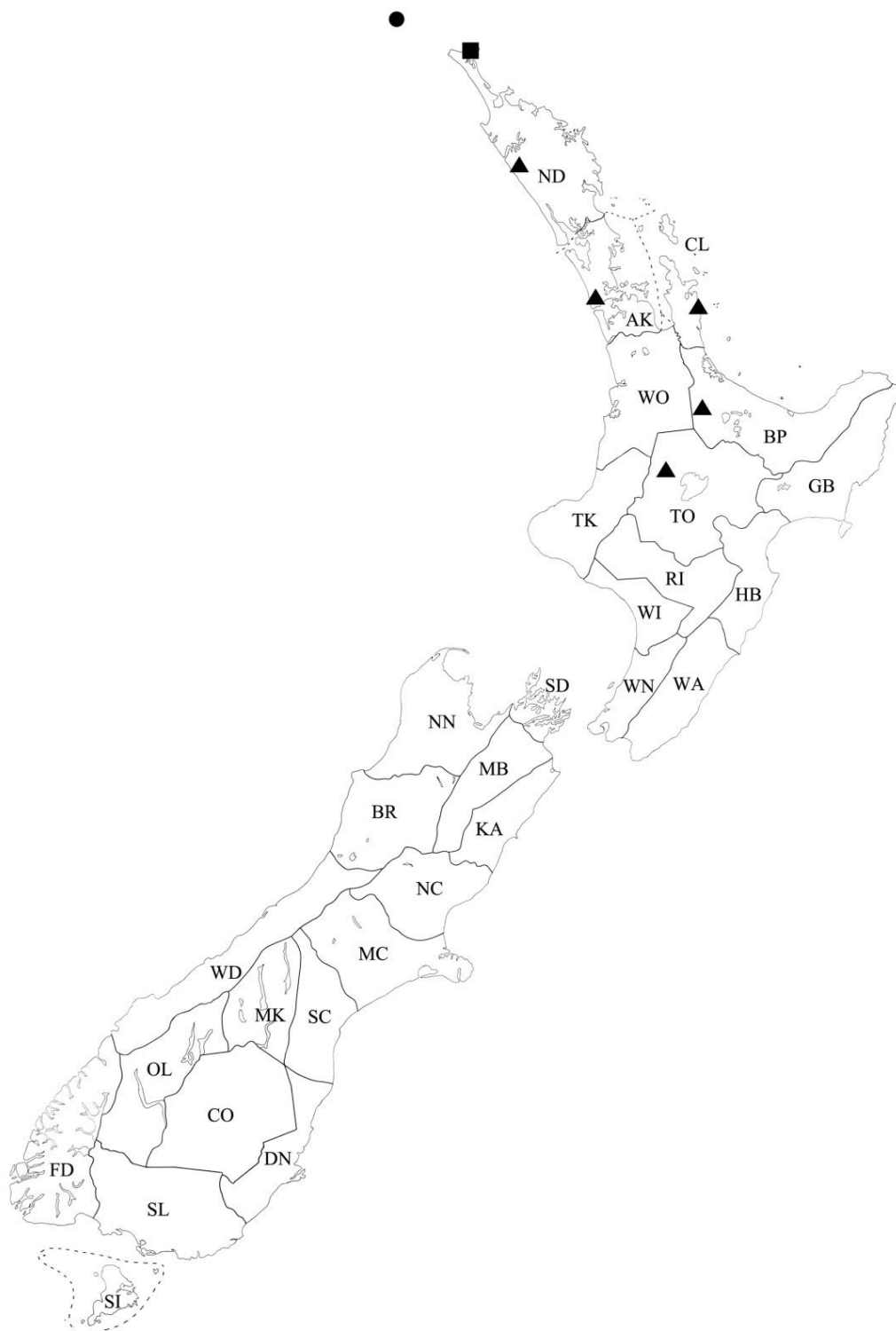


Figure 49. Locations where *Sagola incisa*, *S. deformipes* and *S. sp. nov. 69-1* specimens have been collected in New Zealand. *S. incisa*: black circle; *S. deformipes*: triangles; *S. sp. nov. 69-1*: black square.

Group 9 (2 species)

Key to species of *Sagola* group 9

The key is mainly based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Horn of ventral surface of male head shorter than wide; median lobe of genitalia branched into 3 lobes, major lobe triangular (Figure 50c); paramere asymmetrical and as long as median lobe (Figure 50c).....*Sagola flavipes* Broun
- 1'. Horn of ventral surface of male head as long as wide; median lobe of genitalia branched into 2 lobes, major lobe rectangular (Figure 50d); paramere symmetrical and reaching midpoint of median lobe (Figure 50d).....*S. sulcator* Broun

Diagnosis. The members of group 9 may be separated from other *Sagola* groups by the following combination of characters: body length 2.4–2.8 mm; head transverse, widest across eyes (Figure 50e); antennomere 1 approximately 2 times longer than wide with sparse punctures; anterior frontal fovea small round, but not externally observable owing to covered by connected frontal rostrum (Figure 50e); posterior frontal fovea elongate (Figure 50e); frontal sulcus reaching length of vertexal fovea (Figure 50e); ventral surface of male head with hairy horn medially (Figure 5f); hind wings reduced to small pads; fore-femur with semicircular depression; mid-tibia bent; male abdominal tergite IV without microtrichial patch; abdominal tergites IV–VI with discal carinae; abdominal ventrites IV–VI with basolateral foveae; present on North Island, not known from South Island (Figure 51).

Sagola flavipes Broun

Sagola flavipes Broun, 1893b: 1422. Raffray, 1904: 498; 1911: 6. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. New Zealand: Auckland (AK): 1♂, glued on rectangular card, “Type” [red label, printed]; “2471.♂” [white, handwritten]; “Hunua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola flavipes*” [white label, handwritten].

Additional Material (n= 15; 11 males, 4 females). New Zealand: Auckland (AK): 2♂♂, Clevedon Scenic Reser., 05km n Clevedon, 20m, 19 III 2010, D.S. Chandler, sift forest litter by streams; 1♂, Waitakere Ranges Reg. Park, 1.3km n Hunua, Parau Tr., 133m, 20 III 2010, D.S. Chandler, sift kauri, *Cyathea* & etc. leaf litter; 1♀, Waitakere Ranges Reser. Pk., Upper Huia Reser. tr., 31 I 2010, 340m, 4km sw Waiaatarua, D.S. Chandler, sift mixed leaf litter; 2♀♀, Le Roys Bush, Birkenhead, 21 IX 1957; 1♂, Kohukohunui, Hunua Ra., 600m, 30 III 1974, G. Kuschel, litter 74/20; 1♂, Waitakere Ra., IV 1955, A.G. Smith, litter; 1♂ (slide-mounted), Goldie Bush Scenic Res., Mokoroa Falls Tr., 6km w Waitakere, 28 III 2010, 106m, D.S. Chandler, rotten wood & branch debris; **Bay of Plenty (BP):** 1♂, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit rd., 450m, 37°31.429'S 175°44.005'E, 19 XI 2005, mixed broadleaf forest w/many tree ferns, nikau palms, FMHD#2005-016, FIT, A. Newton, M. Thayer, ANMT site 1144; 1♂, Tikitiki Stm., Horohoro SF, Mamaku Plateau, 24 VII 1976, J.S. Dugdale, litter 76/48; **Waikato (WO):** 3♂♂, Hapuakohe ra., 3km sw of Kaihere, 29 I 1984, J.C. Watt et al., sieved wood mould 84/7; 1♀, Pirongia Forest Park, Mahaukura tr., (above end Grey Rd.), 270m, 37°58.218'S 175°06.523'E, 18 XI 2005, mixed broadleaf forest, FMHD#2005-011, berl., leaf & log litter, M. Thayer & A. Newton, ANMT site 1142.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the horn of ventral surface of male head shorter than wide, the shapes of antennae and genitalia.

Redescription. Length 2.5–2.8 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 50a). *Head.* Head transverse (Figure 50e). Antennomeres 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Eye small and prominent, one-third length of temple (Figure 50e). Horn of ventral surface of male head triangular and shorter than wide. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra approximately triangular (Figure 50a). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe branched into 3 lobes, as long as left paramere, major lobe triangular (Figure 50c). Phallobase of median lobe symmetrical and rounded (Figure 50c). Paramere asymmetrical with acute bent tip, left paramere longer than right (Figure 50c).

Type locality. Maketu (AK), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Waikato (WO) (Figure 51: black circles).

Habitat. Most of specimens of this species were collected using flight intercept traps, or by sifting leaf and log litter in broadleaf forests.

Sagola sulcator Broun

Sagola sulcator Broun, 1886: 885. Raffray, 1893: 36; 1904: 497; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Sagola crassulipes Broun, 1915: 283. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Type Material. Holotype. New Zealand: Auckland (AK): ♀, glued on rectangular card, “Type” [red label, printed]; “1575.♂.” [green label, printed]; “Woodhill” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola sulcator*.♂.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Holotype of *Sagola crassulipes*: New Zealand: Auckland (AK): ♂, glued on rectangular card, “Type” [red label, printed]; “3697.♂” [white, handwritten]; “Epsom. Feby.1912.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♂. *crassulipes*” [white label, handwritten].

Additional Material (n=6; 2 males, 4 females). New Zealand: Auckland (ND): 1♂, Omahutu SF, 18 III 1978, S.B. Peck, litter; 1♂, Tauranganui Estate nr Kaiwhetu, 19 XI 1985, B.A. Holloway, litter 85/57a; 1♀, Waipoua Forest, 7 XII 1961, G. Kuschel, litter 61/13; 1♀, Hen & Chickens Is, Lady Alice, 1 I 1982, L. Roberts, litter 82/6; 1♀, Waipoua SF, Yakas Tr., 29 III 1999, R. Leschen, R. Hoare, G. Hall, at large, RL358, 35°37’S, 173°32’E; 1♀, Mt. Huarua, 1200’, Tangihua Range, 25 XII 1936, E. Fairburn, A.E. Brookes Collection.

Diagnosis. This species is similar in appearance to other members of this group, but can be distinguished by the horn of ventral surface of male head as long as wide, the shapes of antennae and genitalia.

Redescription. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi paler, and elytra yellowish brown (Figure 50b). *Head.* Head transverse (Figure 50b). Antennomeres 2–3 subquadrate, 4–8 longer than wide, 9–10 subquadrate. Eye small and prominent, one-third length of temple. Male horn of ventral head triangular and as long as wide. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra approximately triangular (Figure 50b). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe divided, major

lobe rectangular, longer than minor lobe and parameres, minor lobe slender, as long as parameres (Figure 50d). Phallobase of median lobe symmetrical and rounded (Figure 50d). Paramere symmetrical, rectangular (Figure 50d).

Type locality. Woodhill, on the Kaipara Railway, near Helensville (AK), New Zealand.

Distribution. Auckland (AK), Northland (ND) (Figure 51: triangles).

Habitat. Most of specimens were collected by sifting leaf litter.

Comments. Specimens of *S. sulcator* can be separate from *S. flavipes* externally by the longer horn of ventral surface of male head and longer antennomeres. The type specimens of *S. crassulipes* share those diagnostic characters. For these reasons, I have placed *S. crassulipes* in synonymy with *S. sulcator*.

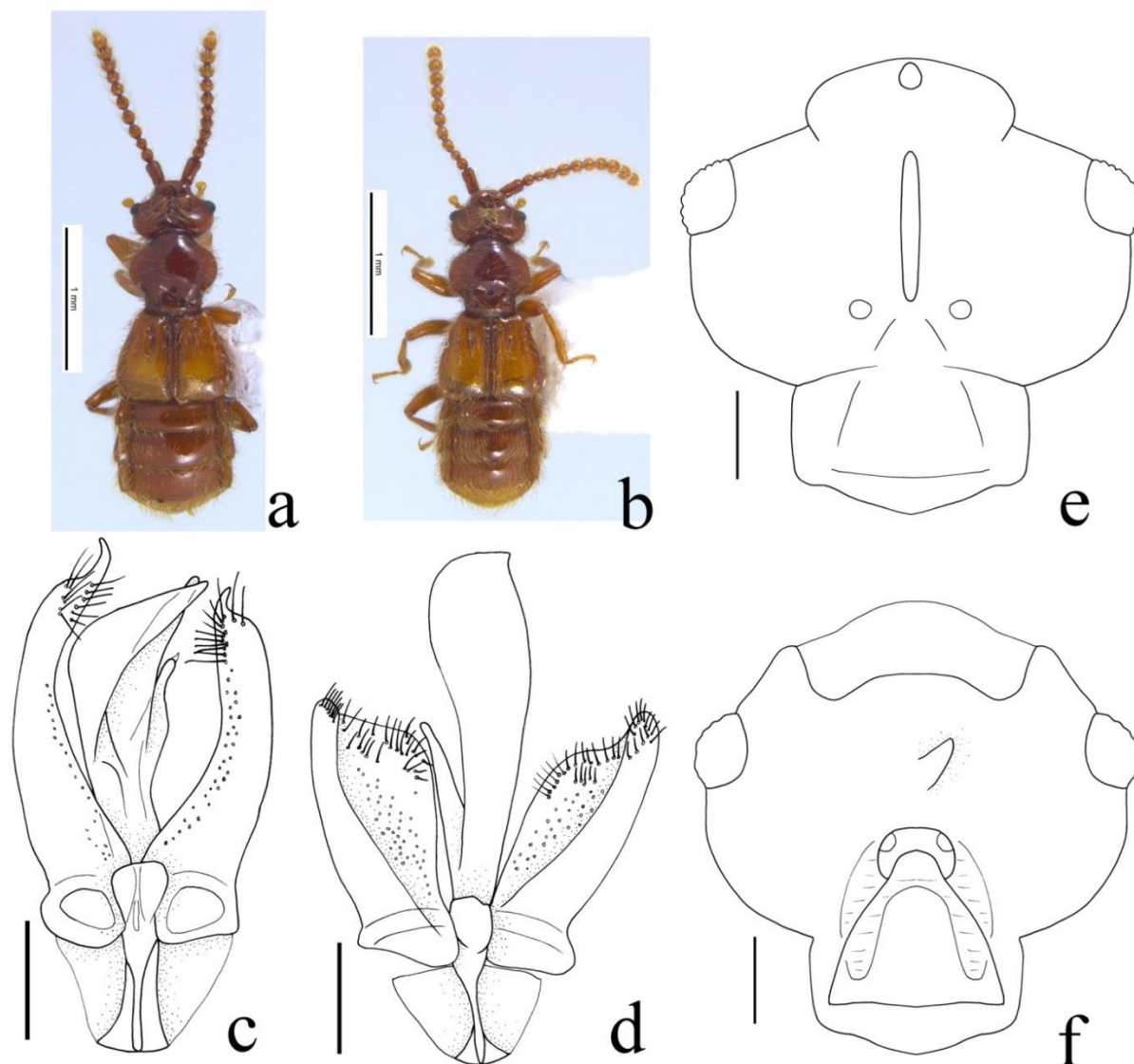


Figure 50. Habitus of group 9, dorsal views. a) *Sagola flavipes* Broun; b) *S. sulcator* Broun; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S. flavipes*; d) *S. sulcator*; Scale bars = 0.1 mm. *S. flavipes*. e) male dorsal head ; f) ventral surface of male head ; Scale bars = 0.1 mm.

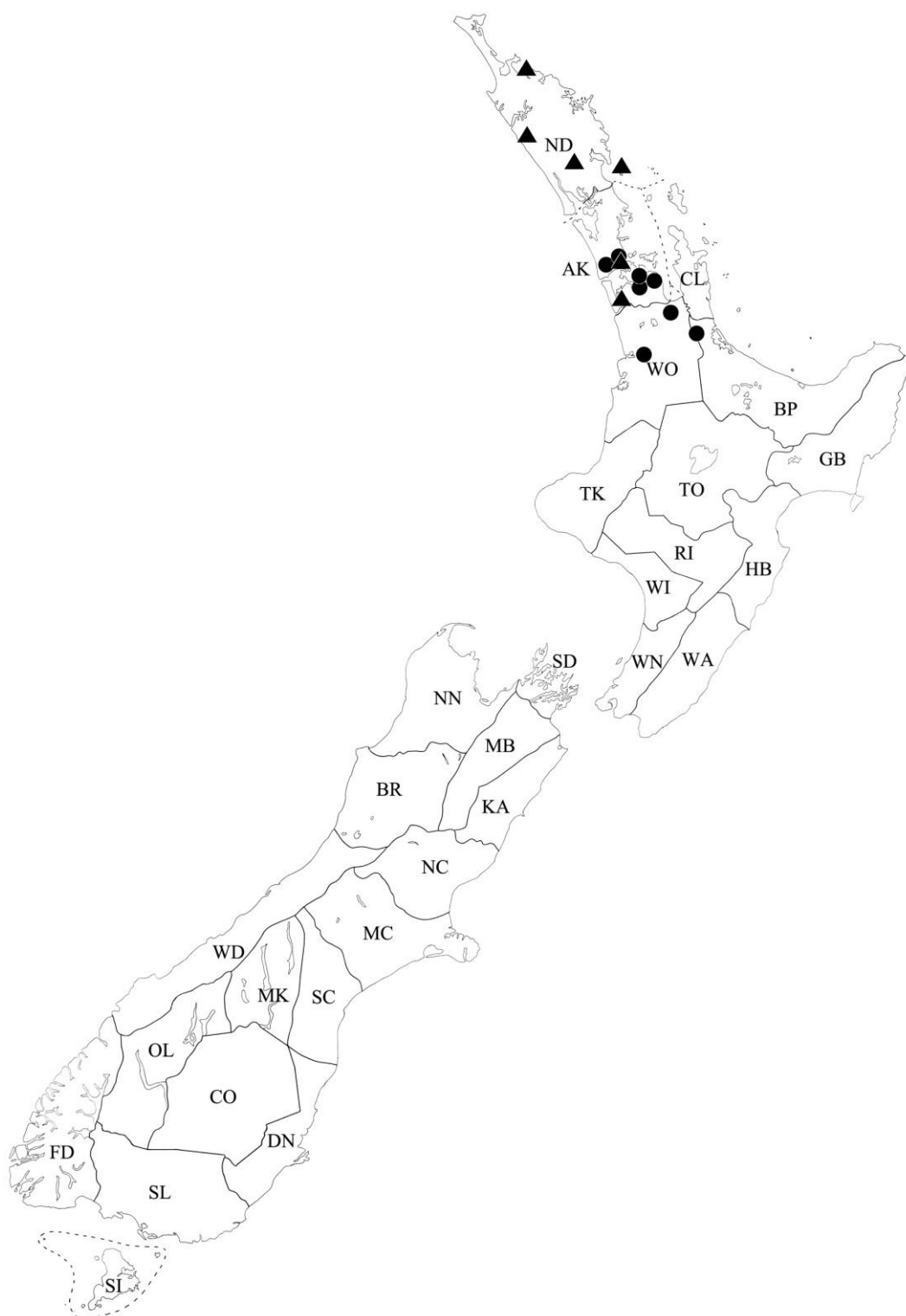


Figure 51. Locations where *Sagola flavipes* and *S. sulcator* specimens have been collected in New Zealand. *S. flavipes*: black circle; *S. sulcator*: triangles.

Group 10 (2 species)

Key to species of *Sagola* group 10

1. Ventral surface of male temple normal (Figure 52f); male antennomeres 6–8 longer than wide; left paramere divided from one-third length (Figure 52c).....*Sagola* sp. nov.11
1'. Ventral surface of male temple depressed and flat; male antennomeres 6–8 subquadrate; left paramere divided deeper, from two-third length (Fig 52d).....*S.* sp. nov.12

Diagnosis. The members of group 10 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–2.9 mm; head subquadrate with dense setae around posterior frontal fovea of frontal fovea (Figures 52a–b); antennomere 1 approximately 2.5 times longer than wide with dull surface; anterior and posterior frontal fovea round (Figure 52e); frontal sulcus reaching midpoint of eye (Figure 52e); hind wings well developed; legs elongate and slender (Figures 52a–b); abdominal tergites IV–VI with discal carinae; genitalia small, not exceed 0.25 mm (Figures 52c–d); present on North Island, not known from South Island (Figure 53).

Sagola sp. nov. 11

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND SH 12, Waipoua SF 20 Sep 1977 D.W. Helmore”, “Rotten stumps/trees 77/102”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (11 males). New Zealand: Auckland (AK):** 2♂♂, Waitakere Ra., Cascade-kauri Park, Upper Kauri tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap (FMNH); 1♂, Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap (FMNH); **Northland (ND):** 2♂♂ (slide-mounted), Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 683, FIT&window trap (FMNH); 1♂, Waipoua SF, 0.9km e forest hqtrs, 120m, 26 XI–4 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 686, berl., leaf & log litter, forest floor (DSC); 1♂, Waipoua SF, Wairau Summit, 400m, 27 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 687, FIT&window trap (FMNH); 1♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 689, FIT&window trap (FMNH); 1♂, Puketona, 20 I 1972, G.W. Ramsay, litter 72/49 (NZAC); 1♂, Pahia, 20 I 1972, G.W. Ramsay, litter 72/44 (NZAC); 1♂, Waipoua F., Te Matua Ngahere., 16–17 III 1978, 400m, S. Peck, J. Peck, Kauri forest (FMNH).

Diagnosis. This species can be distinguished by normal temple of male, longer male antennomeres 6–8, left paramere divided from one-third length.

Description of male. Length 2.3–2.8 mm. Body brown, antennae, legs, maxillary palpi paler (Figure 52a). *Head.* Antennomere 2 longer than wide, 3 subquadrate, 4–8 longer than wide, 9–10 subquadrate. Eye small and prominent, one-third length of temple (Figures 52e–f). *Thorax.* Prosternum slightly longer wide, widest one-third length of prosternum. Elytra rectangular (Figure 52a). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus.* Median lobe broad and blunt, shorter than parameres (Figure 52c). Phallobase of median lobe asymmetrical and rectangular (Figure 52c). Paramere asymmetrical and divided with one setae at tip, left paramere broader than right (Figure 52c).

Distribution. Auckland (AK), Northland (ND) (Figure 53: black circles).

Habitat. Most of specimens of this species were collected using flight intercept traps, or by sifting leaf and log litter in hardwood and podocarp forests.

***Sagola* sp. nov. 12**

Type Material. Holotype. New Zealand: Wellington (WN): ♂, “NEW ZEALAND, WN Orongorongo V, W.N. 1 Jan 1993”, “Hard beech forest litter Tullgren #13”, “*Sagola* sp. 2 det. Klimaszewski 1996”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=13; 7 males, 6 females). New Zealand: Auckland (AK):** 1♂, Wellsford, 29 IX 1958, R.A. Cumber; **Bay of Plenty (BP):** 1♀, Tapapa Tukorehe Res., 300m, 25 III 1978, S. Peck, J. Peck, berl., litter (FMNH); **Coromandel (CL):** 3♂♂2♀♀, Kaitohe, 1334, 1 II 1952, R. Hornabrook (NZAC); 1♂, Great Barrier I, Little Windy Hill, 100m, 19 XII 2002–23 I 2003, K. Parsons, coastal forest, malaise trap L11899 (AMNZ); 1♂, Great Barrier I, Mt. Hobson, 500m, pitfall trap, 9 XI–17 XII 2003, J.W. Early (AMNZ); **Waikato (WO):** 1♀, Pirongia Forest Park, Tirohanga tr. (above end Corcoran rd.), 500m, 37°58.409’S 175°07.173’E, 20 XI 2005, broadleaf forest, FMHD#2005-015, berl., forest litter, D. Clarke, A. Solodovnikov, ANMT site 1146 (FMNH); 1♀, Waitomo, 24 V 1983, G. Kuschel, decayed wood and litter 83/56 (NZAC); **Wellington (WN):** 1♂ (slide-mounted), Taraua Forest Park, Waitewaewae Tr., 220m, 40°51.98’S 175°15.319’E, 26 XI–21 XII 2005, broadleaf (much *Knightia exelsa*)-podocarp forest, FMHD#2005-034, FIT&window trap, ANMT site 1152 (FMNH); 1♀, Rimutakes Range, 11 VIII 1954, R. Hornabrook (NZAC).

Diagnosis. This species can be distinguished by depressed and flat temple of ventral surface of male head, subquadrate male antennomeres 4–8, left paramere divided from two-third length.

Description. Length 2.4–2.9 mm. Body brown, antennae, legs, maxillary palpi paler (Figure 52b). **Head.** Male antennomeres 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Female antennomeres 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Eye small and prominent, one-third length of temple. Male temple of ventral head depressed and flat. **Thorax.** Prosternum slightly longer than wide, widest one-third length of prosternum. Elytra rectangular (Figure 52b). Meso- and metathorax trapezoidal, as long as wide. **Aedeagus.** Median lobe broad and blunt, shorter than parameres (Figure 52d). Phallobase of median lobe asymmetrical and rectangular (Figure 52d). Paramere asymmetrical and divided with one seta at tip, left deeply divided (Figure 52d).

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Waikato (WO), Wellington (WN) (Figure 53: triangles).

Habitat. Most of specimens were collected using pitfall, malaise, window and flight intercept traps, or by sifting leaf litter in broadleaf and podocarp forests.

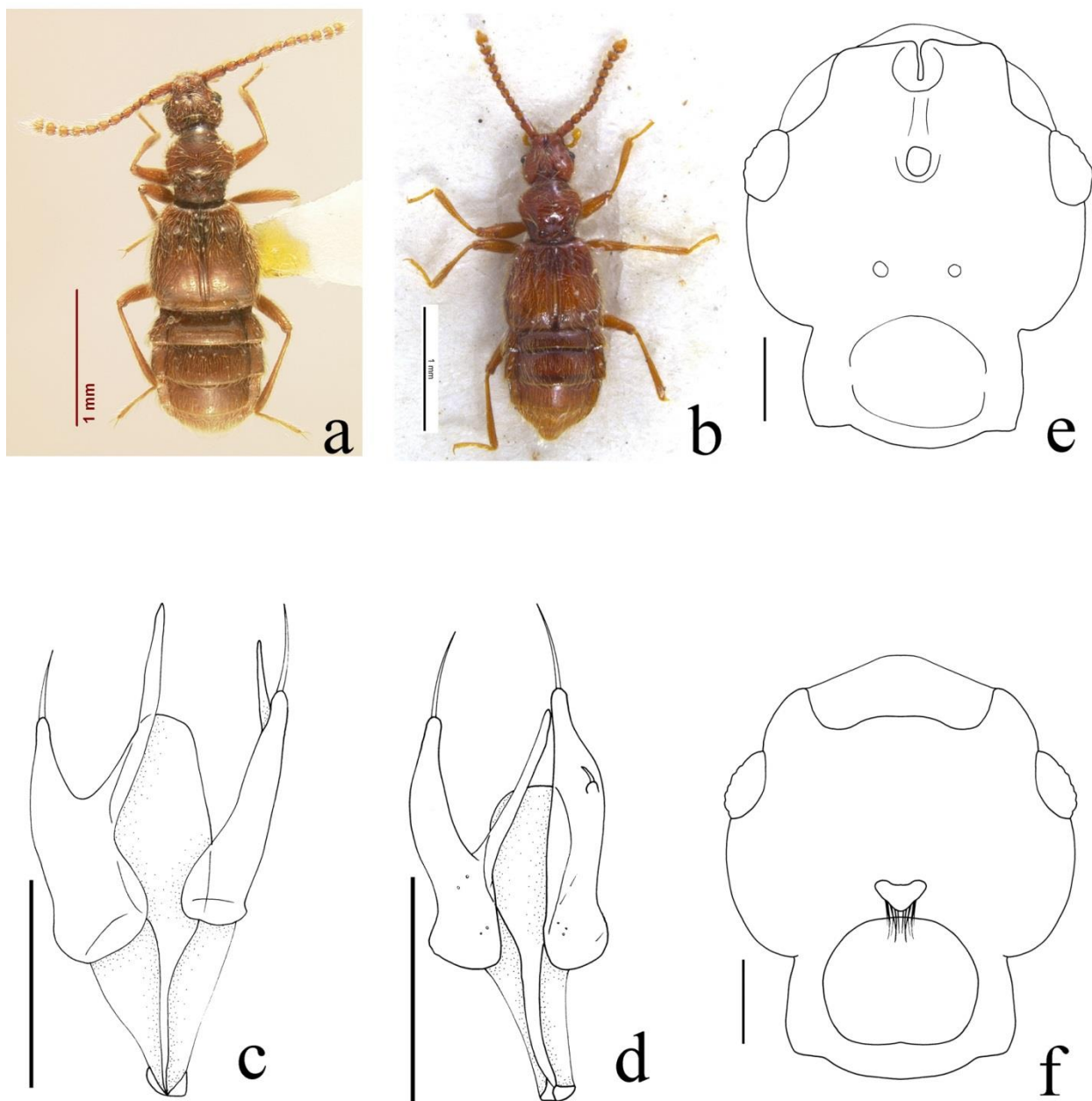


Figure 52. Habitus of group 10, dorsal views. a) *Sagola* sp. nov. 11; b) *S.* sp. nov. 12; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S.* sp. nov. 11; d) *S.* sp. nov. 12; Scale bars = 0.1 mm. *S.* sp. nov. 11. e) dorsal head; f) ventral head. Scale bars = 0.1 mm.

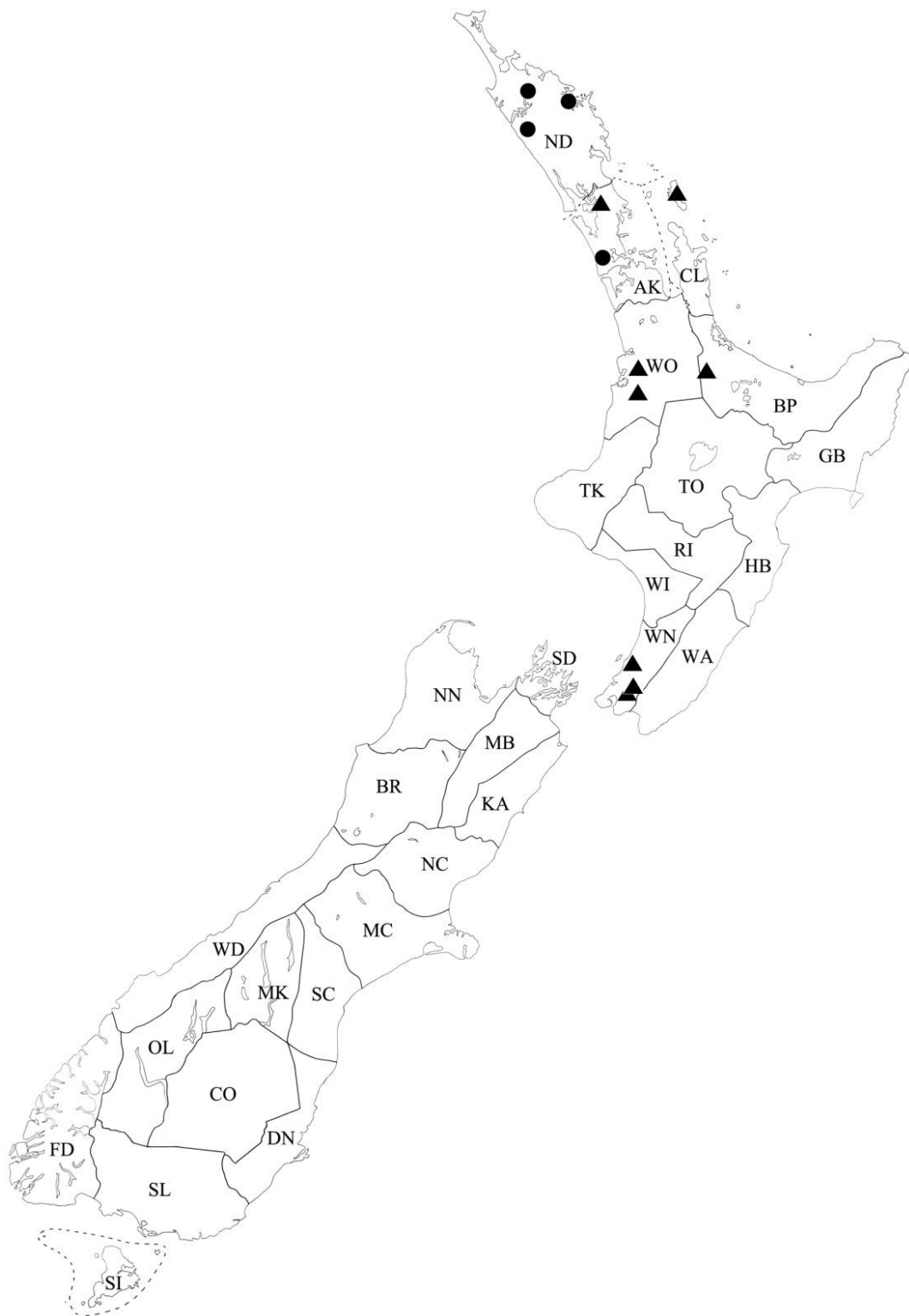


Figure 53. Locations where *Sagola* sp. nov. 11 and *S. sp. nov. 12* specimens have been collected in New Zealand. *S. sp. nov. 11*: black circles; *S. sp. nov. 12*: triangle.

Group 11 (4 species)

Key to species of *Sagola* group 11

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Antennomeres 4–7 elongate; eye as long as temple (Figure 54a).....*S. duplicata* Broun
1'. Antennomeres 4–7 slightly longer than wide or subquadrate; eye one-half length of temple.....2
2 (1). Apical major lobe of genitalia bluntly triangular (Figure 54g).....*S. sp. nov.*31-2
2'. Apical major lobe of genitalia round.....4
3 (2). Larger genitalia, ca. 0.35 mm; minor lobe of genitalia longer than major lobe (Figure 54e).....*S. rustica* Broun
3'. Smaller genitalia, ca. 0.25 mm; minor lobe of genitalia as long as major lobe (Figure 54h).....*S. sp. nov.*51

Diagnosis. The members of group 11 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–2.9 mm; antennomere 1 approximately 1.5–2.0 times longer than wide (Figure 54i); ventral surface of male head convex with setose gular; anterior frontal fovea oval (Figure 54j), posterior frontal fovea elongate (Figure 54j); hind wings well developed; abdominal tergites IV–VI with discal carina; parameres long triangular and broader than median lobe of genitalia (Figures 54e–f).

Sagola rustica Broun

Sagola rustica Broun, 1915: 285. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola brevifossa Broun, 1921a: 501. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Sagola subcuneata Broun, 1921a: 488. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244. New synonym.

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♀, glued on rectangular card, “Type” [red label, printed]; “3700.♀” [white label, handwritten]; “Rakaia. 18_5_1912.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♀. *rustica*.” [white label, handwritten]. **Holotype of *Sagola brevifossa*: New Zealand: Otago Lakes (OL):** ♂, glued on rectangular card, “4014.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Routeburn. 16.2.1914.” [white label, handwritten]; “*Sagola* ♂. *brevifossa*.” [white label, handwritten]. **Holotype of *Sagola subcuneata*: New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “3995.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sec x?” [white label, handwritten]; “Moa Basin. 20.10.1913.” [white label, handwritten]; “*Sagola* ♂. *subcuneata*.” [white label, handwritten].

Additional Material (n= 22; 5 males, 17 females). New Zealand: Fiordland (FD): 1♂2♀♀, Secretary I, Gut Bay, 23 XI 1981, C.F. Butcher, sifted litter around hut 81/177; 1♂, Breaksea Sound, Gilbert I No 6, 12 III 1983, C.F. Butcher, sifted rotten wood 83/43; 1♂, South Arm, L. Manapouri, 15 XII 1998, J. Nunn, underside log with white rot; 1♀, South Arm, L. Manapouri, 13 XII 1998, J. Nunn, in moss; 1♂1♀, Fiordland NP, Kepler tr. below Mt. Luxmore Hut, 900m, 45°24.865'S, 167°38.675'E, 11 XII 2005, *Nothofagus* forest, pyt. fogging mossy log,

A. Solodovnikov, D. Clarke, ANMT site 1176; 1♂, Murchison Mts, lower east McKenzie Burn, 945m, 8 XII 1983, C.A. Muir, litter in *N. menziesii* forest; 2♀♀, Fiordland NP, Milford Sound rd., Smithy Creek Campground area, 400m, 44°57.065'S, 168°01.156'E, 9–11 XII 2005, *Nothofagus fusca* & *N. menziesii* open forest, pyt. fogging old mossy & fungusy logs, A. Newton, ANMT site 1170; 1♀, Fiordland NP, Milford Sound rd., Gertrude Saddle car park area, 800m, 44°46.13'S, 168°00.16'E, 9 XII 2005, very mossy *Nothofagus menziesii* forest, FMHD#2005-087, berl., leaf & log litter, A. Newton, M. Thayer, ANMT site 1169; 1♀, Fiordland NP, Borland rd., Mt. Burns Tops tr. above Borland Saddle, 1075m, 45°44.883'S, 167°22.938'E, 10 XII 2005, subalpine tussockland, FMHD#2005-096, berl., unsifted at bases of shrubs (*Dracophyllum*, possibly *Fillfolium*), M. Thayer, ANMT site 1173; 2♀♀, Eglinton Valley Divide, 400m, 13 II 1982, C.F. Butcher, moss/liverworts 82/29; 2♀♀, Mt. Annetta Sdle, Little Red Hill, Barrier R., 1433m, 4 II 1975, litter alpine swards 75/43; 1♀, Simonin Pass, W. Olivine Ra., 1067m, 23 I 1975, G.W. Ramsay, litter in *Nothofagus* forest 75/37; **Westland (WD)**: 4♀♀, Mt. Aspiring NP, Arawata Biv, 840m, 5 II 1989, LCNZ 89/2, J.W. Early, R.M. Emberson, scrub litter.

Diagnosis. This species is separated from other species of this group by the following combination of characters: larger body, length 2.6–2.8 mm; ventral surface of male head convex with setose gular; eye large and prominent, approximately one-half length of temple; frontal sulcus deep and reversed keyhole shaped; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.6–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 54a). *Head.* Head round, widest across eyes (Figure 54a). Ventral surface of male head convex with setose gular. Male antennomere 1 approximately 2 times longer than wide, 2 subquadrate, 3–8 longer than wide, 9–10 subquadrate. Female antennomere longer than male, 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching posterior end of eye. Anterior frontal fovea oval. Posterior frontal fovea elongate. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 54a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, less developed in female. *Aedeagus.* Median lobe divided, minor lobe longer with tubercles (Figure 54e). Phallobase of median lobe symmetrical and rounded (Figure 54e). Paramere symmetrical with sparse setae from apex to midpoint, broader than median lobe (Figure 54e).

Type locality. Rakaia Gorge (MC), New Zealand.

Distribution. Fiordland (FD), Mid Canterbury (MC), Otago Lakes (OL), Westland (WD) (Figure 55: black circles).

Habitat. Most specimens of this species were collected by fogging or sifting mossy leaf or log litter in *Nothofagus* forests.

Comments. Specimens of *S. rustica* can be separated from other species by the shapes and sizes of the antennomeres, frontal fovea, frontal sulcus, size of eye, and unique genitalia. The type specimens of *S. rustica* share these diagnostic characters, and these species have been collected at or near the type locality. For these reasons, I have placed *S. brevifossa* and *S. subcuneata* in synonymy with *S. rustica*.

Sagola duplicata Broun

Sagola duplicata Broun, 1886: 888. Raffray, 1893: 40; 1904: 498; 1911: 5; 1923: 233. Hudson, 1923: 365; 1934: 183. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. New Zealand: Northland (ND): ♀, glued on rectangular card, “Type” [red label, printed]; “1581.♀.” [white label, handwritten]; “Parua” [white label, Printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola duplicata*” [white label, handwritten].

Additional Material (n= 7; 3 male, 4 females). New Zealand: Bay of Plenty (BP): 2♀♀ (1♀, slide-mounted), Waiaroho, 17 IX–21 X 1992, G. Hall, Malaise trap; **Coromandel (CL):** 1♀, Great Barrier I, Little Windy Hill, 220m, 22 V–7 VII 2002, P. Sutton, forest edge malaise trap; **Gisborne (GB):** 1♂, Taikawakawa, 2 II–18 III 1993, J.S. Dugdale, Malaise trap; **Marlborough Sounds (SD):** 1♂, Tennyson Inlet, east side Ducan Bay, 30m, 15 XII 1984–5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, FIT&window trap; **Southland (SL):** 1♂, Blue Mountains north end, 9 VIII 2003, J. Nunn, in compact moss cushion on beech bole at treeline; **Waikato (WO):** 1♀, Kaimai Range, Matamata, 1520', 1 III 1948, A.E. Brookes.

Diagnosis. This species is separated from other species of this group by the following combination of characters: body, length 2.7–2.9 mm; ventral surface of male head convex; eye large and prominent, as long as temple; longer antennomeres 4–7; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.7–2.9 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 54b). *Head.* Male head round, widest across eyes (Figure 54b), ventral head convex. Male antennomere 1 approximately 1.5 times longer than wide, 2 subquadrate, 3 longer than wide, 4–7 elongate, 8–9 longer than wide, 10 subquadrate. Female antennomeres 2–3 subquadrate, 4 elongate, 5–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea oval, posterior frontal fovea elongate. Eye large and prominent, as long as temple, female slightly smaller. *Thorax.* Prosternum as long as wide, widest at one-third of prosternum. Elytra rectangular (Figure 54b). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus.* Median lobe elongate triangular, as long as parameres, apical lobe with weak tubercles (Figure 54f). Phallobase of median lobe symmetrical and rounded (Figure 54f). Paramere symmetrical, broad with setae at tip (Figure 54f).

Type locality. Parua, near Whangarei Harbour (ND), New Zealand.

Distribution. Bay of Plenty (BP), Coromandel (CL), Gisborne (GB), Marlborough Sounds (SD), Northland (ND), Southland (SL), Waikato (WO) (Figure 55: triangles).

Habitat. Specimens of this species were collected using malaise traps.

Sagola sp. nov. 31-2

Type Material. Holotype. New Zealand: Marlborough (MB): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: MB: Richmond Ra, 1600m Johnson Pk., 13 III 1969 J.S. Dugdale, swards 69/96”.

Diagnosis. This species is separated from other species of this group by the following combination of characters: body 2.4 mm; ventral surface of male head transversely convex with setose gular; eye large and prominent, approximately one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.4 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 54c). *Head.* head as long as wide, widest across eyes (Figure 54c). Ventral head transversely convex with setose gular. Antennomere 1 approximately 2 times longer than wide with dull surface, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching hind point of eye. Anterior frontal fovea oval, posterior frontal fovea elongate. Eye large, approximately one-half length of temple. *Thorax.* Prosternum longer than wide, widest one-third length of prosternum. Elytra rectangular (Figure 54c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia. *Aedeagus.* Median lobe divided, major apical lobe broader (Figure 54g). Phallobase of median lobe symmetrical and rounded (Figure 54g). Paramere symmetrical, broad with setae from apical to midpoint (Figure 54g).

Distribution. Marlborough (MB) (Figure 55: black square).

Habitat. The holotype of this species was collected in swards.

Sagola sp. nov. 51

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND NN Beebys Knob 1220m 5 Feb 1978 A.K. Walker”, “Moss and rotten wood 78/76”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 56; 35 males, 21 females). New Zealand: Nelson (NN):** 3♂♂7♀♀, Kahurangi NP, Mt. Arthur tr., below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-048, berl., dead wood, D. Clarke, ANMT site 1157 (FMNH); 1♂2♀♀, Kahurangi NP, Mt. Arthur tr., below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, berl., leaf litter, A. Solodovnikov, D. Clarke, ANMT site 1157 (FMNH); 6♂♂3♀♀, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S, 172°44.456'E, 28 XI 2005, *Nothofagus*-dominant forest, pyr.-fogging mossy old logs, A. Newton, M. Thayer, ANMT site 1156 (FMNH); 4♂♂1♀, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S, 172°44.456'E, 28 XI 2005, *Nothofagus*-dominant forest, berl., leaf & log litter, A. Newton, M. Thayer, ANMT site 1156 (FMNH); 4♂♂2♀♀, Arthur Range, w side Flora Saddle, 950m, 1 I 1985, *Nothofagus* mossy forest, A. Newton, M. Thayer 725, pyrethrin fogging fungusy *Nothofagus* log (FMNH); **Buller (BR):** 2♂♂1♀ (1♂, slide-mounted), Nelson Lks. NP, n slope Mt. Robert, Speargrass tr., 880m, 21 XII 1984, *Nothofagus* forest, A. Newton, M. Thayer 704, Pyrethrin fogging fungusy *Nothofagus* logs (FMNH); 6♂♂4♀♀, Nelson Lks. NP, n slope Mt. Robert, Pinchgut tr., 1290m, 18–26 XII 1984, *Notho. sol.* elfin forest, A. Newton, M. Thayer 716, Pyrethrin fogging fungusy *Nothofagus* logs (FMNH&DSC); 5♂♂, Nelson Lks. NP, n slope Mt. Robert, Pinchgut tr., 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, window trap (FMNH&DSC); 1♂, Nelson Lks. NP, Lake Rotoiti, St. Arnaud tr., 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap (FMNH); 1♂, Lewis Pass Nat. Res., 06km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, berl., leaf & log litter, forest floor (DSC); 1♂, Nelson Lks. NP, Robert Ridge, nr. Julius Summit, ca. 1700m, 41°52'S 172°46.5'E, 1 XII 2005, FMHD#2005-063, berl., debris at Bases of tussocks, A. Solodovnikov (FMNH); 1♂, Paparoa Ra., 1036, Mt. Dewar, 12 XII 1969, J.C. Watt, moss 69/260 (ZNAC); 1♀, Reefton, 12 IV 1977, J.A. Wightman, pit trap cutover pine (NZAC).

Diagnosis. This species is separated from other species of this group by the following combination of characters: body 2.3–2.5 mm; ventral surface of male head transversely convex

with setose gular; eye large and prominent, approximately one-half length of temple; antennomeres 3–10 subquadrate; shape of genitalia unique to species.

Description. Length 2.3–2.5 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 54d). *Head.* head blunt triangular, widest across eyes (Figure 54d). Ventral surface of male head transversely convex with setose gular. Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3–10 subquadrate. Frontal rostrum prominent, meet each other, covering anterior frontal fovea. Frontal sulcus deep, reaching hind point of eye from end of frontal rostrum. Anterior frontal fovea oval, posterior frontal fovea elongate. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum longer than wide, widest one-third length of prosternum. Elytra rectangular (Figure 54d). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia, less developed in female. Abdominal ventrites III–V with very small basolateral fovea. *Aedeagus.* Median lobe divided, major lobe as wide as minor (Figure 54h). Phallobase of median lobe symmetrical and rounded (Figure 54h). Paramere symmetrical, broad with setae at tip (Figure 54h).

Distribution. Buller (BR), Nelson (NN) (Figure 55: stars).

Habitat. Most of specimens of this species were collected at high elevations (> 670 m) by fogging, or using window and flight intercept traps, or by sifting leaf litter in *Nothofagus* mossy forests.

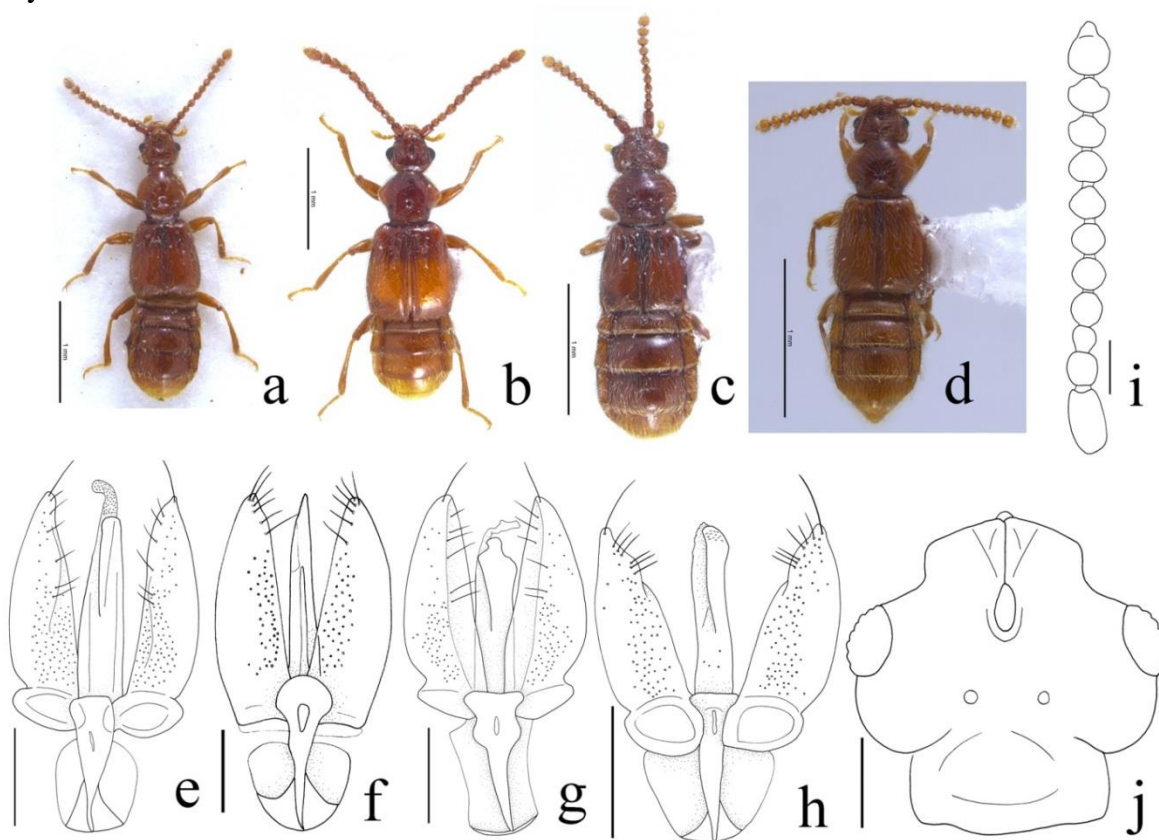


Figure 54. Habitus of group 11, dorsal views. a) *Sagola rustica* Broun; b) *S. duplicata* Broun; c) *S. sp. nov.* 31-2; d) *S. sp. nov.* 5; Scale bars = 1 mm. Aedeagus, dorsal view. e) *S. rustica*; f) *S. duplicata*; g) *S. sp. nov.* 31-2; h) *S. sp. nov.* 51; Scale bars = 0.1 mm. *S. sp. nov.* 51. i) antenna; j) dorsal head ; Scale bars = 0.1 mm.

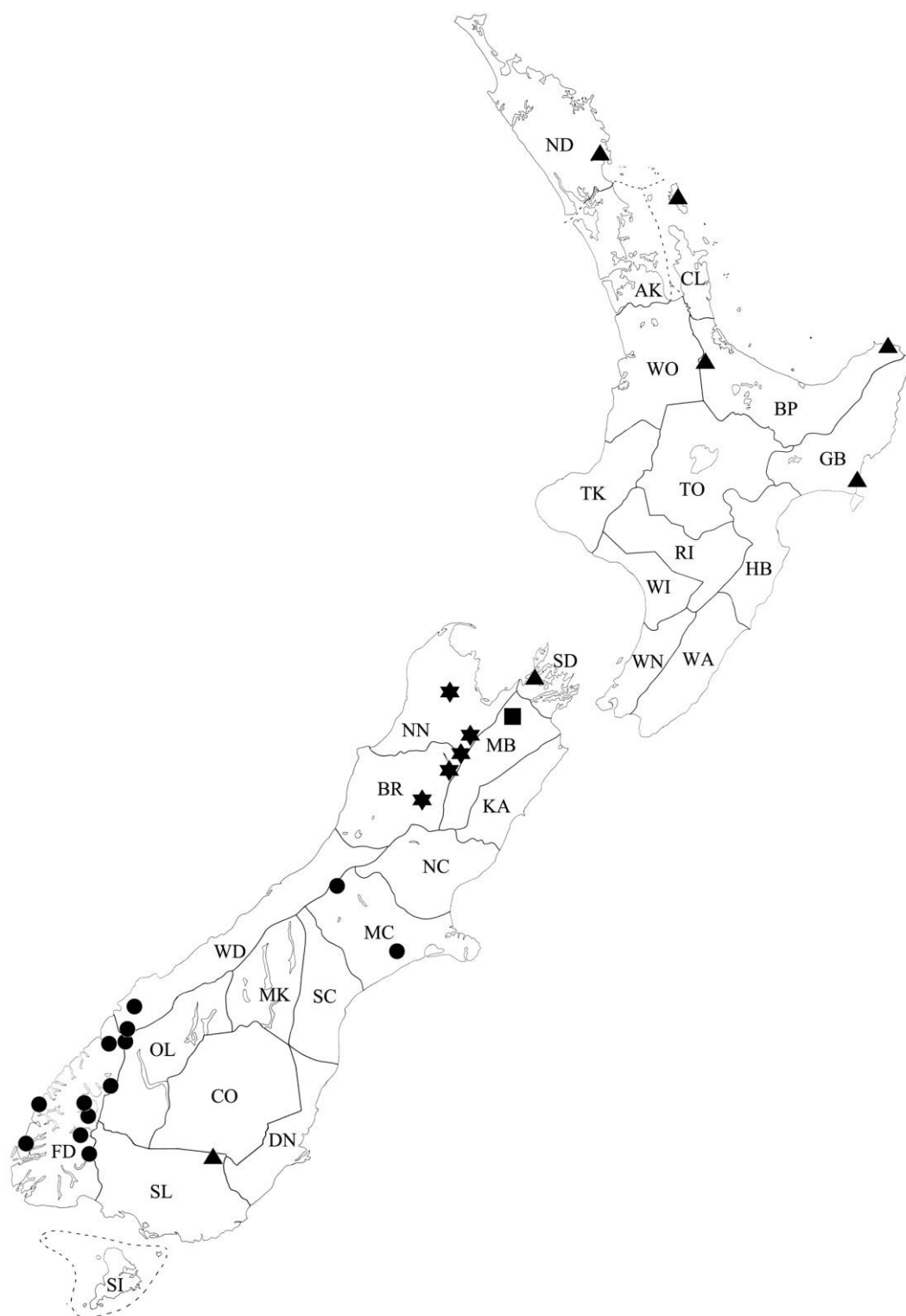


Figure 55. Locations where *Sagola rustica*, *S. duplicata*, *S. sp. nov. 31-2* and *S. sp. nov. 51* specimens have been collected in New Zealand. *S. rustica*: black circle; *S. duplicata*: triangles; *S. sp. nov. 31-2*: black square; *S. sp. nov. 51*: stars.

Group 12 (1 species)

Diagnosis. The members of group 12 may be separated from other *Sagola* groups by the following combination of characters: small body, length 1.7–1.9 mm; antennomere 1 approximately 2 times longer than wide; frontal rostrum prominent (Figure 56a); hind wings well developed; abdominal tergites IV–VI with discal carinae; broad and flattened genitalia (Figure 56b); only known from Northland of North Island (Figure 59: black circles).

Sagola sp. nov. 17

Type Material. Holotype. New Zealand: Northland (ND): ♂, “NEW ZEALAND: ND Waipoua State Forest, 0.9km e Forest Hqtrs. 120m, 26.xi-4.xii.1984 hdwd.-podocarp forest A. Newton/M. Thayer 686”, “flight intercept (window) trap”. **Paratypes (2 males): New Zealand: Northland (ND):** 1 ♂, same data as holotype (FMNH); 1 ♂ (slide-mounted), Omahuta SF, Kauri Sanct., 18 III 1978, S. Peck, J. Peck, 300m, Rangiahua, berl., forest litter (FMNH).

Diagnosis. This species is separated from other species by the following combination of characters: small body 1.7–1.9 mm; frontal rostrum prominent; ventral surface of head weakly convex; eye large and prominent, approximately one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.7–1.9 mm. Body brown, antenna and maxillary palpi paler, elytra, legs paler (Figure 56a). *Head.* Male head as long as wide, widest across eyes (Figure 56a), ventral surface of head weakly convex with setose gular. Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal rostrum prominent. Frontal sulcus reaching midpoint of eye. Anterior frontal fovea oval. Posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 56a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe broader than longer than paramere (Figure 56b). Phallobase of median lobe symmetrical and rounded (Figure 56b). Paramere symmetrical, elongate triangular with setae at tip (Figure 56b).

Distribution. Northland (ND) (Figure 59: black circles).

Habitat. Specimens of this species were collected using window and flight intercept traps or by sifting forest litter in hardwood and podocarp forests.

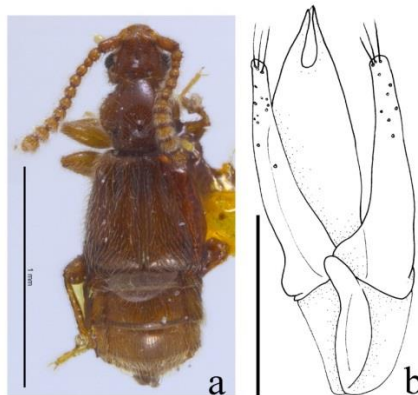


Figure 56. *Sagola* sp. nov. 17. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; Scale bars = 0.1 mm.

Group 13 (1 species)

Diagnosis. The members of group 13 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3 mm (Figure 57a); antennomere 1 approximately 2 times longer than wide; anterior and posterior frontal fovea oval, anterior frontal fovea open anteriorly (Figure 57c); hind wings well developed; only known from Nelson of South Island (Figure 59: triangles).

Sagola sp. nov. 18-5

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Paradise Peak 4500’ 6- 11-38, E. S. Gourlay”, “E.S.Gourlay Acc. 1970 Ent. Div.”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. . This species is separated from other species of group 13 by the following combination of characters: body length 2.3 mm; head transverse; eye large and prominent, one-half length of temple; neck bearing dense setae anteroventrally; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.3 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 57a). *Head.* Head transverse, widest across eyes (Figure 57a). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep and reaching midpoint of eye. Anterior and posterior frontal fovea oval, anterior frontal fovea open anteriorly. Eye large and prominent, one-half length of temple. Anterior ventral neck bearing dense setae. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 57a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe divided, apical major lobe elongate and umbrella shaped (Figure 57b). Phallobase of median lobe symmetrical and rounded (Figure 57b). Paramere symmetrical long triangular with setae at apex (Figure 57b).

Distribution. Nelson (NN) (Figure 59: triangles).

Habitat. Unknown.

Comments. The holotype has suffered damage to the frontal head and mouth parts, so the shape of frontal sulcus and fovea may differ from the original condition.

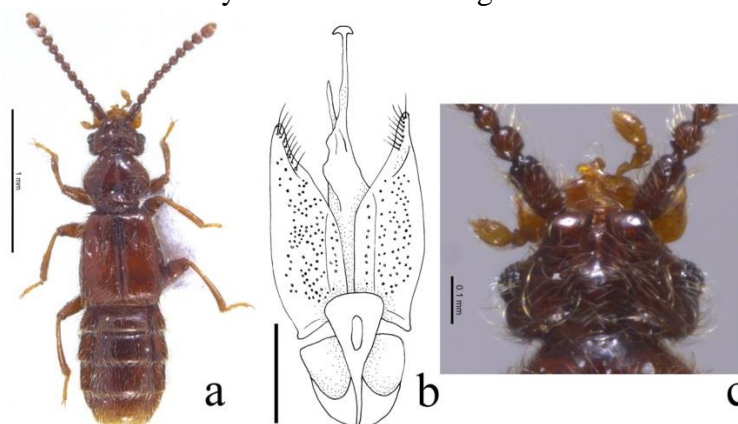


Figure 57. *Sagola* sp. nov. 18-5. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) dorsal head; Scale bars = 0.1 mm.

Group 14 (1 species)

Diagnosis. The members of group 14 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–2.6 mm (Figure 59a); antennomere 1 approximately 1.5 times longer than wide; eye large and prominent, approximately two-third length of temple (Figure 59c); ventral surface of male head distinctly convex with heart-shaped depression containing a pair of diagonal processes (Figure 59d); hind wings well developed; abdominal tergites IV–VI with discal carinae.

Sagola sharpi Raffray

Sagola sharpi Raffray, 1893: 26; 1904: 498; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola clavatella Broun, 1912b: 631. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New synonym.

Sagola grata Broun, 1912b: 628. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Sagola posticalis Broun, 1915: 291. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Type Material. Syntype. New Zealand: ♀, glued on rectangular card, “Type” [red label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola sharpi* Type Raffray.” [white label, handwritten]. **Holotype of *Sagola clavatella*: New Zealand: Buller (BR):** ♂, glued on rectangular card, “Type” [red label, printed]; “19.–” [white label, handwritten]; “Greymouth, New Zealand Helms.” [white label, printed]; “Sharp Coll. 1905–313” [white label, printed]; “*Sagola* ♂. *clavatella*.” [white label, handwritten]. **Holotype of *Sagola grata*: New Zealand: Marlborough Sounds (SD):** ♂, glued on rectangular card, “Type” [red label, printed]; “18_” [white label, handwritten]; “Sharp Coll. 1905–313” [white label, printed]; “Picton, New Zealand Helms.” [white label, printed]; “*Sagola grata*. ♂.” [white label, handwritten]. **Syntypes of *Sagola posticalis*: New Zealand: Kaikoura (KA):** ♂, glued on rectangular card, “Type” [red label, printed]; “3707. ♂” [white label, handwritten]; “Wairiri. Kaikoura” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♂. *posticalis*” [white label, handwritten]. ♀, glued on rectangular card, “3707. ♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Wairiri. Kaikoura” [white label, handwritten]; “*Sagola posticalis*” [white label, handwritten].

Additional Material (n= 70; 47 males, 23 females). New Zealand: Buller (BR): 1 ♂, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713, FIT&window trap (FMNH); 1 ♀, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713, pyrethrin fogging fungusy log (FMNH); 1 ♂, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, FIT&window trap (FMNH); 1 ♀, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, pyrethrin fogging fungusy log (FMNH); 1 ♀, Nelson Lks NP, n slope Mt. Robert, Speargrass tr., 880m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 704, window trap (FMNH); 1 ♀, Nelson Lks NP, n slope Mt. Robert, Pinchgut Tr., 1290m, 18–26 XII 1984, *Noth. sol.* elfin forest, A. Newton, M. Thayer 716, FIT&window trap (FMNH); 1 ♀, Nelson Lks NP, n slope Mt. Robert, 860m, 23–26 III 1980, *Nothofagus* forest, A. Newton, M.

Thayer, pyrethrin fogging fungusy log (FMNH); 1♂, Shenandoah Saddle, 700m, 10 I 1982, R.M. Emberson, moss by stream LCZN 82/5 (LUNZ); 1♂, Punakaiki, Pororari R Valley tr., 80m, 2–4 V 2007, J.W. Early, R.F. Gilbert, *Nothofagus*-podocarp forest, yellow pan trap L15869 (AMNZ); 1♂, Nelson Lks NP, Lake Rotoiti, St. Arnaud tr., 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap (FMNH); **Coromandel (CL)**: 1♂, Kaitohe, 12 I 1952, R. Hornabrook (NZAC); **Gisborne (GB)**: 1♂, Urewera NP, Waikaremoana Rd., s end Matanunui Ridge, 720m, 38°44.404'S 177°05.806'E, 22 XI–23 XII 2005, mixed broadlf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, FIT, M. Thayer, A. Solodovnikov, ANMT site 1149 (FMNH); **Dunedin (DN)**: 1♂, Government tr., Waipori Valley, 13 XII 2003–6 II 2004, J. Nunn, FIT (JTN); **Marlborough (MB)**: 2♂♂, Pelorus Bridge Scenic Reserve, 35m, 41°18.3'S 173°34'E, 27 XI 2005, mixed broadlf (incl. *Nothofagus*)-podocarp forest, pyr-fogging old fungusy logs, A. Newton, D. Clarke, ANMT site 1155 (FMNH); **North Canterbury (NC)**: 1♀, 2.9km N Arthur's Pass Bealey Valley tr., 840–950m, 42°55'S 171°33'E, #40, under bark, 11 I 1998, C. Carlton, R. Leschen (LSAM); **Nelson (NN)**: 1♂, Kahurangi NP, Cobb Dam rd., Asbestos tr., 450m, 41°06.333'S 172°43.174'E, 29 XI 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, pyr-fogging mossy/fungusy logs, A. Newton, M. Thayer, ANMT site 1160 (FMNH); 1♂, Kahurangi NP, Cobb Dam rd., Asbestos tr., 450m, 41°06.333'S 172°43.174'E, 29 XI 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, FMHD#2005-056, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT site 1160 (FMNH); 1♂, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172°44.456'E, 28 XI 2005, *Nothofagus* dominant forest, under bark of small logs, A. Newton, M. Thayer, ANMT site 1156 (LSAM); 1♂, Slaters Rd., 0.7km S Whangamoa Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 703, window trap (FMNH); 1♂, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172°44.456'E, 28 XI 2005, *Nothofagus* dominant forest, FMHD#2005-044, FIT, A. Newton, M. Thayer, ANMT site 1156 (LSAM); 1♂, Hope Saddle, 25 I 1957, E.S. Gourlay (NZAC); 1♂, Cobb rd., summit, 29 XI 2005, J. Nunn, under tight bark of beech log (JTN); 1♀, Slaters rd., 0.7km s Whangamoa Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 703, FIT&window trap (FMNH); 1♀, 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap (FMNH); **Otago Lakes (OL)**: 1♂1♀, Paradise, 2 II 1984, J.C. Watt, sifted wood mould 84/9 (NZAC); 1♂, 14km nw Glenorchy, beyond Paradise, Mt. Aspiring NP, 44°41'S 168°20'E, #103, *Nothofagus* leaf litter berlese, 21 I 1998, C. Carlton, R. Leschen (LSAM); 1♂, Mt. Aspiring NP, 5.5km nne Makarora, 330m, 11–17 I 1985, *Nothofagus menziesii* forest, A. Newton, M. Thayer 741, under bark rotting log (FMNH); **Marlborough Sounds (SD)**: 3♂♂, Tennyson Inlet, west side Duncan Bay, 30m, 15 XII 1984–5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, FIT&window (FMNH); 1♀, Tennyson Inlet, west side Duncan Bay, 30m, 15 XII 1984–5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, pyrethrin fogging fungusy log (FMNH); 1♂, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd, A. Newton, M. Thayer 710, berl., leaf & log litter, forest floor (FMNH); 1♂, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 708, window trap (FMNH); 1♂, Opouri Saddle, 28 I 1979, L.A. Mound, wet moss on roadside bank (NZAC); 1♂, Picton, IX 1969, G. Kuschel (NZAC); **Stewart Island (SI)**: 1♂, Golden Bay, 10 I 1996, J. Nunn, in dead Rimu wood (JTN); **Southland (SL)**: 1♂, Catlins Forest Park, Table Hill Scenic Res., nne Papatowai, 180m, 46°30.05'S 169°30.06'E, 13 XII 2005, *Nothofagus menziesii*, FMHD#2005-106, berl., leaf & log litter, A. Newton, M. Thayer, et al., ANMT site 1179 (FMNH); **Wairarapa (WA)**: 1♂, upper Manawatu Gorge, 24 X

1993, J. Nunn (JTN); 3♂♂3♀♀, Klein Tr., Manawatu Gorge, 16 VII 1994, J. Nunn, in much decayed wood (JTN); 3♀♀, Hikurangi, 13 IX 1982, J.C. Watt, sifted woodmould 82/76 (NZAC); **Westland (WD)**: 2♂♂, Lake Kaniere rd., 2.8km nw Lake Kaniere, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 732, FIT&window trap (FMNH); 2♂♂ (1♂, slide-mounted), Okuku Scenic Reserve, 9.2km sse Kumara, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 731, FIT&window trap (FMNH); 2♂♂1♀, 1.8km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd forest with nikau, A. Newton, M. Thayer 718, FIT&window trap (FMNH); 1♀, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap (FMNH); 1♀, Hokitika Lake Mahinapua Res., 28 I 1978, S. Peck, J. Peck, bracket fungi berl (FMNH); **Wellington (WN)**: 1♂1♀, Wilton's Bush, 110m, 41°15.963'S 175°45.159'E, 24 XI 2005, mixed broadleaf-podocarp forest, FMHD#2005-030, berl., leaf & log litter, M. Thayer, A. Newton, ANMT site 1150 (FMNH); 1♂, Tararua Ra., Dundas Hut Ridge, 750m, 11 II 1985, C.F. Butcher sifted rotten wood 85/31 (NZAC); 1♂, Nikau Preserve, Paraparaumu, 23 VII 1995, in kohekohe with white rot, on forest floor (JTN); 1♂, Mana Island, 5–7 XI 1993, J. Nunn, in decayed wood (JTN); 1♂, Nikau Reserve, Paraparaumu, 9 I 1996, in humfied log on forest floor (JTN); 1♂, Kaitoke Regional Park, Pakuratahi Forks, 15 IV 2005, R. Leschen, C. McGuiness, leaf litter, RL975, 41.03'S 175.11'E (NZAC); 2♂♂1♀, Pakurara Forks, Kaitoke, 24 VII 1993, J. Nunn, in decayed wood (JTN); 1♀, Nikau Res., Paraparaumu, 10 X 1993, J. Nunn (JTN); 1♀, Wilton Bush, Wellington City, 24 XI 2005, in decayed wood (JTN).

Diagnosis. This species is separated from other species of group 14 by the following combination of characters: body length 2.3–2.6 mm; ventral surface of male head distinctly convex with heart-shaped depression containing a pair of diagonal processes; eye large and prominent, approximately two-third length of temple; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.3–2.6 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 58a). *Head.* Head round, widest across eyes (Figure 58c). Ventral surface of male head distinctly convex with heart-shaped depression containing a pair of diagonal processes (Figure 58d). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–8 subquadrate, 9–10 weakly transverse. Frontal sulcus deep, reaching midpoint of eye (Figure 58c). Anterior frontal fovea round (Figure 58c). Posterior frontal fovea oval (Figure 58c). Eye large and prominent, approximately two-third length of temple (Figure 58c). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 58a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe simple and small, < 0.25 mm (Figure 58b). Phallobase of median lobe symmetrical and rounded (Figure 58b). Paramere symmetrical with setae at tip (Figure 58b).

Type locality. New Zealand (specific locality unknown).

Distribution. Buller (BR), Coromandel (CL), Dunedin (DN), Gisborne (GB), Fiordland (FD), Marlborough (MB), North Canterbury (NC), Nelson (NN), Otago Lakes (OL), Marlborough Sounds (SD), Stewart Island (SI), Southland (SL), Westland (WD), WA (Wairarapa), WN (Wellington) (Figure 59: black squares).

Habitat. Most specimens of this species were collected using window and flight intercept traps, and by fogging or by sifting mossy leaf or decayed log litter in *Nothofagus*, podocarp, hardwood, broadleaf forests.

Comments. The original description cited two males and one female specimens, but I was only able to examine one female. Nevertheless, specimens of *S. sharpi* can be separated from other species by the shapes and sizes of the antennomeres, frontal fovea, frontal sulcus and size of eye are diagnostic. The type specimens of *S. sharpi* share these diagnostic characters. For these reasons, I have placed *S. clavatella*, *S. grata* and *S. posticalis* in synonymy with *S. sharpi*.

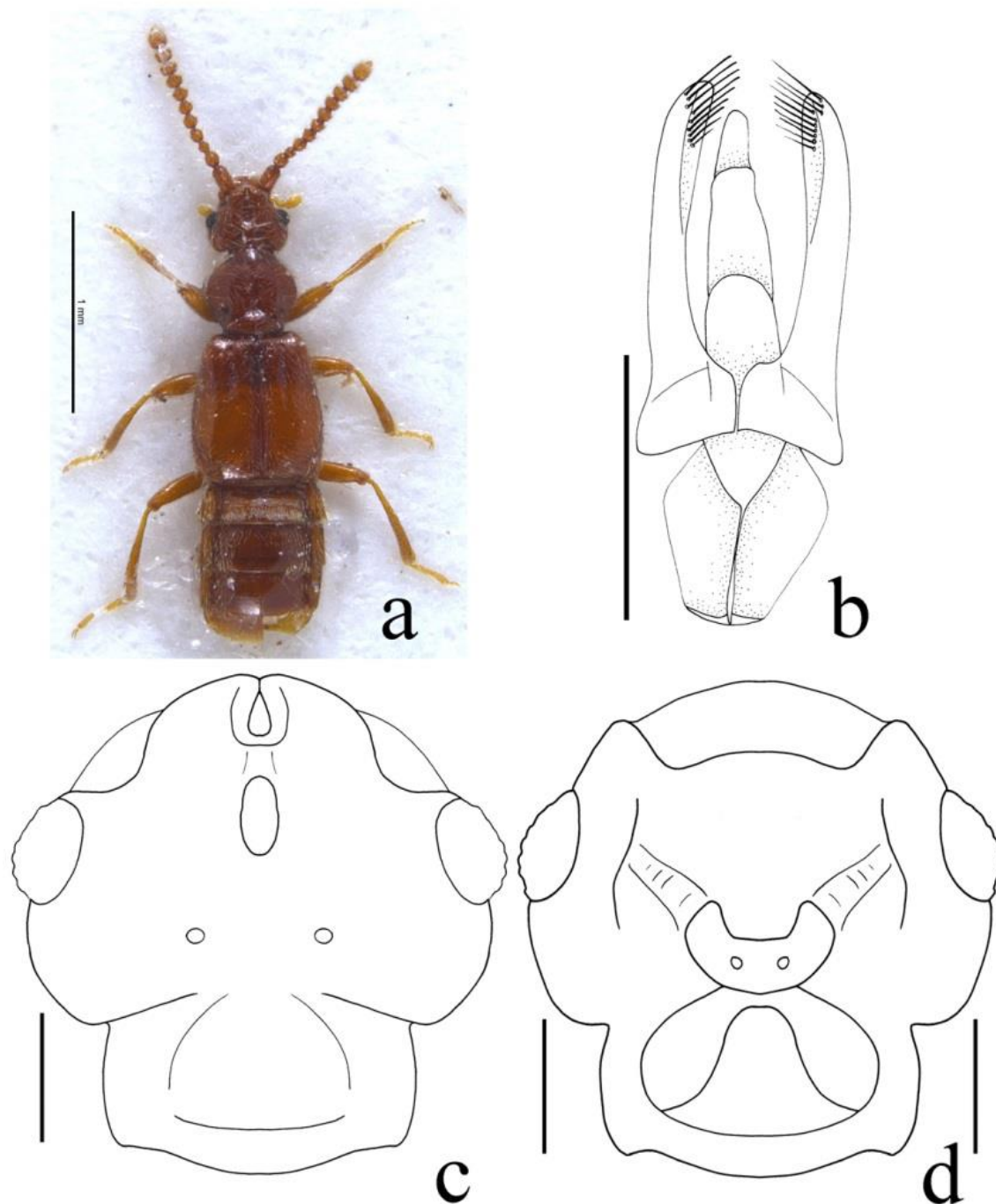


Figure 58. *Sagola sharpi* Raffray. 18-5. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) dorsal head; d) ventral head; Scale bars = 0.1 mm.

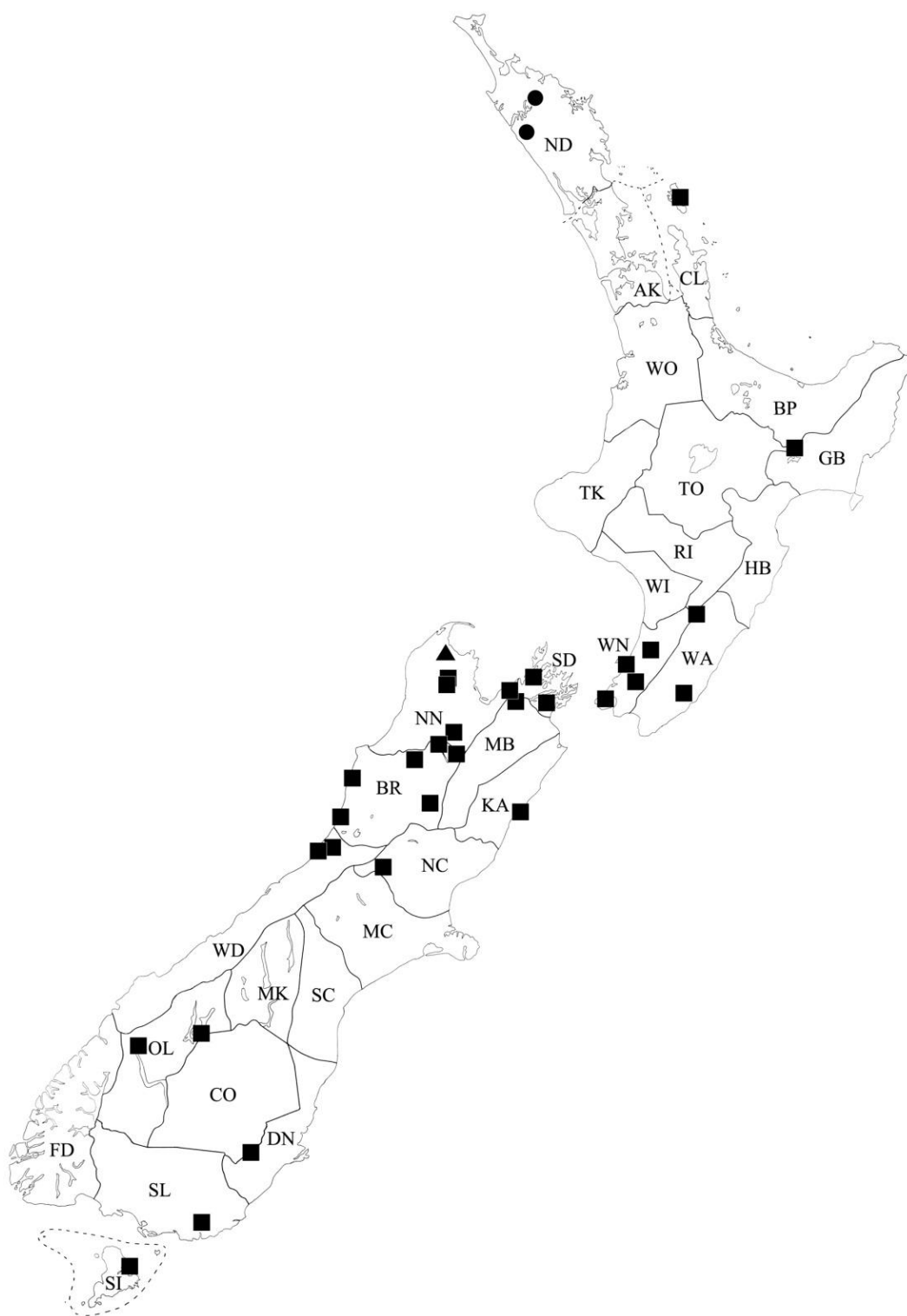


Figure 59. Locations where *Sagola* sp. nov. 17, *S. sp. nov. 18-5* and *S. sharpi* specimens have been collected in New Zealand. *S. sp. nov. 17*: black circles; *S. sp. nov. 18-5*: triangles; *S. sharpi*: black squares.

Group 15 (8 species)

Key to species of *Sagola* group 15

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Antennomere 1 approximately 2 times longer than wide with dull surface; frontal sulcus reaching posterior margin of head.....2
- 1'. Antennomere 1 approximately 1.5 times longer than wide; frontal sulcus not exceed vertexal fovea.....3
- 2 (1). Left paramere longer than wide and bent (Figure 61h).....*Sagola* sp. nov.71
- 2'. Right paramere longer than wide with round depression at base (Figure 61i).....*S. sp. nov.*71-1
3. Frontal sulcus distinctly wide (Figure 61j).....*S. spiniventris* Broun
- 3'. Frontal sulcus linear (Figure 61k).....4
- 4 (3). Male antennomeres 5–10 weakly enlarged; male hind-femur with triangular process; only known from North Island.....5
- 4'. Male antennomeres 5–10 simple; male hind-femur simple; known from Chatham Island or Three kings Islands.....6
- 5 (4). Lateral median lobe of genitalia rectangular with emarginate apical lobe; parameres C-shaped (Figure 61a).....*S. auripila* Broun
- 5'. Lateral median lobe of genitalia long curved with wave shaped ventral margin; parameres weakly curved (Figure 61e).....*S. sp. nov.*31-1
- 6 (4). Paramere asymmetrical and setae only at tip (Figure 61f); only known from Three Kings Islands (Figure 63: black square).....*S. sp. nov.*29-3
- 6'. Paramere symmetrical and setae on middle; only known from Chatham Island.....7
- 7 (6). Median lobe of genitalia S-shaped (Figure 61k).....*S. sp. nov.*29-2
- 7'. Median lobe of genitalia rectangular (Figure 61d).....*S. sp. nov.*65

Diagnosis. The members of group 15 may be separated from other *Sagola* groups by the following combination of characters: body small, length 1.8–2.4 mm; antennomere 1 approximately 1.5–2.0 times longer than wide; frontal sulcus deep and long reaching between behind eye and end of head (Figures 61j–k); hind wings reduced to small pads; abdominal tergites IV–VI with discal carinae.

Sagola auripila Broun

Sagola auripila Broun, 1911: 500. Hudson, 1923: 365; 1934: 184. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. Holotype. New Zealand: Taupo (TO): ♀, glued on rectangular card, “Type” [red label, printed]; “3371.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Erua. Feby. 1911.” [white label, handwritten]; “*Sagola* ♂ *auripila*.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (n= 5; 4 males, 1 female). New Zealand: Gisborne (GB): 1♂, Taikawakawa, 300m, 1 V 1993, C.T. Duval, litter 93/106; **Taupo (TO):** 1♂, Urewera NP, Ngomoko tr., nr. jct Tawa loop, berlese, 8 III 2000, C. Carlton, A. Weir, #027; 1♂, National Park, Taurewa Lookout, 13 XII 1961, G. Kuschel, litter 61/14; 1♂, Minginui SF, 27 VII 1977, J.S. Dugdale, rotten *Podocarpus*; **Waikato (WO):** 1♀, Pirongia Forest Park, Mahaukura tr (above

end Grey rd.), 270m, 37°58.218'S 175°06.523'E, 18 XI–27 XII 2005, mixed broadleaf forest, FMHD#2005-009, FIT, A. Newton, M. Thayer et al., ANMT site 1142.

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: larger body, length 2.1–2.3 mm; weakly enlarged male antennomeres 5–10; frontal sulcus linear and deep, slightly exceeding eye; male hind-femur with triangular process on middle of inside edge; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.1–2.3 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60a). *Head.* Head round, widest across eyes (Figure 60a). Male antennomere 1 approximately 1.5 times longer than wide, 2 subquadrate, 3–10 subquadrate, 9–10 subquadrate, 5–10 weakly enlarged. Female antennomere 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus linear and deep, slightly exceeding eye. Anterior frontal fovea oval. Posterior frontal fovea elongate. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 60a). Meso- and metathorax trapezoidal, as long as wide. Male hind femur with triangular process on middle of inside edge. *Aedeagus.* Lateral median lobe rectangular and apical lobe weakly emarginate (Figure 61a). Phallobase of median lobe symmetrical and rectangular (Figure 61a). Paramere symmetrical and curved to c-shaped with setae at tip and one seta at middle (Figure 61a).

Type locality. Erua (TO), New Zealand.

Distribution. Gisborne (GB), Taupo (TO), Waikato (WO) (Figure 62: black circles).

Habitat. Most specimens of this species were collected using flight intercept traps, or by sifting leaf in broadleaf or podocarp forests.

Sagola spiniventris Broun

Sagola spiniventris Broun, 1912b: 627. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232.

Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Sagola occipitalis Broun, 1912b: 624. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232.

Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New synonym.

Type Material. Syntype. New Zealand: Marlborough Sounds (SD): ♀, glued on rectangular card, “Type” [red label, printed]; “17.” [white label, handwritten]; “Picton, New Zealand Helm.” [white label, printed]; “Sharp Coll. 1905-313” [white label, printed]; “*Sagola* ♂ *spiniventris*.” [white label, handwritten]. **Holotype of *Sagola occipitalis*: New Zealand: Buller (BR):** ♀, glued on rectangular card, “Type” [red label, printed]; “11.” [white label, handwritten]; “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp Coll. 1905-313” [white label, printed]; “*Sagola occipitalis*.” [white label, handwritten].

Additional Material (n= 15; 8 males, 7 females). New Zealand: Buller (BR): 1♂, Nelson Lks NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap; 1♂, Mt. Robert, carpark, 9 IV 2004, R. Leschen, H. Harman, T. Buckley, litter RL864, 41.49°S 172.48°E; **Fiordland (FD):** 1♀, Fiordland NP, Kepler tr, below Mt. Luxmore Hut, 900m, 45°24.86'S, 167°38.675'E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-101, berl, leaf & log litter, A. Solodovnikov, D. Clarke, ANMT site 1176; **Mid Canterbury (MC):** 1♂, Banks Peninsula Ahuriri Scenic Res., 480m, 1 IV 1982, G. Kuschel, litter and rotten wood 82/48; **Nelson (NN):** 1♂, 30km sw Collingwood 15mi ck, 100m, 23 V 1982, FMHD#82-597, log litter, S. Peck; 2♀♀, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov,

ANMT site 1159; 1♀, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S, 172°44.456'E, 28 XI 2005, *Nothofagus* dominant forest, under bark of small logs, A. Newton, M. Thayer, ANMT site 1156; 1♀, Dun Mt., 2500', 13 II 1961, G. Kuschel; **Marlborough Sounds (SD)**: 1♂, Tennyson Inlet, e side Duncan Bay, 30m, 15 XII 1984–5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, pyrethrin fogging fungusy log; **Westland (WD)**: 1♀, Deception R, 20 XI 1978, S.P. Worner, mixed podocarp litter; 1♀, Okuku Scenic Reserve, 46.7km w Otira, 75m, 42°43'S 171°14'E, #050, *Laurelia novae-zelandiae* leaf litter berlese, 12 I 1998, C. Carlton, R. Leschen; **Wellington (WN)**: 1♂, Manukau rd, north road end, 20 X 1996, in moderately wet forest litter, J. Nunn; 1♂, Atatapia Stm, Tararua FP, 19 IX 1993, J. Nunn, in wood mould.

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: body length 2.1–2.3 mm; male antennomeres 5–10 enlarged; frontal sulcus deep and wide, reaching vertexal fovea; posterior frontal fovea large and oval; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.1–2.3 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60b). *Head.* Head round, widest across eyes (Figure 60b). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–10 subquadrate, male 5–10 enlarged. Frontal sulcus deep and wide, reaching vertexal fovea. Anterior frontal fovea round. Posterior frontal fovea large oval. Eye large and prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 60b). Meso- and metathorax trapezoidal, long as wide. *Aedeagus.* Median lobe slender (Figure 61b). Phallobase of median lobe symmetrical and rectangular (Figure 61b). Paramere symmetrical and curved to c-shaped with setae at tip and one seta at middle (Figure 61b).

Type locality. Picton (SD), New Zealand.

Distribution. Buller (BR), Fiordland (FD), Nelson (NN), Mid Canterbury (MC), Marlborough Sounds (SD), Westland (WD), Wellington (WN) (Figure 62: triangles).

Habitat. Specimens of this species were collected by fogging or sifting leaf or decayed log litter in podocarp or *Nothofagus* forests.

Comments. Specimens of *S. spiniventris* can be separated from other species by the enlarged male antennomeres 5–10 enlarged, deep and wide frontal sulcus and reaching vertexal fovea; posterior frontal fovea large oval, and shapes of antennomeres and genitalia unique to species. The type specimens of *S. occipitalis* share these diagnostic characters. For these reasons, I have placed *S. occipitalis* in synonymy with *S. spiniventris*.

Sagola sp. nov. 29-2

Type Material. Holotype. New Zealand: Chatham Island (CH): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, CH Mangere I Robin Bush 28.x.1993 R.M. Emberson”, “litter ex *Olearia*, *Melicytus*, *Muehlerbeckia* forest and feathers”.

Paratypes (n=23; 14 males, 9 females): New Zealand: Chatham Island (CH): 3♂♂5♀♀, same data as holotype (LUNZ); 2♂♂1♀ (1♀, slide-mounted), Star Keys, 23 I 1998, R.M. Emberson, under rocks in coastal sward; 4♂♂, Mangere, Robin Bush 30 XI 2004, R.M. Emberson, P. Syrett, from leaf litter (LUNZ); 1♂, Star Keys, 23 I 1998, J.W.M. Marris, under rock in low coastal vegetation (LUNZ); 1♂, Mangere I, Robin Bush, 30 XI–3 XII 1992, J.W.M. Marris, J.W. Early, pitfall trap (LUNZ); 2♂♂2♀♀ (1♂, slide-mounted), Taiko Camp, 10 XI 1991, J.S. Dugdale, sifted rotten wood (NZAC); 1♀, Mangere I, 28 X 1993, R.M. Emberson, litter ex

coastal scrub LCNZ 93/10 (LUNZ); 1♂, Rungaika, 240–260m, 6 III 1991, R.C. Craw, litter 91/14 (NZAC).

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: body smaller, length 1.8–2.0 mm; ventral surface of head weakly convex; eye small, approximately one-third length of temple; frontal sulcus deep and linear, reaching slightly vertexal fovea; anterior frontal fovea round and covered by frontal rostrum; posterior frontal fovea elongate; shapes of antennomeres and genitalia unique to species.

Description. Length 1.8–2.0 mm. Body brown, antenna and maxillary palpi paler, elytra, legs paler (Figure 60c). *Head.* Male head as long as wide, widest across eyes (Figure 60c), ventral surface of head weakly convex. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–7 subquadrate, 8–10 weakly transverse. Frontal sulcus deep and linear, reaching almost vertexal fovea. Anterior frontal fovea round and covered by frontal rostrum. Posterior frontal fovea elongate. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra approximately triangular (Figure 60c). Meso- and metathorax trapezoidal, longer than wide. *Aedeagus.* Median lobe bent s-shaped (Figure 61c). Phallobase of median lobe symmetrical and rectangular (Figure 61c). Paramere symmetrical and weakly curved with one seta at tip and three setae on middle (Figure 61c).

Distribution. Chatham Island (CH) (Figure 62: black square).

Habitat. Specimens of this species were collected using pitfall traps, or by sifting forest litter in coastal area.

Sagola sp. nov. 65

Type Material. Holotype. New Zealand: Chatham Island (CH): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Pitt Island, 16-26-I-44, E.S.Gourlay.”, “E.S.Gourlay Acc. 1970 Ent. Div.”, “N.Z. Arthropod Collection, NZAC Private Bag 92710 AUCKLAND New Zealand”. **Paratypes (n=10; 4 males, 6 females):** New Zealand: Chatham Island (CH): 1♂, Taiko Camp, 10 XI 1991, J.S. Dugdale, sifted rotten wood (NZAC); 1♂3♀♀, Awatotara, 182m, 21 II 1967, G.W. Ramsay, litter 67/139 (NZAC); 1♂, North Coast, 2 III 1967, G.W. Ramsay (NZAC); ♀♀, Pitt Island, 16–26 I 1944, E.S. Gourlay (NZAC).

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: body smaller, length 1.8–2.0 mm; ventral surface of male head transversely depressed with rectangular setose process behind mouth part; eye small, approximately one-third length of temple; frontal sulcus deep and linear, reaching slightly vertexal fovea; anterior frontal fovea round and covered by frontal rostrum; posterior frontal fovea elongate; shapes of antennomeres and genitalia unique to species.

Description. Length 1.8–2.0 mm. Body brown, antenna and maxillary palpi paler, elytra, legs paler (Figure 60d). *Head.* Male head as long as wide, widest across eyes (Figure 60d). Ventral surface of male head transversely depressed with rectangular setose process behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–7 subquadrate, 8–10 weakly transverse. Frontal sulcus deep and linear, almost reaching vertexal fovea. Anterior frontal fovea round and covered by frontal rostrum. Posterior frontal fovea elongate. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra approximately triangular (Figure 60d). Meso- and metathorax trapezoidal, longer than wide. *Aedeagus.* Median lobe rectangular (Figure

61d). Phallobase of median lobe symmetrical and rectangular (Figure 61d). Paramere symmetrical and weakly curved with one seta at tip and three setae on middle (Figure 61d).

Distribution. Chatham Island (CH) (Figure 63: black circle).

Habitat. Specimens of this species were collected by sifting forest litter.

Sagola sp. nov. 31-1

Type Material. Holotype. New Zealand: Wellington (WN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND WN Wilton Bush 4/1/93 Wellington”, “in fallen *Astelia*”. The original label does not mention who collected this specimen, but the collector is J.T. Nunn. **Paratypes (n=5; 4 males, 1 female): New Zealand: Rangitikei (RI):** 1♂, Ruahine FP, entrance Wharite, 22 X 1994, J. Nunn (JTN); **Wairarapa (WA):** 1♂, West L Wairarapa Res., 3 X 1995, J. Nunn (JTN); **Wanganui (WI):** 1♂, Ashurst Domain, 25 X 1993, J. Nunn (JTN); **Wellington (WN):** 1♂1♀, same data as holotype (JTN).

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: larger body, length 2.1–2.3 mm; male antennomeres 5–10 weakly enlarged; frontal sulcus linear and deep, slightly exceeding eye; male hind-femur with triangular process on middle of inside edge; shapes of antennomeres and genitalia unique to species.

Description. Length 2.1–2.3 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60e). *Head.* Head round, widest across eyes (Figure 60e). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate, male 5–10 weakly enlarged. Frontal sulcus deep, reaching bit behind eye. Anterior frontal fovea round. Posterior frontal fovea oval. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 60e). Meso- and metathorax trapezoidal, as long as wide. Male hind femur with triangular process on middle of inside edge. *Aedeagus.* Median lobe simple (Figure 61e). Phallobase of median lobe symmetrical and rectangular (Figure 61e). Paramere symmetrical and weakly curved with 4–5 setae at tip and one seta before tip (Figure 61e).

Distribution. Rangitikei (RI), Wairarapa (WA), Wanganui (WI), Wellington (WN) (Figure 63: triangles).

Habitat. Specimens of this species were collected by sifting forest litter or fallen *Astelia*.

Sagola sp. nov. 29-3

Type Material. Holotype. New Zealand: Three Kings Islands (TH): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: TH: Tasman Valley 24 XI 1970, G. Kuschel Litter 70/210”.

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: larger body, length 1.8 mm; antennomere 1 with dull surface, 2–8 subquadrate; frontal sulcus deep, reaching vertexal fovea; gular of male head depressed transversely; shape of genitalia unique to species; only known from Three Kings Islands.

Description of male. Length 1.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60f). *Head.* Head round, widest across eyes (Figure 60f). Gular of ventral surface of head depressed transversely. Antennomere 1 approximately 1.5 times longer than wide with dull surface, 2–8 subquadrate, 9–10 weakly transverse. Frontal sulcus deep, reaching vertexal fovea from frontal rostrum. Anterior frontal fovea round and covered by frontal rostrum. Posterior frontal fovea elongate. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular

(Figure 60f). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus*. Median lobe as long as paramere with triangular apical lobe (Figure 61f). Phallobase of median lobe symmetrical and rounded (Figure 61f). Paramere asymmetrical, right weakly curved and divided, left rectangular (Figure 61f).

Distribution. Three Kings Islands (TH) (Figure 63: black square).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 71

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: ND Waipoua State Forest, vic. Wairau Summit, 460m, 1.xii.1984 hdwd.-podocarp forest A.Newton/M.Thayer 683”, “pyrethrin-fogging fungusy logs”.

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: larger body, length 2.4 mm; antennomere 1 approximately 2 times longer than with dull surface; gular of male head depressed and densely setose; frontal sulcus deep reaching vertexal fovea; shape of genitalia unique to species.

Description of male. Length 2.4 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60g). *Head*. Head round, widest across eyes (Figure 60g). Gular depressed and densely setose. Antennomere 1 approximately 2 times longer than wide with dull surface, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching end of head from frontal rostrum. Anterior frontal fovea round and partially covered by frontal rostrum. Posterior frontal fovea elongate. Eye small, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 60g). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus*. Median lobe slender and simple (Figure 61g). Phallobase of median lobe symmetrical and rounded (Figure 61g). Paramere asymmetrical, left long, bent with divided apex (Figure 61g, h).

Distribution. Northland (ND) (Figure 63: star).

Habitat. The holotype of this species was collected by pyrethrin-fogging fungusy logs in hardwood and podocarp forests.

Sagola sp. nov. 71-1

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Pakohu 3 Dec 1977 A.K.Walker Litter 77/178”, “N.Z. Arthropod Collection, NZAC Private Bag 92710 AUCKLAND New Zealand”. **Paratype (1 male): New Zealand: Northland (ND):** 1♂ (slide-mounted), North Cape area, Taputaputa Bay, 7 XII 1967, K. Wise, in rotten wood (AMNZ).

Diagnosis. This species is separated from other species of group 15 by the following combination of characters: larger body, length 2.3 mm; antennomere 1 approximately 2 times longer than with dull surface; gular of male head depressed roundly and densely setose; frontal sulcus deep reaching vertexal fovea; shape of genitalia unique to species.

Description of male. Length 2.3 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 60h). *Head*. Head round, widest across eyes (Figure 60h). Gular depressed roundly and densely setose. Antennomere 1 approximately 2 times longer than wide with dull surface, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching end of head from frontal rostrum. Anterior frontal fovea round and partially covered by frontal rostrum. Posterior frontal fovea elongate. Eye small, approximately one-third length of temple. *Thorax*.

Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately triangular (Figure 60h). Meso- and metathorax trapezoidal, as long as wide. *Aedeagus*. Median lobe weakly curved as S-shaped (Figure 61i). Phallobase of median lobe symmetrical and rounded (Figure 61i). Paramere asymmetrical with round depression basally (Figure 61i).

Distribution. Northland (ND) (Figure 63: white circles).

Habitat. Specimens of this species were collected by sifting leaf and rotten wood litter.

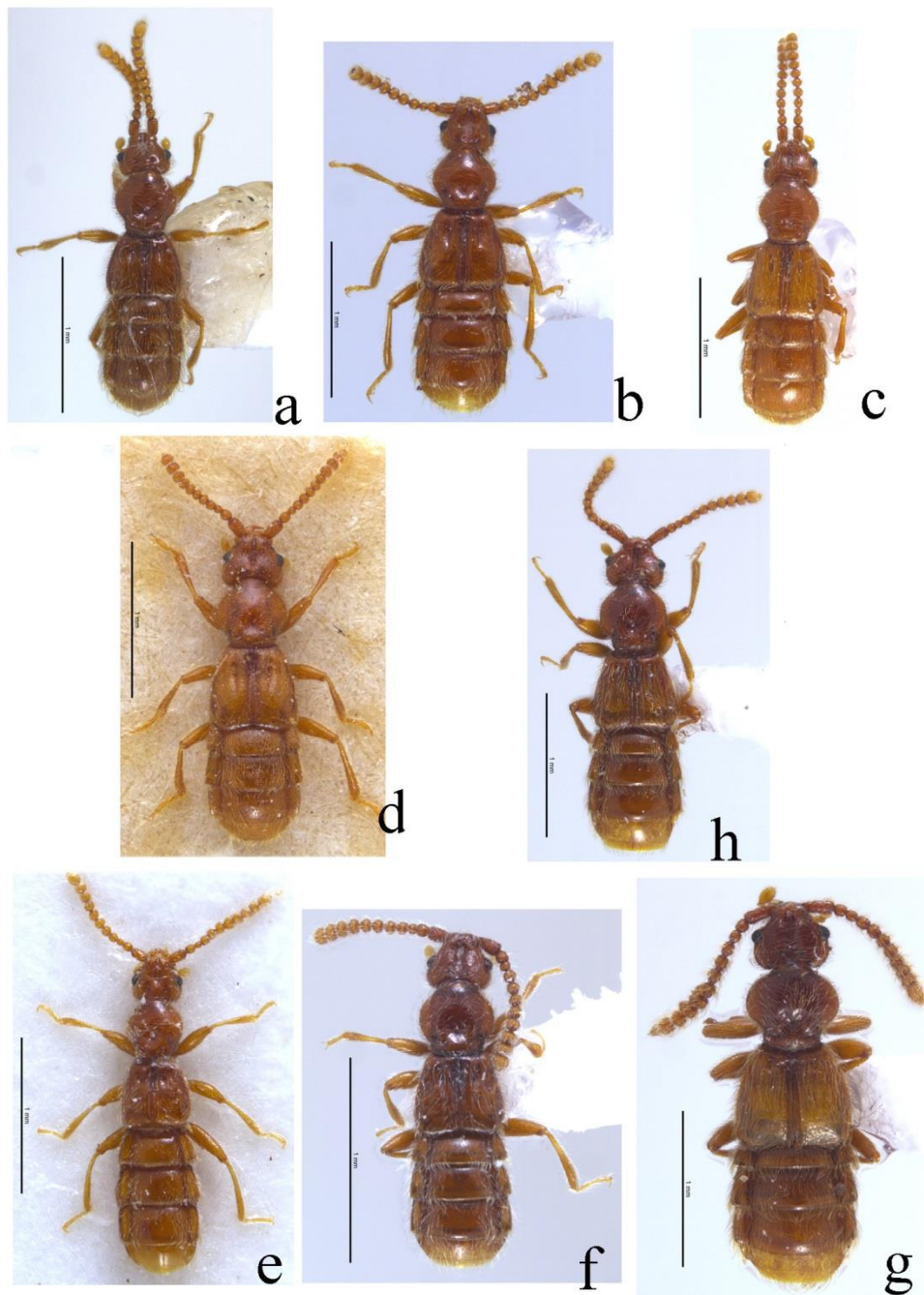


Figure 60. Habitus of group 15, dorsal view. a) *Sagola auripila* Broun; b) *S. spiniventris* Broun; c) *S. sp. nov.* 29-2; d) *S. sp. nov.* 65; e) *S. sp. nov.* 31-1; f) *S. sp. nov.* 29-3; g) *S. sp. nov.* 71; h) *S. sp. nov.* 71-1; Scale bars = 1 mm.

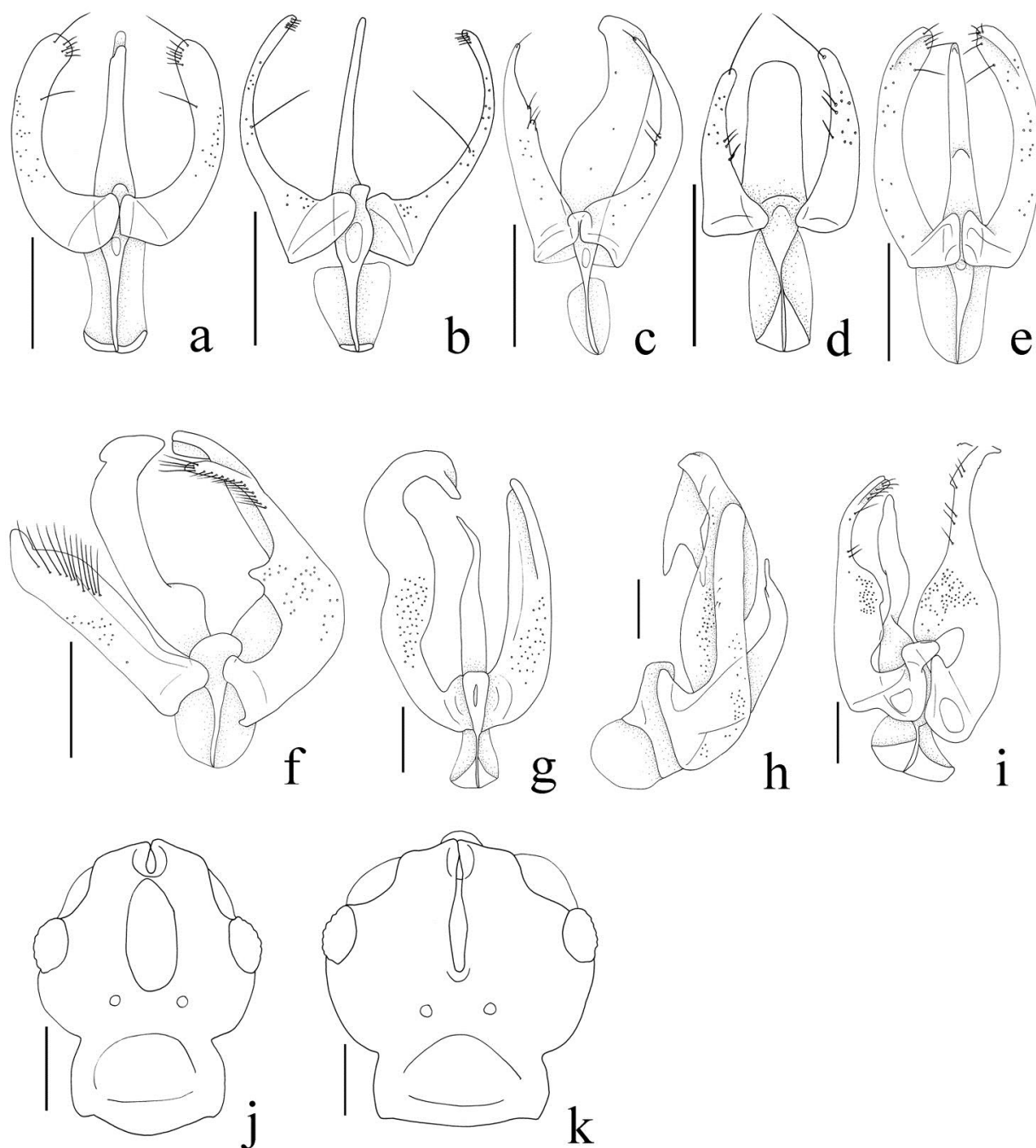


Figure 61. Aedeagus of group 15, dorsal view. a) *Sagola auripila* Broun; b) *S. spiniventris* Broun; c) *S. sp. nov.* 29-2; d) *S. sp. nov.* 65; e) *S. sp. nov.* 31-1; f) *S. sp. nov.* 29-3; g) *S. sp. nov.* 71; h) *S. sp. nov.* 71, lateral view; i) *S. sp. nov.* 71-1; j) dorsal head of *S. spiniventris*; k) dorsal head of *S. sp. nov.* 29-2; Scale bars = 0.1 mm.

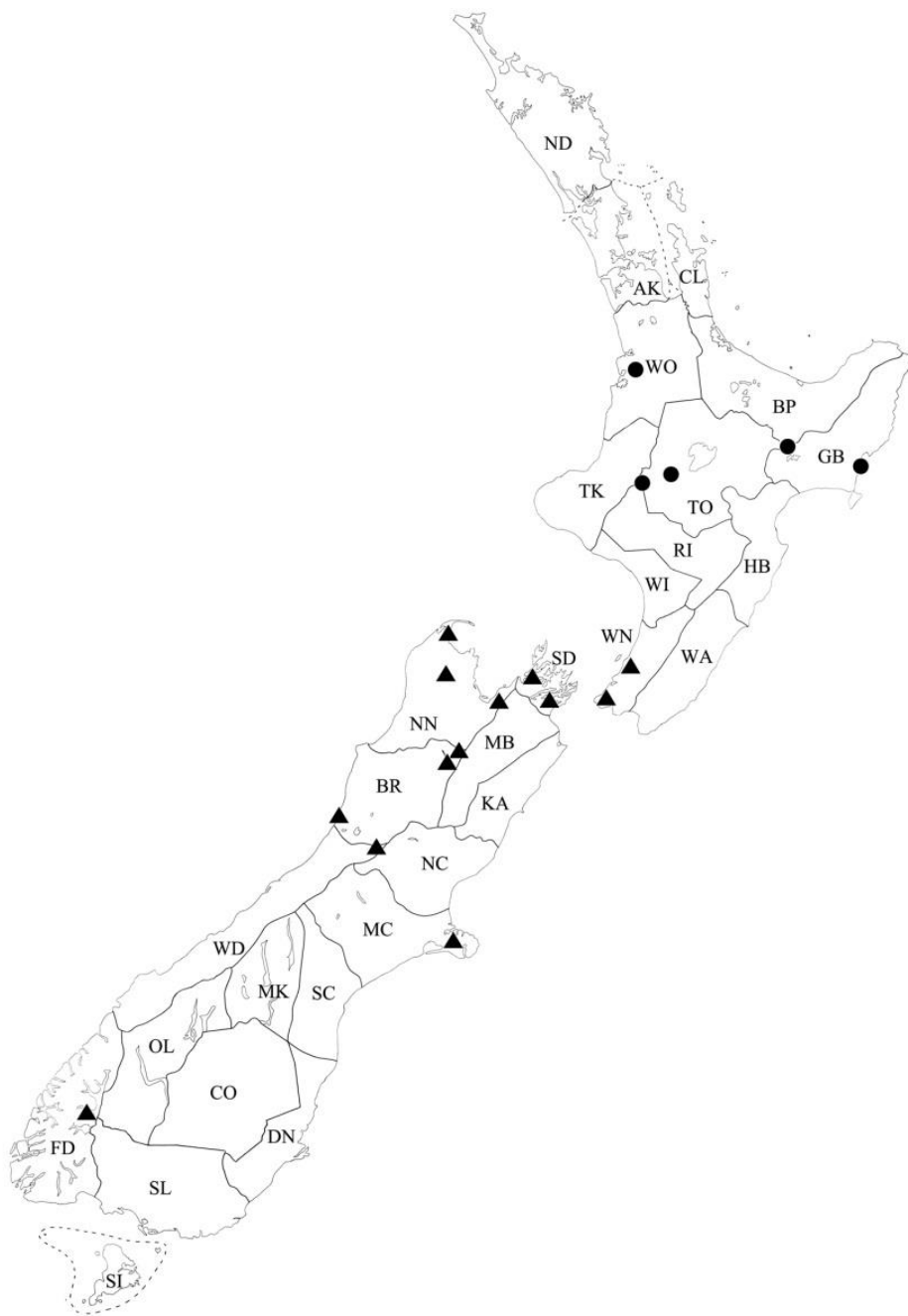


Figure 62. Locations where *Sagola auripila*, *S. spiniventris* and *S. sp. nov. 29-2* specimens have been collected in New Zealand. *S. auripila*: black circles; *S. spiniventris*: triangles; *S. sp. nov. 29-2*: black square.



Figure 63. Locations where *Sagola* sp. nov. 65, *S.* sp. nov. 31-1, *S.* sp. nov. 29-3, *S.* sp. nov. 71 and *S.* sp. nov. 71-1 specimens have been collected in New Zealand. *S.* sp. nov. 65: black circle; *S.* sp. nov. 31-1: triangles; *S.* sp. nov. 29-3: black square; *S.* sp. nov. 71: star; *S.* sp. nov. 71-1: white circles.

Group 16 (2 species)

Key to species of *Sagola* group 16

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Body length, 2.3–2.7 mm; male antennomeres 2–10 with distinctly tubercles; ventral surface of male head with reversed triangular process bearing dense setae behind mouthparts (Figure 64f); male abdominal ventrite VII with round depression medially.....*S. arboricola* Broun
- 1'. Larger body, length 2.5–3.0 mm; ventral surface of male head with blunt process bearing dense setae behind mouthparts; male antennomeres 2–10 subquadrate and weakly enlarged; male abdominal ventrite VII simple.....*S. tenebrica* Broun

Diagnosis. The members of group 16 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–3.0 mm; antennomere 1 approximately 1.5 times longer than wide; frontal sulcus deep reaching one-third length of eye; anterior frontal fovea oval, posterior frontal fovea round (Figure 64e); eye large and prominent, approximately as long as temple (Figure 64e); ventral surface of male head with process bearing dense setae behind mouth parts (Figure 64f); hind wings well developed; abdominal tergites IV–VI with discal carinae.

Sagola arboricola Broun

Sagola arboricola Broun, 1921a: 502. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. Lectotype. New Zealand: Otago Lake (OL): ♀, glued on rectangular card, “4015.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hollyford. 19.2.1914.” [white label, handwritten]; “*Sagola* ♀ *arboricola*.”
Paratypes: New Zealand: Otago Lakes (OL): 2♂♂2♀♀, same as holotype.

Additional Material (n= 75; 42 males, 33 females). New Zealand: Bay of Plenty (BP): 1♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha, up. end Tui Mine tr, nr. summit rd, 775m, 37°31.685'S 175°44.684'E, 19 XI–26 XII 2005, low *Nothofagus menziesii* forest w/*Astelia* ground layer, FMHD#2005-019, FIT, A. Newton, M. Thayer, ANMST site 1145; **Buller (BR):** 2♀♀, Nelson Lks NP, Lake Rotoiti, St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap; 2♂♂1♀, Nelson Lks NP, n slope Mt. Robert, Pinchgut tr, 1290m, 18–26 XII 1984, *Noth. sol.* elfin forest, A. Newton, M. Thayer 716, FIT&window trap; 2♀♀, Nelson Lks NP, n slope Mt. Robert, Pinchgut tr, 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, FIT&window trap; 1♂, Nelson Lks NP, Mt. Robert, Speargrass tr, 875m, 41°49.469'S, 172°48.311'E, 30 XI 2005, *Nothofagus* forest, pyr.-fogging & hand-collecting litter in crotch of *Nothofagus menziesii* ca. 1m above ground, A. Newton, ANMT site 1161; 1♂, Nelson Lks NP, n slope Mt. Robert, 860m, 23–26 III 1980, *Nothofagus* forest, A. Newton, M. Thayer, fogging; **Dunedin (DN):** 1♂1♀, Woodside Glen, Outram, 13 XI 2005, J. Nunn, in moss on tree trunk; 1♂1♀, Mt. Maungatua nr bushline, 1 VII 2000, J. Nunn, on sooty mould on bole of *Melicytus*; 1♂, Woodside Glen, Outram, 30 X 2005, J. Nunn, in moss and lichen on tree trunk; 1♂, Leith Saddle, 31 VIII 2003, J. Nunn, in dead tree branch; 1♂, Mt. Cargill, Dunedin, 28 IX 1998, J. Nunn, Beaten from Totara; 1♀, Mt. Cargill, Dunedin, 27 VII 2002, J. Nunn, in dead *Pseudopanax* twig; 1♀, Swampy Spur, 29 XI 1997, J. Nunn; 1♀, Could Forest of Leith tr, 7 XII 2003, J. Nunn, general beating; 1♀, Woodside Glen,

Outram, 29 XII 2003, J. Nunn, in moss and sooty mould on tree trunk; **Fiordland (FD)**: 3♂♂5♀♀, Gertrude Vly, Milford rd, 23 I 2008, J. Nunn; in moss on beech tree; 1♀, Gertrude Vly, Homer, 19 II 2007, Amongst moss on boulder in riverbed, J. Nunn; 1♀, Kepler tr. start, Te Anau, 22 I 2008, J. Nunn, in moss sample; 1♀, Borland Saddle, 24 I 2008, J. Nunn, sifted moss; **Mid Canterbury (MC)**: 2♂♂4♀♀, Banks Peninsula, Mt. Sinclair Scenic Res., 775m, 43°42.977'S, 172°51.098'E, 3–16 XII 2005, ridge top mixed broadleaf w/emergent *podocarpus totara*, FMHD#2005-070, FIT, A. Newton, M. Thayer, ANMT site 1163; 1♂, Banks Peninsula, Ahuriri Scen. Res., 450m, 43°39.971'S 172°37.427'E, 16 XII 2005, mixed broadleaf w/emergent podocarp, fogging old log & mossy trunk, A. Newton, ANMT site 1162; 1♂1♀, McLennans Bush, Mt. Hut, 25 XII 1999, J. Nunn, from lichen on *Nothofagus* bole; 1♂, upper Kaituna V, Banks Penin., 12 I 2008, J. Nunn, in moss from forest; **Nelson (NN)**: 1♂ (slide-mounted), 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap; 1♂, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT site 1159; 1♂, Mt. Arthur, 1200m, 20 XI 1969, J.I. Townsend, mats 69/230; 1♂, Mt. Domett, 30 XI 1971, G. Kuschel, moss 71/169; 1♀, Cobb Ridge, 1040m, 29 XI 2005, J. Nunn, Amongst moss on tree trunk; **Otago Lakes (OL)**: 1♂, Mt. Shrimpton tr, at Pipson ck, Makarora West, 22 X 2006, in moss sample 400m, J. Nunn; **Rangitikei (RI)**: 1♂, Ruahine Ra, 1036m, Shuteye Shack, 7 II 1980, C.F. Butcher, Malaise trap; **South Canterbury (SC)**: 1♀, Otaio Gorge nr Pareora, 23 III 2008, J. Nunn, in moss on rock face; **Marlborough Sounds (SD)**: 2♂♂, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 708, window trap; 1♂, Tennyson Inlet, east side Duncan Bay, 30m, 15 XII 1984–5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, FIT&window trap; 1♂, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd, A. Newton, M. Thayer 710, FIT&window trap; **Southland (SL)**: 2♂♂, Catlins For. Park, Chloris Pass, wnw Owaka, 285m, 46°23.47'S 169°27.482'E, 7 XII 2005, *Wienmannia*-*Metrosideros*-*Nothofagus*-podocarp forest, fogging, A. Newton, D. Clarke, ANMT site 1167; 1♂, Tutuku, sw of Owaka, 19 I 1978, G. Kuschel, sifted 78/44; 3♂♂1♀, Whiskey Gulley, Blue Mtns, 3 VIII 2002, J. Nunn, Amongst lichen from fallen beech branch; 1♂3♀♀, Blue Mountains, north end, 9 VIII 2003, in compact moss cushion on beech bole at treeline; 1♂, Dollamere Park, Hokonui Hills, 28 X 2002, J. Nunn, in moss on bole of Rimu; 1♂, Princhester Base Hut, Takitimu Fst, 21 II 2003, J. Nunn, in moss sample; 1♀, Blue Mountains, mw relay stn, 13 II 2005; **Taranaki (TK)**: 1♂, Pouakai Ra., 10–13 I 1978, J.S. Dugdale, malaise trap; **Waikato (WO)**: 2♂♂1♀, Mt. Pirongia, Wharauoa, 854m, 9 VI 1977, B.A. Holloway, moss/lichen 77/60; 1♂, Mt. Pirongia, Wharauoa, 854m, 9 VI 1977, B.M. May, moss 77/58; 1♂, Mt. Pirongia, 853m, 24 XI 1964, G. Kuschel, moss 64/105; **Westland (WD)**: 1♂, Otira E., 6.8km ne Otira, 280m, 18–21 III 1980, *Nothofagus fusca*-podocarp, A. Newton, M. Thayer, fogging.

Diagnosis. This species is separated from other species of group 16 by the following combination of characters: body length 2.3–2.7 mm; male antennomeres 2–10 with tubercles; ventral surface of male head with reversed triangular process bearing dense setose behind mouth parts; male abdominal ventrite VII with round depression medially; shape of genitalia unique to species.

Redescription. Length 2.3–2.7 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 64a). *Head.* Head bluntly triangular, widest across eyes (Figure 64e). Ventral surface of male head with reversed triangular process bearing dense setose behind mouth

parts (Figure 64f). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate, male 2–10 with tubercles. Frontal sulcus deep, reaching one-third of eye (Figure 64e). Anterior frontal fovea oval (Figure 64e). Posterior frontal fovea round (Figure 64e). Eye large and prominent, approximately as long as temple (Figure 64e). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 64a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, less developed in female. Male abdominal ventrite VII with round depression medially. Basolateral foveae of abdominal ventrites V–VI very small. *Aedeagus*. Median lobe triangular, dorsal process large V-shaped (Figure 64c). Phallobase of median lobe symmetrical and rectangular (Figure 64c). Paramere symmetrical and rectangular with sparse setae anteriorly (Figure 64c).

Type locality. Hollyford (OL), New Zealand.

Distribution. Bay of Plenty (BP), Buller (BR), Dunedin (DN), Fiordland (FD), Nelson (NN), Mid Canterbury (MC), Otago Lakes (OL), Rangitikei (RI), South Canterbury (SC), Marlborough Sounds (SD), Southland (SL), Taranaki (TK), Westland (WD) Waikato (WO) (Figure 65: black circles).

Habitat. Most specimens of this species were collected by fogging, or using malaise, flight intercept or window traps, or by sifting mossy leaf or log litter in *Nothofagus*, podocarp or hardwood forests. Many specimens were collected at high elevations.

Sagola tenebrica Broun

Sagola tenebrica Broun, 1921a: 487. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♀, glued on rectangular card, “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Moa Basin. 20.10.1913.” [white label, handwritten]; “*Sagola* ♀ *tenebrica*.” [white label, handwritten].

Additional Material (n= 19; 11 male, 8 females). New Zealand: Fiordland (FD): 4♂♂6♀♀, Borland Saddle, 24 I 2008, sifted moss, J. Nunn; 1♀, Borland Saddle, 1050m, 16 XII 1998, in moss on *Nothofagus* bole, J. Nunn; 1♂, Breaksea So, 12 III 1983, C.F. Butcher; 1♂, Secretary I, Mt. Grono, 853m, 27 XI 1981, C.F. Butcher, mats, moss, tussock 91/186; 1♂, Fiordland NP, Milford Sound rd, Gertrude Saddle car park area, 800m, 44°46.13’S, 168°00.16’E, 9 XII 2005, very mossy *Nothofagus menziesii* forest, FMHD2005-088, recent flood debris floating in stream, J. Nunn, A. Newton, ANMT site 1169; **Mid Canterbury (MC):** 1♂, Arthur Pass, Dobson Nature Walk, 8 II 1982, C.F. Butcher, sifted litter 82/26; 1♂, Moa Basin, A.E. Brookes Collection, T. Broun Collection; **Mackenzie (MK):** 1♂, Mt. Burns, 1700m, 13 I 1970, J.I. Townsend, Mats 70/101; **Nelson (NN):** 1♂, Mt. St. Arnaud, 1900m, 1 VII 1973, J.C. Watt, litter 73/109; **Westland (WD):** 1♂, Fox G 1200m, Chancellor Hut, 15 XII 1984, J.W. Early, P Syrett Subalpine herb field tussock litter LCNZ 84/8.

Diagnosis. This species is separated from other species of group 16 by the following combination of characters: larger body length 2.5–3.0 mm; ventral surface of male head with blunt process bearing dense setae behind mouth parts; male antennomeres 2–10 subquadrate and weakly enlarged; shape of genitalia unique to species.

Redescription. Length 2.5–3.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 64b). *Head*. Head bluntly triangular, widest across eyes (Figure 64b). Ventral surface of male head with blunt process bearing dense setae behind mouth parts. Male antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate and weakly enlarged.

Female antennomeres 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching one-third of eye. Anterior frontal fovea oval. Posterior frontal fovea round. Eye large and prominent, approximately as long as temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 64b). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, less developed in female. *Aedeagus*. Median lobe triangular, dorsal process crescent-shaped (Figure 64d). Phallobase of median lobe symmetrical and rectangular (Figure 64d). Paramere symmetrical and rectangular with sparse setae anteriorly and posteriorly (Figure 64d).

Type locality. Moa Basin, Canterbury (MC), New Zealand.

Distribution. Fiordland (FD), Mid Canterbury (MC), Mackenzie (MK), Nelson (NN), Westland (WD) (Figure 65: triangles).

Habitat. Most specimens of this species were collected by sifting mossy leaf or log litter in *Nothofagus* forests. Many specimens were collected at high elevations.

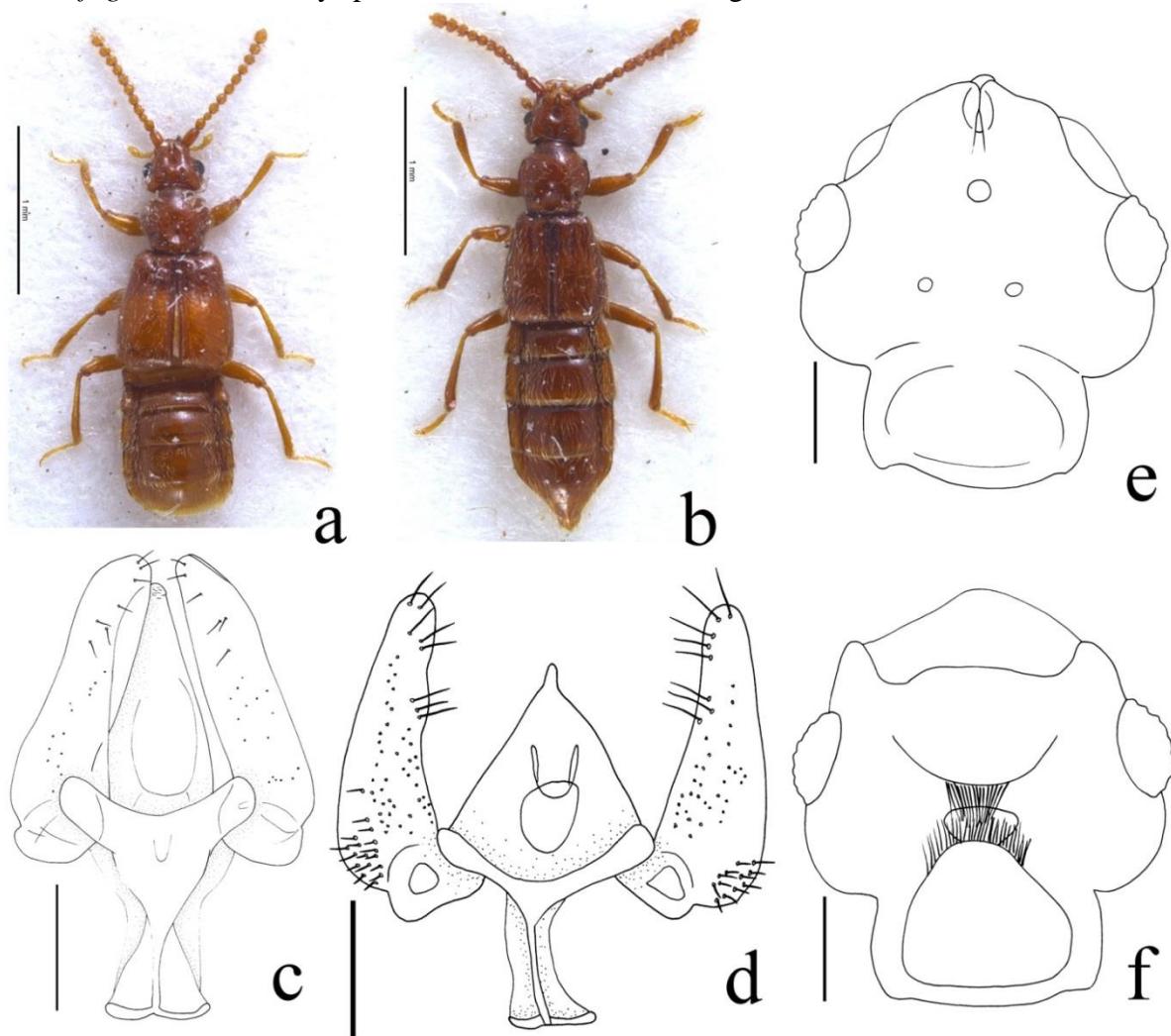


Figure 64. Habitus of group 16, dorsal views. a) *Sagola arboricola* Broun; b) *S. tenebrica* Broun; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S. arboricola*; d) *S. tenebrica*; Scale bars = 0.1 mm. *S. arboricola*. e) dorsal head; f) ventral head; Scale bars = 0.1 mm.

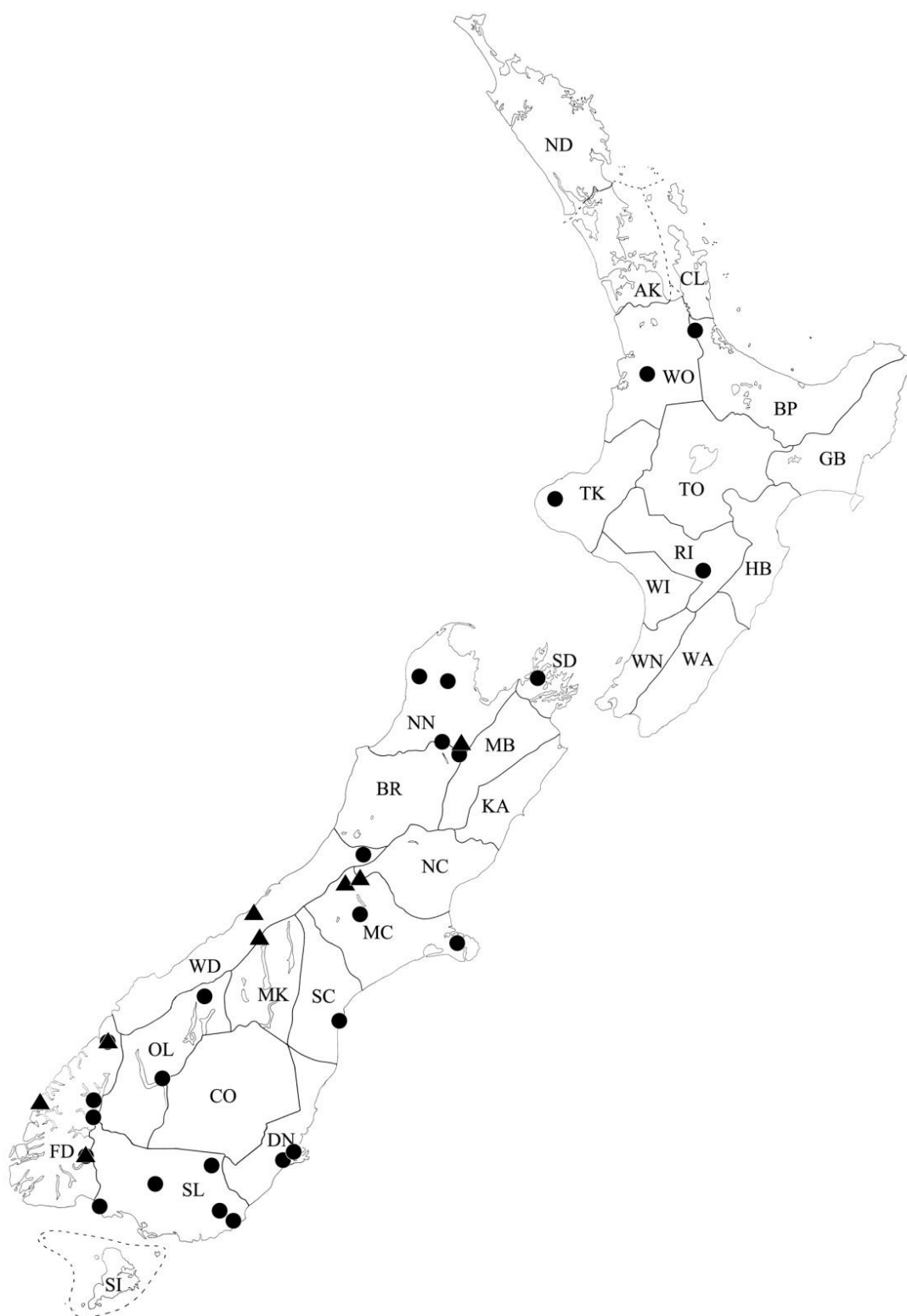


Figure 65. Locations where *Sagola arboricola* and *S. tenebrica* specimens have been collected in New Zealand. *S. arboricola*: black circles; *S. tenebrica*: triangles.

Group 17 (1 species)

Diagnosis. The members of group 17 may be separated from other *Sagola* groups by the following combination of characters: body length 2.2–2.8 mm; frontal rostrum prominent (Figure 66c); antennomere 1 approximately 2 times longer than wide; anterior and posterior frontal fovea deep and large oval (Figure 66c); ventral surface of male head with distinct triangular process bearing dense setae behind mouth parts (Figure 66d); hind wings well developed; abdominal tergites IV–VI with discal carinae; only known from South Island.

Sagola strialis Broun

Sagola strialis Broun, 1921a: 489. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Sagola fasciculata Broun, 1921a: 497. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New Synonym.

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♂, glued on rectangular card, “3996.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Moa Hill. 20.11.1913.” [white label, handwritten]; “*Sagola*. ♂ *strialis*.” [white label, handwritten]. **Syntypes. New Zealand: Nelson (NN):** ♂, glued on rectangular card, “4007.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 20.12.1914” [white label, handwritten]; “*Sagola fasciculata* ♂.” [white label, handwritten]. ♂, glued on rectangular card, “4007.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 20.2.1915” [white label, handwritten]; “*Sagola* ♂ *fasciculata*.” [white label, handwritten]. ♀, glued on rectangular card, “4007.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 20.10.1914” [white label, handwritten]; “*Sagola* ♀ *fasciculata*.” [white label, handwritten].

Additional Material (n= 246; 160 males, 86 females). New Zealand: Buller (BR): 13♂♂3♀♀, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469’S, 172°48.311’E. 17 XII 2005, *Nothofagus* forest, FMHD#2005-110, berl leaf & log litter, A. Solodovnikov, D. Clarke, ANMT site 1161; 1♂, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469’S, 172°48.311’E. 30 XI–17 XII 2005, *Nothofagus* forest, FMHD#2005-061, pitfall trap (10), A. Solodovnikov, D. Clarke, ANMT site 1161; 1♂, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469’S, 172°48.311’E. 30 XI 2005, *Nothofagus* forest, FMHD#2005-110, fogging, A. Newton, ANMT site 1161; 7♂♂3♀♀, Lewis Pass Nat Res, 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 715, litter; 3♂♂, 18km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd forest with nikau, A. Newton, M. Thayer 718, litter; 3♂♂, Nelson Lks NP, Lake Rotoroa, Braeburn tr, 470m, 16 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 712, window trap; 4♂♂2♀♀, Nelson Lks NP, n slope Mt. Robert, Pinchgut tr, 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, litter; 1♂, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713; 3♂♂4♀♀, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, litter; 2♂♂3♀♀, Nelson Lks NP, n slope Mt. Robert, 860m, 23–26 III 1980, *Nothofagus* forest, A. Newton, M. Thayer, litter; 2♂♂, 0.8km n Bullock ck nr Punakaiki, 50m, 23 III 1980, broadleaf-nikau palm-podocp, A. Newton, M. Thayer, litter; 1♂, Nelson Lks NP, Lake Rotoiti, St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap; 1♂, Greymouth,

Boddytown, 2 II 1984, J.C. Watt, sifted litter 84/23; 1♀, Paparoa Ra, 610m, Buckland Peaks Tk, 25 XI 1984, B.A. Holloway, C.F. Butcher, moss & lichen 84/77; 3♂♂, Flagstaff Bio. Res., 13 VII 1972, J.S. Dugdale, litter; 1♂, Mawhera SF, 15km se of Ngahere, 305m, 10 XI 1971, J.S. Dugdale, litter 71/143; 1♂, Mawhera SF, 19km se of Ngahere, 305m, 10 XI 1971, J. McBurney, litter 71/144; 1♂, Mawhera SF, 16km se of Ngahere, 305m, 11 XI 1971, J.S. Dugdale, litter 71/145; 2♂♂1♀, Mawhera SF, Kangaroo Ck, 27 I 1972, J.S. Dugdale, litter 72/86; 2♂♂, Paparoa Ra, Croesus tr, 730m, 21 I 1982, J.W. Early, moss & litter in podocarp –broadleaf forest; 1♂1♀, Fletchers Ck, Biological Reserve, XI 1971, McBurney, litter 71/127; 1♂, W. Inangahua, St. 127 Coll Ck, 19 IX 1972, J.S. Dugdale, moss 72/184; 1♂, Tawhai SF, Big R. Rd, 3km S of Reefton, 28 I 1972, J. McBurney, litter 72/76; 1♂, Fletcher Ck, MacMahan Ck, 25 I 1972, J.S. Dugdale, XPB9, litter 72/79; 1♂, Fletchers Ck, 6km sw Rotokohu, 25 I 1972, J.S. Dugdale, PB1 litter 72/103; 1♂, Fletchers Ck, 6km sw Rotokohu, 25 I 1972, J. McBurney, PB15 litter 72/93; 1♂, Capleston, Redmans Ck, 21 IX 1972, J.C. Watt, litter 72/186; 1♂, Reefton, 12 IV 1977, J.A. Wightman, pit trap burnt pine; 1♂, Lewis Pass, 19 X 2007, J. Nunn, washed soil sample; 1♂, Inland Pack tr, 1km n of Runakaiki River, sifted moss, J. Nunn, 29 XII 2010; 1♀, Coal Ck, Runanga, 11 II 2007, J. Nunn, moss; 1♀, W Inangahua SF, 127m, Stoney ck, 18 IV 1972, J. McBurney, litter PB1; 1♀, Fletcher ck, 7 III 1972, J.S. Dugdale, litter 72/106; 1♀, Reefton, 5 XI 1958, J.M. Hoy; 1♂, Nelson Lks NP, Mt. Robert car park, 28 IX 1973, R.M. Emberson, beech litter; **Fiordland (FD):** 1♂1♀, W. Olivine ra, Simonin Pass, 1 II 1975, G.W. Ramsay, under decayed braches lower bush edge; 2♂♂1♀, Fiordland NP, Borland rd, Borland Saddle vic, 980m, 45°44.81'S 167°22.88'E, 10 XII 2005, *Nothofagus menziesii* forest in ravine, FMHD#2005-090, litter, A. Newton, ANMT site 1171; 1♂4♀♀, Fiordland NP, Milford Sound rd, Tukoko tr, 70m, 44°40.517'S 167°57.895'E, 9 XII 2005, very mossy *Nothofagus* forest, emergent podocarp, FMHD#2005-086, litter, A. Newton, M. Thayer, ANMT site 1168; 1♂1♀, Fiordland NP, Milford Sound rd, Gertrude Saddle car park area, 800m, 44°46.13'S 168°00.16'E, 9 XII 2005, very mossy *Nothofagus menziesii* forest, FMHD#2005-087, litter, A. Newton, M. Thayer, ANMT site 1169; 1♂6♀♀, Fiordland NP, Milford Sound rd, Smithy Creek Campground area, 400m, 44°57.065'S 168°01.155'E, 9 XII 2005, *Nothofagus fusca* & *N. menziesii* open forest, FMHD#2005-089, litter, M. Thayer, A. Newton, ANMT site 1170; 1♂, Borland rd, Limestone Cave tr, 45°46'S 167°28'E, #140, *Nothofagus* log/bark litter berlese, 24 I 1998, C. Carlton, R. Leschen; 1♂, Borland rd, Borland Saddle tr, 45°46'S 167°23'E, #138, *Nothofagus* leaf litter berlese, 24 I 1998, C. Carlton, R. Leschen; 1♂, Bauza Is, Doubtfull sd, III 1986, pitfall trap, G.M. Bremner; 1♂, Lower Hollyford rd, 44°44'S 168°08'E, #111, *Nothofagus*/coastal forest leaf litter berlese, 22 I 1998, C. Carlton, R. Leschen; 1♂, Hump Ridge, 1220m, 6 II 1976, G.W. Ramsay, litter 76/38; 1♂, Milford rd, 60', 12 XII 1966, A.K. Walker, K. Wilson, cordyline litter 66/505; 1♂, Eglington Valley Divide, 400m, 13 II 1982, C.F. Butcher, moss/liverworts 82/29; 1♂, Lake Hauroko, 2 II 1966, J.I. Townsend, mixed moss 66/363; 1♀, Beside Tutoko R, 60m, 13 II 1980, J.W. Early, litter, *N. menziesii* forest; 1♀, Lake Hauroko Road end, 19 II–22 III 2003, FIT, R. Leschen, J. Nunn; 1♂1♀ (1♂, slide-mounted), Te Anau Control Gates, #104, 45°26'S 167°41'E, *Nothofagus* leaf litter berlese, 22 I 1998, R. Leschen, D. Gleeson; 1♀, Fiordland NP, Kepler tr, above Brod Bay, 680m, 45°24.37'S 167°39.105'E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-102, litter, A. Solodovnikov, D. Clarke, ANMT site 1177; 1♀, Fiordland NP, Kepler tr, below Mt. Luxmaore Hut, 900m, 45°24.865'S 167°38.675'E, 11 XII 2005, *Nothofagus* forest, fogging, A. Solodovnikov, D. Clarke, ANMT site 1176; 1♀, Tempest Spur, W. Olivine ra, 1220–1463m, 25 I 1975, G.W. Ramsay, litter 75/33; **Mid Canterbury (MC):** 3♂♂, Arthur's Pass, Dobson Nature Walk, 8 II 1982, C.F. Butcher, sifted litter 82/26; 3♂♂,

Arthur's Pass, Bealey tr, 8 II 1982, C.F. Butcher, litter 82/19; 1♂, Craigieburn SF, *Dracophyllum* Flat tr, 43°10'S 171°42'E, FIT, #150, 11–27 I 1998, C. Carlton, R. Leschen; **North Canterbury (NC)**: 1♂1♀, 2.9km N Arthur's Pass, 840m, Bealey Valley Trailhead, 42°55'S 171°33'E #036, *Nothofagus solandri* leaf litter berlese, 11 I 1998, C. Carlton, R. Leschen; 1♂, 3km n Arthur's Pass, 900m, 42°55'S 171°33'E, #042, *Nothofagus/Dracophyllum* leaf litter berlese, 11 I 1998, C. Carlton, R. Leschen; 3♂♂, Arthur's Pass NP, Bealey Vv tr, 840m, 18–21 III 1980, subalpine *Nothofagus*, A. Newton, M. Thayer, litter; 1♂, Arthur's Pass NP, Klondyke Cnn, 700m, 26 X 1981, J.W. Early, moss from forest floor; 1♂, Mt. Arthur Pass, Avalanche Park, 3 I 1950, E. Dawson, leaf litter; 1♂, Arthur's Pass NP, Halpine Creek, 17 V 1970, D.S. Homink litter & rotten wood; 1♂, Arthur Pass Mt. Aicken, 950m, 9 II 1984, J.C. Watt, sifted litter 84/24; 1♀, Arthur Pass, Mt. Aicken, 305m, 11 II 1984, J.C. Watt, W. Pond flood debris; **Nelson (NN)**: 5♂♂, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, AMNT site 1159; 23♂♂2♀♀, Kahurangi NP, Cobb Dam rd, Asbestos tr, 450m, 41°06.333'S 172°43.174'E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, FMHD#2005-057, carrion(octopus) trap, A. Solodovnikov, D. Clarke, ANMT site 1160; 1♂2♀♀, Kahurangi NP, Mt. Arthur tr, below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, litter, A. Solodovnikov, D. Clarke, ANMT site 1157; 1♀, Cobb Ridge east of Cobb Reservoir, 990m, 2 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 728, litter; 2♂♂, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172°44.456'E, 28 XI–19 XII 2005, *Nothofagus* dominant forest, FMHD#2005-044, FIT, A. Newton, M. Thayer, ANMT site 1156; 3♂♂, 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap; 3♂♂4♀♀, Third House, Dun Mt, 14 IX 1971, G.W. Ramsay, litter 7/114; 1♂ (slide-mounted), 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap; 2♂♂, Karamea sdle, 13 X 1970, J.I. Townsend, litter 70/157; 1♂♀, Karamea Bluff, 1420ft, 29 IX 1966, J. Nunn; 1♂, Cobb Valley, Mytton Hut, 1220m, 13 XII 1967, S. Edridge, litter 67/287; 1♂, Dun Mt, 610m, 4 IV 1966, J.I. Townsend, moss 66/127; 1♂, Arthur Range, w side Flora Saddle, 950m, 1 I 1985, *Nothofagus* mossy forest, A. Newton, M. Thayer 725, wet litter; 1♂, Punakaiki, Pororari tr, 27 I 1996, forest litter, J. Nunn; 1♂, Oparara Basin, Box Canyon Cave, 200m, 27 II–1 III 2007, J.W. Early, R.F. Gilbert, *Nothofagus*-podocarp forest, yellow pan trap; 1♂, Glenhope, T. Hall, 30 I 1915; 1♀, Dun Mt, 2000', 14 II 1942, E.S. Gourlay; 1♀, Dun Mt., 580m, 12 VII 1966, J.I. Townsend, moss 66/204; 1♀, Upper Maitai, 3 V 1950, E.S. Gourlay; 1♀, Wooded Peak, 609m, 31 VIII 1966, J.C. Watt, rotten *Nothofagus* stump; **Otago Lakes (OL)**: 4♂♂, Mt. Aspiring NP, 12.5km nne Makarora, 370m, 11–17 I 1985, *Noth. menz.*-hdwd-podocarp forest, A. Newton, M. Thayer 740, FIT&window trap; 1♂1♀, Davis Flat, Makarora vly, 19 I 2008, moss, J. Nunn; 1♂, Mt. Aspiring NP, se of Haast Pass, 600m, 11–17 I 1985, *Noth. menz.* forest, A. Newton, M. Thayer 739, FIT&window trap; 1♂, Mt. Aspiring NP, 5.5km nne Makarora, 330m, 11–17 I 1985, *Noth. menz.* forest, A. Newton, M. Thayer 741, FIT&window trap; 1♂, Makarora, 23–25 I 1978, 500m, S. Peck, J. Peck, litter; 1♂, McKerrow Range, Makarora, 1150m, 23 I 1978, G. Kuschel, litter 78/51; 1♂, Dart Hut, 13–15 II 1980, J.S. Dugdale, malaise trap; 1♀, 44.5km nw Wanaka, 350m, Matukituki Valley, 44°29'S 168°47'E, #079, *Nothofagus menziesii* leaf litter berlese, 18 I 1998, C. Carlton, R. Leschen; 1♀, Cameron Flat, Makarora V, 22 I 1996, J. Nunn; **Southland (SL)**: 1♂, N. Te Anau, 50m, 19 II 1965, A.K. Walker, litter 65/52; 1♂, Owaka Glenomaru Res, 18 I 1978, S. Peck, J. Peck, litter; 1♀, MacLennan, 100', 14 II 1968, J.I. Townsend, moss 68/20; **Westland (WD)**: 1♂♂3♀♀, Okuku

Scenic Reserve, 9.2km sse Kumara, 120m, 8–19 I 1986, podocarp-hdwd forest, A. Newton, M. Thayer 731, litter; 1♂, Okuku Scenic Reserve, 9.2km sse Kumara, 120m, 8–19 I 1986, podocarp-hdwd forest, A. Newton, M. Thayer 731, fogging; 2♂♂1♀, 1.8km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd forest with nikau, A. Newton, M. Thayer 718, FIT&windwo trap; 5♂♂, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap; 1♂, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, litter; 2♂♂, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, FIT&window trap; 1♂, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, litter; 2♂♂1♀, Lake Ianthe, 7 II 1984, J.C. Watt, sifted litter & wood mould 84/22; 4♂♂4♀♀, Hokitika Gorge, 29 I 1978, S.B. Peck, litter; 2♂♂, Okuku State Forest, 10km e of Kumara, 28 VIII 1977, R.M. Emberson, podocarp-broadleaf forest, moss&litter; 1♂, Hokitika R.Gorge, S Kowhitirangi, 100m, 17 III 1980, podocarp-broadleaf, A. Newton, M. Thayer, litter; 1♂1♀, Okuku ck, 11.3km sse Kumara, 60m, 18–22 III 1980, podocarp-broadlf, A. Newton, M. Thayer, litter; 1♂, L. Mahinapua Scen Res, 30m, 16–22 III 1980, podocarp mixed broadleaf, A. Newton, M. Thayer, litter; 1♂1♀, Lake Wahapo, 27 XI 1966, J.I. Townsend, litter 66/345; 1♂, Jacksons Bay, 23 IX 1979, A.K. Walker, moss & dead wood litter; 1♂1♀, Hokitika Gorge Res, Hokitika, 29 I 1978, S. Peck, J. Peck, litter, 100m; 1♂, Westland NP, Castle Rocks Hut, 1220m, 14–16 I 1996, yellow pan trap, subalpine tussock herb field; 1♂, Haast Pass, road summit, 6 II 2009, sifted ground moss, J. Nunn; 1♂, Haast Pass, 31 I 2005, J. Nunn, forest floor moss; 1♂, Otira, Barretts Creek, 9 II 1982, C.F. Butcher, litter 82/27; 1♂1♀, Fantail Falls, 3km ne Haast Pass, 4 II 1984, J.C. Watt, wood mould & litter; 1♂, Summit Haast Pass rd, 1850', 7 XII 1966, A.K. Walker, litter 66/471; 1♂, Pakihi Walk, 5.2km se Okarito, #062, 43°15S 170°12E, 14 I 1998, litter, C. Carlton, R. Leschen; 1♂, 3.2km ne Haast, 14m, Haast River Walk, 43°52S 169°03E, #072, *Nothofagus*-podocarp forest litter, 17 I 1998, C. Carlton, R. Leschen; 1♂, 56.6km se Haast, Fantail Falls tr, 475m, 44°05S 169°23E, #073, *Nothofagus menziesii* litter, 17 I 1998, C. Carlton, R. Leschen; 1♂, Victoria Range, 300', 26 X 1940, E.S. Gourlay; 3♀♀, Jacksons, Taramakau R, 150m, 26 I 1978, G. Kuschel, sifted litter & rotten wood; 1♀, Haast Pass w of summit, 550m, 24 I 1978, G. Kuschel, sifted litter & rotten wood 78/52; 1♀, Haast Pass, 20 III 1968, R.A. Cumberm litter; 1♀, Otira Valley, Dobsons tr, 1005m, 11 XI 1966, A.K. Walker, moss 66/382; 1♀, Nile River Valley, moss, 1 IX 1971, R.M. Emberson; 1♀, Haast Pass, 518m, 23 X 1966, J.I. Townsend, moss 66/349; 1♀, Lake Kaniere rd, 2.8km nw Lake Kaniere, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 732, litter; 1♀, 3km n of Bruce Bay, 6 II 2009, sifted moss from podocarp swamp forest, J. Nunn; 1♀, Kelly's ck, Otira, 25 II 1989, J. Nunn.

Diagnosis. This species is separated from other species by the following combination of characters: larger body, length 2.2–2.8 mm; frontal rostrum prominent; anterior and posterior frontal fovea deep and large oval; ventral surface of male head with distinct triangular process bearing dense setae behind mouth parts; shapes of antennomere and genitalia.

Redescription. Length 2.2–2.8 mm. Body reddish to blackish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 66a). *Head.* Head round, widest across eyes (Figure 66a). Ventral surface of male head with distinct triangular process bearing dense setae behind mouth parts (Figure 66d). Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal rostrum prominent. Frontal sulcus deep, slightly exceed eye (Figure 66c). Anterior and posterior frontal fovea oval (Figure 66c). Eye prominent, one-third of temple (Figure 66c). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 66a). Meso- and metathorax

trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe elongate and divided vertically, dorsal process small reversed triangular (Figure 66b). Phallobase of median lobe symmetrical and rounded (Figure 66b). Paramere symmetrical and wide with setae anteriorly (Figure 66b).

Type locality. Moa Hill, Canterbury (MC), New Zealand.

Distribution. Buller (BR), Mid Canterbury (MC), North Canterbury (NC), Nelson (NN), Otago Lakes (OL), Southland (SL), Westland (WD) (Figure 67: black circles).

Habitat. Most specimens of this species were collected using flight intercept and window traps, or by sifting mossy leaf or log litter in hardwood, podocarp, broadleaf or *Nothofagus* forests.

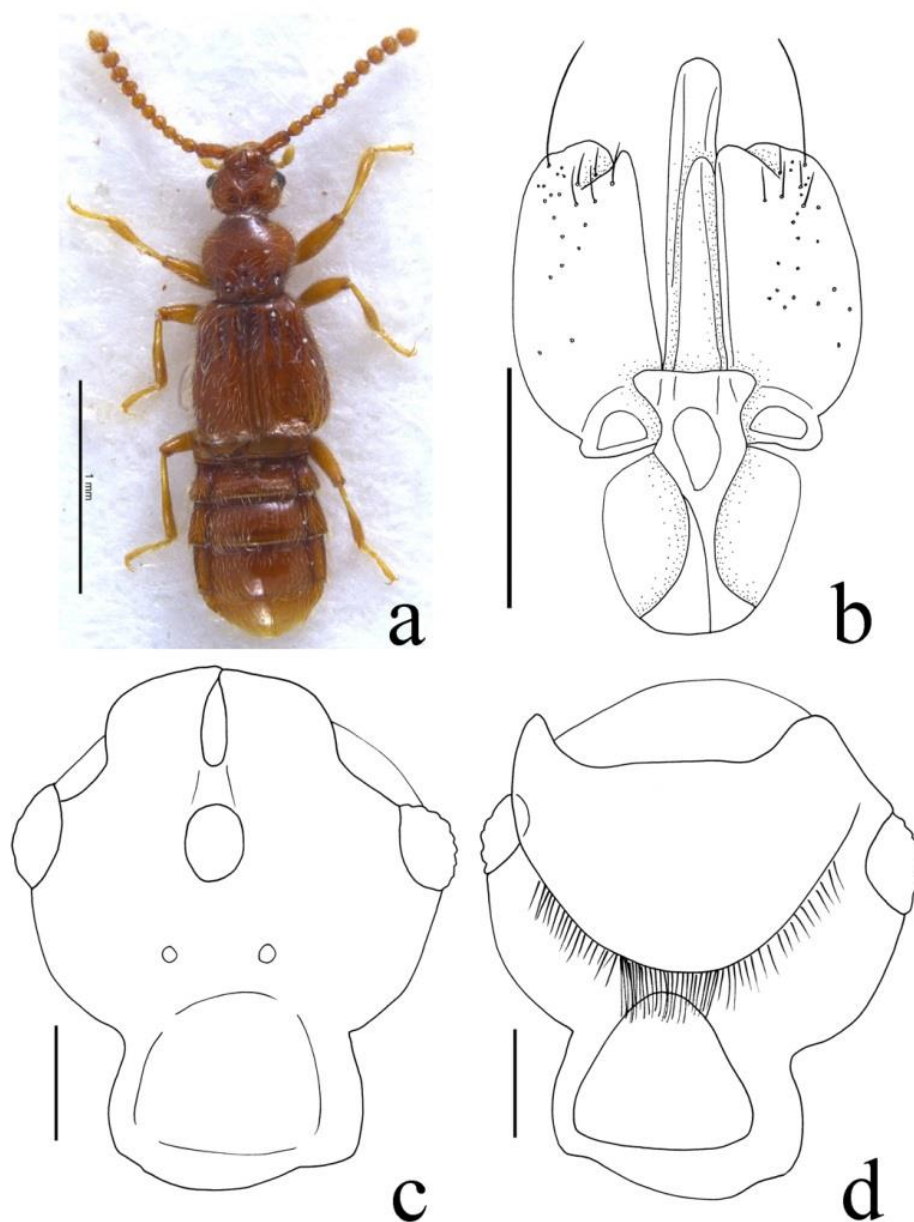


Figure 66. *Sagola strialis* Broun. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) dorsal head; d) ventral head; Scale bars = 0.1 mm.

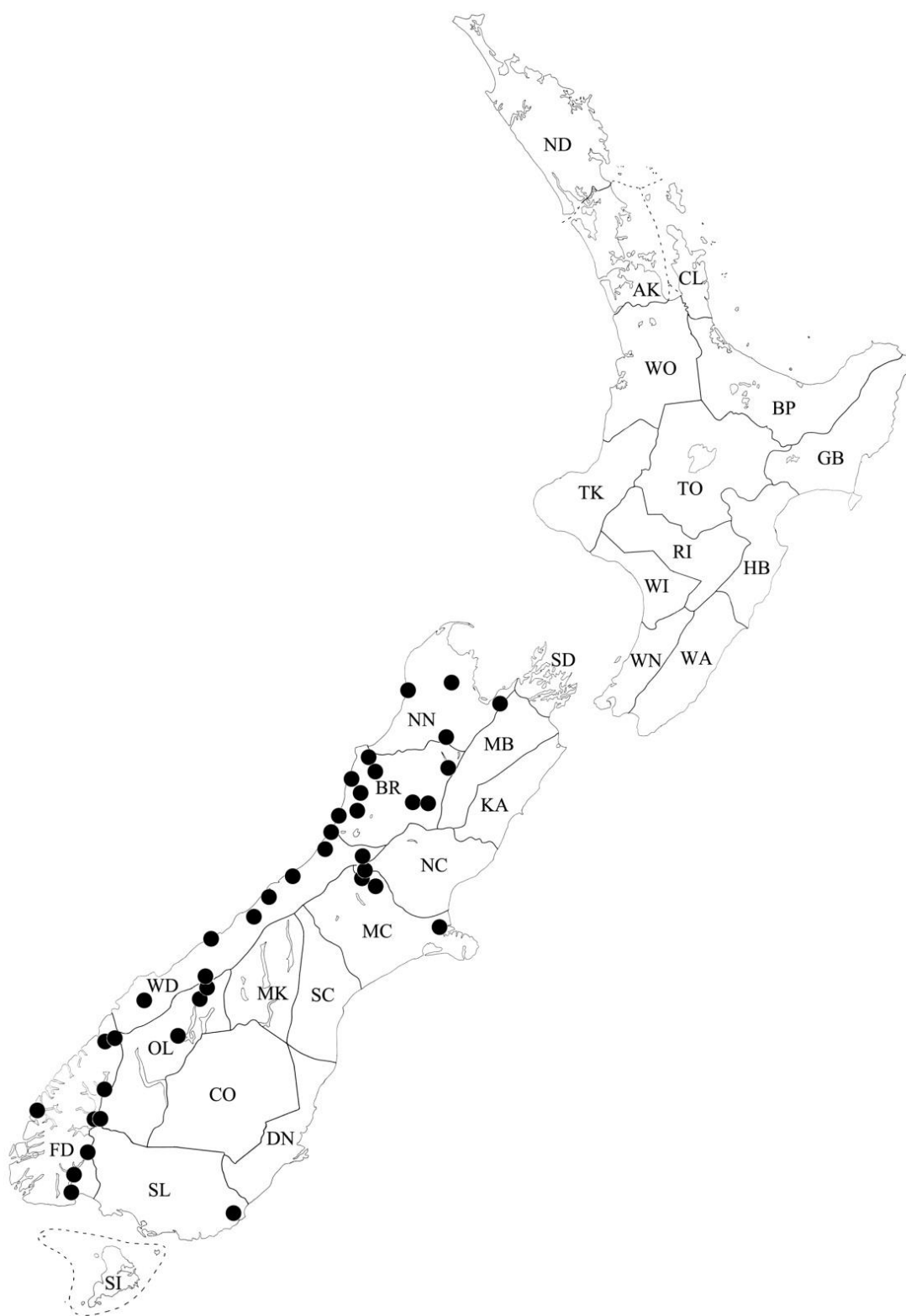


Figure 67. Locations where *Sagola strialis* specimens have been collected in New Zealand (circles).

Group 18 (5 species)

Key to species of *Sagola* group 18

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

- 1. Abdominal ventrite VII deeply emarginate, surrounded by dense setae.....2
- 1'. Abdominal ventrite VII normal.....3
- 2 (1). Antennomeres 9–10 transverse; elytra triangular, as long as wide; hind wings reduced to small pads.....*Sagola* sp. nov.35-5
- 2'. Antennomeres 9–10 subquadrate; male elytra rectangular, longer than wide; hind wings fully developed.....*S.* sp. nov.47
- 3 (1). Antennomeres 4–6 enlarged; frontal sulcus deep (Figure 68l); eye larger, one-half length of temple (Figure 68l).....*S. anisarthra* Broun
- 3'. Antennomeres 4–6 normal with tubercles; frontal sulcus shallow; eye smaller, one-third length of temple.....4
- 4 (3). Median lobe of genitalia slender as wide as paramere (Figure 68g, h)...*S. planipennis* Broun
- 4'. Median lobe of genitalia at least 3 times broader than paramere (Figure 68i).....*S.* sp. nov.17-1

Diagnosis. The members of group 18 may be separated from other *Sagola* groups by the following combination of characters: body length 2.3–3.2 mm; antennomere 1 approximately 2 times longer than wide; ventral surface of head weakly convex, but not modified (Figure 68m); anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea oval (Figure 68i); hind wings well developed; abdominal tergites IV–VI with discal carinae.

Sagola anisarthra Broun

Sagola anisarthra Broun, 1893b: 1053. Raffray, 1904: 498; 1911: 6; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Sagola dickensis Broun, 1917: 377. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New synonym.

Sagola suturalis Broun, 1914b: 158. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244. New synonym.

Type Material. Holotype. New Zealand: Dunedin (DN): ♂, glued on rectangular card, “Sharp Coll. 1905-313.” [white label, printed]; “*Sagola anisarthra* fide Sandager Moeraki” [white label, handwritten]. **Syntypes of *Sagola dickensis*: New Zealand: Otago Lakes (OL):** ♂, glued on rectangular card, “Type” [red label, printed], “3827.♂” [white label, handwritten], “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed], “Mt. Dick. 10.3.1914” [white label, handwritten], “*Sagola*. ♂ *dickensis*.” [white label, handwritten]; ♂, glued on rectangular card, “3827.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Dick. 10.3.1914” [white label, handwritten]; “*Sagola*. ♂ *dickensis*.” [white label, handwritten]; 1♂, glued on rectangular card, “Coll. T.Hall. 10-3-1914.” [white label, handwritten], “Mt. Dick, W. of L. Wakatipu, Southland.” [white label, handwritten], “3827.” [white label, handwritten], “Paratype.” [white label, handwritten], “*Sagola dickensis* Broun.” [white label, handwritten], “T.Broun Collection” [white label, handwritten], “A.E.Brookes Collection” [white label, handwritten], “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]; 1♂, glued on rectangular card and aedeagus

dissected and mounted in balsam on a clear plastic card, “*Sagola dickensis* Broun.” [white label, handwritten], “3827.” [white label, handwritten], “L. Wakatipu Region, Southland.” [white label, handwritten], “Coll. T.Hall, march, 1914.” [white label, handwritten], “A.E.Brookes Collection” [white label, handwritten], “T.Broun Collection” [white label, handwritten], “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]; 1♂, glued on rectangular card, “Coll. T.Hall, march, 1914.” [white label, handwritten], “L. Wakatipu Region, Southland.” [white label, handwritten], “3827.” [white label, handwritten], “*Sagola dickensis* Broun.” [white label, handwritten], “T.Broun Collection” [white label, handwritten], “A.E.Brookes Collection” [white label, handwritten], “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]; 2♂♂, glued on rectangular card, “Coll. T.Hall, march, 1914.” [white label, handwritten], “L. Wakatipu Region, Southland.” [white label, handwritten], “3827.” [white label, handwritten], “*Sagola dickensis* Broun.” [white label, handwritten], “T.Broun Collection” [white label, handwritten], “A.E.Brookes Collection” [white label, handwritten], “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. *Original description examined eight specimens, but I could not find one of them. **Syntypes of *Sagola suturalis*: New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “type” [red label, printed], “3522.♂” [white label, handwritten], “Rakaia. 5.6.1912” [white label, handwritten], “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed], “*Sagola* .♂ *suturalis*.” [white label, handwritten]; ♂, glued on rectangular card, “3522.♂” [white label, handwritten], “Rakaia Gorge. 5.6.1912” [white label, handwritten], “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed], “*Sagola* .♂. *suturalis*.” [white label, handwritten].

Additional Material (n= 37; 30 males, 7 females). New Zealand: Dunedin (DN): 10♂♂ (1♂, slide-mounted), Boulder Beach, Otago Penin., 19 XI 2004, washed up live with incoming tide, J. Nunn; 1♀, Mt. Watkin nr Waikouaiti, XII 2007, pit trap, Kelvin Lloyd; 1♂, Boulder Beach, Otago Penin., 7 XII 2002, washed up live with incoming tide, J. Nunn; 1♂, Boulder Beach, Otago Penin., 14 I 2005, washed up live with incoming tide, J. Nunn; 2♂♂, Mt. Cargill, Grahams Bush, 260m, 45°48.299’S 170°34.905’E, 14 XII 2005, mixed broadleaf forest on steep slope w/emergent podocarp, FMHD#2005-107, litter, A. Newton, M. Thayer, ANMT site 1164; **Fiordland (FD):** 4♂♂1♀, S of Lake Hauroko, 12 XI 1966, F. Alack, litter 66/420; **Mid Canterbury (MC):** 4♂♂2♀♀, Goat Hill, nr. Metheven, T. Hall, 20 X 1913; 1♂, Mt Hutt, 11 V 2003, A.C. Eyles, mountain beech litter; **Southland (SL):** 1♀, Clifden, Limestone Bluffs, 11 II 1968, J.I. Townsend, moss; 5♂♂1♀, MW relat stn, Blue Mountains, 19 III 2006, J. Nunn; 1♂, Lookout Point Bluff, 7 VII 2001, amongst tussock grasses, J. Nunn; 1♀, Pounawea Catlins, 25 X 2003, litter at beach streamline, J. Nunn.

Diagnosis. This species is separated from other species of group 18 by the following combination of characters: larger body, length 2.4–2.8 mm; male antennomeres 4–6 enlarged and 4–11 bearing tubercles; frontal sulcus deep reaching midpoint of eye; anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea oval; eye large and prominent, approximately two-third length of temple; shape of genitalia unique to species.

Redescription. Length 2.4–2.8 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 68a). *Head.* Head bluntly triangular, widest across eyes (Figure 68l). Ventral surface of head weakly convex. Male antennomere 1 approximately 2 times longer than wide, 2–10 subquadrate, 4–6 enlarged, 7–10 bearing tubercles. Female antennomere 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate, 4–11 bearing tubercles. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum (Figure

68l). Posterior frontal fovea oval (Figure 68l). Eye large and prominent, approximately one-half length of temple (Figure 68l). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 68a). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe as long and wide as parameres (Figure 68f). Phallobase of median lobe symmetrical and rounded (Figure 68f). Paramere symmetrical with setae at tip (Figure 68f).

Type locality. Moeraki (DN), New Zealand.

Distribution. Dunedin (DN), Fiordland (FD), Mid Canterbury (MC), Otago Lakes (OL), Southland (SL) (Figure 69: black circles).

Habitat. Most specimens of this species were collected by sifting mossy leaf or log litter in forests or intertidal zone of beach area.

Comments. Specimens of *S. anisarthra* can be separated from other species by the enlarged male antennomeres 4–6 and shape of dorsal head. The type specimens of *S. dickensis* and *S. suturalis* share these diagnostic characters, and additional species have been collected at or near the type localities. For these reasons, I have placed *S. dickensis* and *S. suturalis* in synonymy with *S. anisarthra*.

Sagola planipennis Broun

Sagola planipennis Broun, 1921a: 500. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Additional Material (n= 15; 13 male, 2 females). **New Zealand: Buller (BR):** 1 ♀, Lake Rotoiti, 15 II 1916, T. Broun collection, A.E. Brookes collection; 2 ♂♂, Rotoiti, 3 IV 1916, T. Broun collection, A.E. Brookes collection; **Fiordland (FD):** 1 ♀, Barrier River, 1067m, little Red Hill, 2 II 1975, G.W. Ramsay, litter 75/50; **Marlborough (MB):** 2 ♂♂, nr Wards Pass, 1218m, Molesworth, 19 III 1968, J.I. Townsend, moss 68/80; 1 ♂, Wairau V, Schrodcs ck, 7 IX 1966, J.I. Townsend, litter 66/295; **Mid Canterbury (MC):** 1 ♂ 1 ♀ (1 ♀, slide-mounted), Arthurs Pass, Temple Basin, 1493m, 8 II 1982, J.S. Dugdale, sedges, moss and mats; **Mackenzie (MK):** 1 ♂, Ohau Skifield, Ohau Rng, 3 III 2007, J. Nunn, under stone, 1800m; **Nelson (NN):** 4 ♂♂, Saint Arnaud, 15 VI 1916, T. Broun collection, A.E. Brookes collection; 1 ♂, Iron Hill Summit ridge, Lake Sylvester, 1600m, 18 XI 1972, J.S. Dugdale, 72/193; **Otago Lakes (OL):** 1 ♂, Haast Pass, Mt. Albert, 5 III 2003, R. Leschen, under rocks, RL779, 44°26'S 169°06'E.

Diagnosis. This species is separated from other species of group 18 by the following combination of characters: body length 2.3–2.7 mm; antennomeres 4–11 bearing tubercles; frontal sulcus shallow, reaching midpoint of eye; anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval; eye large and prominent, one-half length of temple; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.3–2.7 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 68b). *Head*. Male head round, widest across eyes (Figure 68b). Male antennomere 1 approximately 2 times longer than wide, 2–10 subquadrate, 4–11 bearing tubercles. Female antennomeres 2–3 subquadrate, 4 longer than wide, 5–7 subquadrate, 8–10 weakly transverse, 4–11 bearing tubercles. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, one-half of temple. *Thorax*. Prosternum as long as wide, widest at one-third of prosternum. Elytra rectangular (Figure 68b), female slightly shorter. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV with a pair of

oval or transverse weak patches of microtrichia, female absent. *Aedeagus*. Median lobe elongate and bent to right (Figure 68g, h). Phallobase of median lobe symmetrical and rounded (Figure 68g). Paramere symmetrical and long with setae at tip (Figure 68g).

Type locality. Mount Oakden, Canterbury (MC), New Zealand.

Distribution. Buller (BR), Fiordland (FD), Marlborough (MB), Mid Canterbury (MC), Mackenzie (MK), Nelson (NN), Otago Lakes (OL) (Figure 59: triangles).

Habitat. Most specimens of this species were collected by sifting leaf and moss litter.

Comments. I could not examine a syntype of *Sagola planipennis* Broun, but I identified the additional specimens by two specimens from the type locality and identified by T. Broun who described this species.

Sagola sp. nov. 17-1

Type Material. Holotype. New Zealand: South Canterbury (SC): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: SC: Mt. Dalgety, 1737m 19 I 1966, G.W. Ramsay J.I. Townsend, moss 66/36”.

Diagnosis. This species is separated from other species of group 18 by the following combination of characters: body length 2.8 mm; antennomeres 4–11 bearing tubercles; frontal sulcus shallow, reaching midpoint of eye; anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval; eye large and prominent, one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.8 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 68c). *Head*. Male head round, widest across eyes (Figure 68c). Antennomere 1 approximately 2 times longer than wide, 2–10 subquadrate, 4–11 bearing tubercles. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum as long as wide, widest at one-third of prosternum. Elytra rectangular (Figure 68c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of oval or transverse weak patches of microtrichia. *Aedeagus*. Median lobe broad with triangular apical lobe (Figure 68i). Phallobase of median lobe symmetrical and rounded (Figure 68i). Paramere symmetrical and long with setae at tip (Figure 68i).

Distribution. South Canterbury (SC) (Figure 69: black square).

Habitat. The holotype was collected in moss.

Sagola sp. nov. 35-5

Type Material. Holotype. New Zealand: Wairarapa (WA): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand WA Putangirua Stm Palliser Bay 23-Oct-95”, “In forest leaf litter”.

Diagnosis. This species is separated from other species of group 18 by the following combination of characters: body length 2.8 mm; antennomeres 4–11 bearing tubercles; frontal sulcus shallow, reaching midpoint of eye; anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval; eye large and prominent, one-half length of temple; male abdominal ventrite VII emarginate and surrounded by dense setae; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.7 mm. Body yellowish brown and antenna, elytra, legs, maxillary palpi paler (Figure 68d). *Head*. Male head round, widest across eyes (Figure 68d).

Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–7 subquadrate, 9–10 transverse, 4–11 bearing tubercles. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum as long as wide, widest at one-third of prosternum. Elytra approximately triangular (Figure 68d). Hind wings reduced to small pads. Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Abdominal tergite IV without patches of microtrichia. Abdominal ventrite VII deeply emarginate and surrounded dense setae. *Aedeagus*. Median lobe elongate triangular and broader than parameres (Figure 68j). Phallobase of median lobe symmetrical and rounded (Figure 68j). Paramere symmetrical and long with setae at tip (Figure 68j).

Distribution. Wairarapa (WA) (Figure 69: star).

Habitat. The holotype was collected by sifting leaf litter.

Sagola sp. nov. 47

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: NN: Kahurangi N.P., Cobb Dam Rd., Asbestos Track, 450m, 41°06.333’S, 172°43.174’E, 29 XI-18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest; FMHD#2005-111, berl., leaf & log litter, A. Solodovnikov, D. Clarke, et al.; ANMT site 1160”. **Paratypes (n= 9; 2 males, 7 females). New Zealand: Nelson (NN):** 2♂♂3♀♀ (1♂, slide-mounted), same data as holotype (FMNH); 4♀♀, 20km ne Takaka, Tasman NP, 21 V 1982, FMHD#82-591, mixed forest litter, S. Peck (FMNH).

Diagnosis. This species is separated from other species of group 18 by the following combination of characters: body length 2.9–3.2 mm; antennomeres 4–11 bearing tubercles; frontal sulcus shallow, reaching midpoint of eye; anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval; eye large and prominent, one-third length of temple; male abdominal ventrite VII deeply emarginate and surrounded dense setae; shapes of antennomeres and genitalia unique to species.

Description. Length 2.9–3.2 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 68e). *Head*. Male head bluntly triangular, widest across eyes (Figure 68e). Antennomere 1 approximately 2 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate, 4–11 bearing tubercles. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea round partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, one-third length of temple. *Thorax*. Prosternum as long as wide, widest at one-third of prosternum. Male elytra rectangular (Figure 68e), female triangular. Male hind wings well developed, female reduced to small pads. Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Abdominal tergite IV without patches of microtrichia. Male abdominal ventrite VII deeply emarginate and surrounded dense setae. *Aedeagus*. Median lobe elongate as wide as parameres (Figure 68k). Phallobase of median lobe symmetrical and rounded (Figure 68k). Paramere symmetrical and curved as c-shaped with setae at tip (Figure 68k).

Distribution. Nelson (NN) (Figure 69: white circles).

Habitat. Specimens of this species were collected by sifting forest litter in broadleaf or podocarp forests.

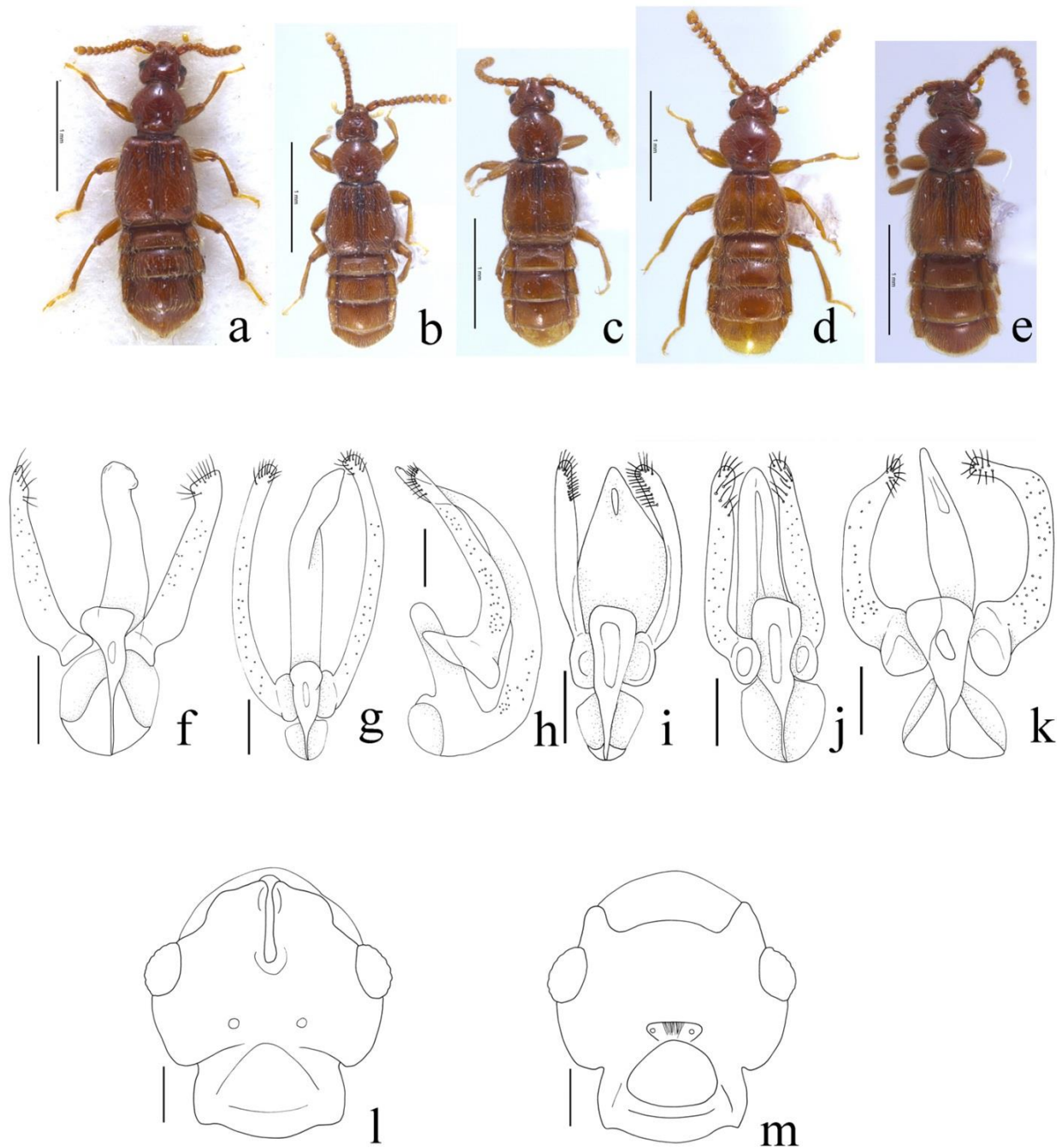


Figure 68. Habitus of group 18, dorsal views. a) *Sagola anisarthra* Broun; b) *S. planipennis* Broun; c) *S. sp. nov.* 17-1; d) *S. sp. nov.* 35-5; e) *S. sp. nov.* 47; Scale bars = 1 mm. Aedeagus, dorsal view. f) *S. anisarthra*; g) *S. planipennis*; h) *S. planipennis*, lateral view; i) *S. sp. nov.* 17-1; j) *S. sp. nov.* 35-5; k) *S. sp. nov.* 47; Scale bars = 0.1 mm. *S. anisarthra*. l) dorsal head; m) ventral head; Scale bars = 0.1 mm.

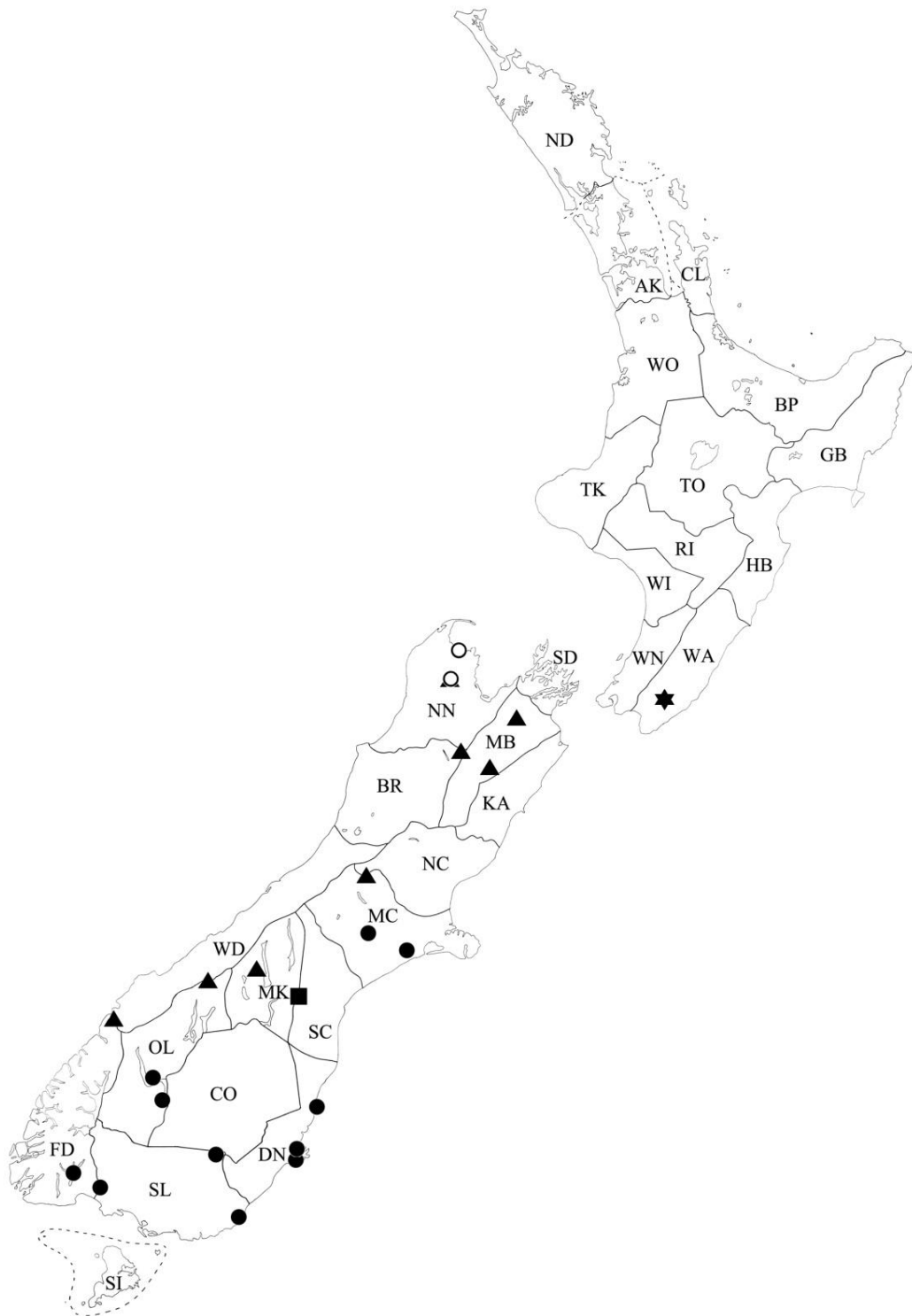


Figure 69. Locations where *Sagola anisarthra*, *S. planipennis*, *S. sp. nov. 17-1*, *S. sp. nov. 35-5* and *S. sp. nov. 47* specimens have been collected in New Zealand. *S. anisarthra*: black circles; *S. planipennis*: triangles; *S. sp. nov. 17-1*: black square; *S. sp. nov. 35-5*: star; *S. sp. nov. 47*: white circles.

Group 19 (5 species)

Key to species of the *Sagola* group 19

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

- 1. Antennomere 7 enlarged, at least twice longer than 8.....2
- 1. Antennomere normal or larger but not exceed twice length of 8.....3
- 2 (1). Elytra rectangular, hind wings fully developed.....*Sagola socia* Broun
- 2'. Elytra subquadrate, hind wings reduced to small pads.....*S. sp. nov.*40
- 3 (1). Antennomeres 8–10 enlarged bearing distinctive tubercles; ventral male head simple.....4
- 3'. Antennomeres 8–10 normal; ventral surface of head with reversed triangular process bearing dense setae behind mouth parts.....*S. sp. nov.*30-4
- 4 (3). Eye one-third length of temple; antennomeres 5–10 normal.....*S. sp. nov.*36
- 4'. Eye as long as temple; antennomeres 5–10 enlarged.....*S. sp. nov.*30-3

Diagnosis. The members of group 19 may be separated from other *Sagola* groups by the following combination of characters: body length 2.2–2.8 mm; antennomere 1 approximately 1.5– 2.0 times longer than wide; anterior frontal fovea oval and mostly covered by frontal rostrum, posterior frontal fovea oval (Figure 70k); hind wings well developed; abdominal tergites IV–VI with discal carinae; median lobe of genitalia divided vertically, major lobe partially cover minor lobe (Figure 70f–j).

Sagola socia Broun

Sagola socia Broun, 1915: 281. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b.

Nomura and Leschen, 2006: 244.

Sagola unicalis Broun, 1917: 376. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b.

Nomura and Leschen, 2006: 244. New synonym.

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♂, glued on rectangular card, “type” [red label, printed], “3695.♂” [white label, handwritten], “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed], “Puoding Hill. 10.12.1912.” [white label, handwritten]; “*Sagola socia*.♂.” [white label, handwritten]. **Syntype of *Sagola unicalis*. New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “3826.♂” [white label, handwritten], “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed], “Moa Basin 20.10.1913.” [white label, handwritten]; “*Sagola unicalis*” [white label, handwritten].

Additional Material (n= 9; 8 males, 1 female). New Zealand: Fiordland (FD): 1♂, Barrier River, 1067m, little Red Hill, 2 II 1975, G.W. Ramsay, litter 75/50; 1♂, W. Olivine Ra., Tempest Spur Summit, 1463m, 30 I 1975, G.W. Ramsay, litter 75/46; 1♂, Middle basin, Tukoko bench, Darran mts, 1524m, 14 I 1977, J.S. Dugdale, swards 77/9; **Mid Canterbury (MC):** 2♂♂ (1♂, slide-mounted), Arthurs Pass, Temple Basin, 1493m, 8 II 1982, J.S. Dugdale, sedges ad mats 82/24; **Westland (WD):** 1♂1♀, Mt Aspiring NP, Arawata Blv, 840m, 5 II 1989, LCNZ 89/2, J.W. Early, R.M. Emberson, scrub litter; 1♂, Chancellor Hut, Fox Glacier, 29 I 2005, J. Nunn, in tussock litter at 1140m; 1♂, Alex Knob, 1280m, nr Franz Josef, 6 II 1984, J.C. Watt, turf 84/15.

Diagnosis. This species is separated from other species of group 19 by the following combination of characters: larger body, length 2.5–2.8 mm; male antennomeres 7 enlarged and

longer than wide; eye prominent, one-third length of temple; male hind wings well developed, female reduced to small pads; shape of genitalia unique to species.

Redescription. Length 2.5–2.8 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 70a). *Head.* Head as long as wide, widest across eyes (Figure 70a). Ventral surface of head weakly convex. Male antennomere 1 approximately 2 times longer than wide, 2–6 subquadrate, 4–7 enlarged, 7 distinctly enlarged and longer than wide, 8–10 subquadrate, 4–11 bearing tubercles. Female antennomere 2–10 subquadrate, 4–11 bearing tubercles. Frontal sulcus deep, reaching posterior end of eye (Figure 70k). Anterior frontal fovea oval and partially covered by frontal rostrum (Figure 70k). Posterior frontal fovea oval (Figure 70k). Eye large and prominent, approximately one-third length of temple (Figure 70k). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular (Figure 70a), female subquadrate. Male hind wings well developed, female reduced to small pads. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe divided vertically, minor lobe broader and triangular apically (Figure 70f). Phallobase of median lobe symmetrical and rounded (Figure 70f). Paramere symmetrical with setae at tip (Figure 70f).

Type locality. Pudding Hill, near Methven (MC), New Zealand.

Distribution. Fiordland (FD), Mid Canterbury (MC), Westland (WD) (Figure 71: black circles).

Habitat. Specimens of this species were collected by sifting forest litter at high elevations.

Comments. I could not examine one of two syntypes of *Sagola unicalis* Broun, but they share a unique enlarged male antennomere 7 that is longer than wide, a diagnostic species character for *S. socia*. One specimen was collected at the same locality as *S. socia* Broun and was identified as *S. unicalis* by T. Broun, the author of the species, and additional specimens have been collected near the type locality. For these reasons, I have placed *S. unicalis* in synonymy with *S. socia*.

Sagola sp. nov. 36

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: NN: Kahurangi N.P., Cobb Dam Rd., Asbestos Track, 450m, 41°06.333’S, 172°43.174’E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest; FMHD#2005-056, flight intercept trap, A. Newton, M. Thayer & A. Solodovnikov; ANMT site 1160”. **Paratypes (n=7; 3 males, 4 females).** New Zealand: Nelson (NN): 1♂1♀, Upper Maitai, 19 V 1941, E.S. Gourlay (NZAC); 1♂2♀♀, Upper Maitai, 13 II 1957, E.S. Gourlay (NZAC); 1♀, Upper Maitai, 7 III 1949, E.S. Gourlay (NZAC); 1♂ (slide-mounted), Kahurangi NP, Cobb Dam Rd, Asbestos tr, 450m, 41°06.333’S 172°43.174’E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, FMHD#2005-058, pitfall trap, A. Solodovnikov, D. Clarke, ANMT site 1160 (FMNH).

Diagnosis. This species is separated from other species of group 19 by the following combination of characters: larger body, length 2.4–2.6 mm; male 8–10 enlarged with tubercles; eye prominent, one-third length of temple; male hind wings well developed, female reduced to small pads; shape of genitalia unique to species.

Description. Length 2.4–2.6 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 70b). *Head.* Male head round, widest across eyes (Figure 70b). Ventral surface of head weakly convex. Antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate,

4–5 longer than wide, 6–7 subquadrate, 8–10 transverse, male 8–10 enlarged with tubercles. Frontal sulcus deep, reaching posterior end of eye. Anterior frontal fovea oval and partially covered by frontal rostrum. Posterior frontal fovea oval. Eye prominent, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular (Figure 70b), female subquadrate. Male hind wings well developed, female reduced to small pads. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe divided vertically, minor lobe broader and wave shaped apically (Figure 70g). Phallobase of median lobe symmetrical and rounded (Figure 70g). Paramere symmetrical with setae at tip (Figure 70g).

Distribution. Nelson (NN) (Figure 71: triangles).

Habitat. Some of this species were collected using flight intercept or pitfall traps.

Sagola sp. nov. 40

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: NN: Kahurangi N.P., track Mt. Arthur Hut to Mt. Arthur Summit, 1550m, 41°13’S, 172°42’E, 19 xii 2005, subalpine area; FMHD#2005-115, berl., sifted tussocks, speargrass & daisy litter, A. Solodovnikov & D. Clarke; ANMT site 1182”. **Paratype (1 male). New Zealand: Nelson (NN):** 1♂, same data as holotype (FMNH).

Diagnosis. This species is separated from other species of group 19 by the following combination of characters: larger body, length 2.5–2.6 mm; male antennomeres 7 enlarged, as long as wide; eye prominent, one-third length of temple; male hind wings reduced to small pads; shape of genitalia unique to species.

Description of male. Length 2.5–2.6 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 70c). *Head*. Male head round, widest across eyes (Figure 70c). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–10 subquadrate, 7 enlarged, 4–11 bearing tubercles. Frontal sulcus deep, reaching posterior end of eye. Anterior frontal fovea oval and partially covered by frontal rostrum. Posterior frontal fovea oval. Eye prominent, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 70c). Hind wings reduced to small pads. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV without patches of microtrichia. *Aedeagus*. Median lobe divided vertically, minor lobe narrower than minor lobe (Figure 70h). Phallobase of median lobe symmetrical and rounded (Figure 70h). Paramere symmetrical with setae from tip to middle (Figure 70h).

Distribution. Nelson (NN) (Figure 71: black square).

Habitat. Specimens of this species were collected by sifting tussocks, speargrass and daisy litter in subalpine area.

Sagola sp. nov. 30-3

Type Material. Holotype. New Zealand: Buller (BR): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Rotoriti 25-12-15”, “A.E.Brookes Collection”, “T.Broun Collection”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from other species of group 19 by the following combination of characters: larger body, length 2.3 mm; male 5–10 transverse and enlarged with

tubercles; eye large and prominent, as long as temple; male hind wings reduced to small pads; shape of genitalia unique to species.

Description of male. Length 2.3 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 70d). *Head.* Male head round, widest across eyes (Figure 70d). Antennomere 1 approximately 1.5 times longer than wide, 2–4 subquadrate, 5–10 transverse and enlarged with tubercles. Frontal sulcus deep, reaching posterior end of eye. Anterior frontal fovea oval and partially covered by frontal rostrum. Posterior frontal fovea oval. Eye large and prominent, as long as temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 70d). Hind wings reduced to small pads. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe divided vertically, minor lobe as long as wide (Figure 70i). Phallobase of median lobe symmetrical and rounded (Figure 70i). Paramere symmetrical, apical lobe triangular with setae (Figure 70i).

Distribution. Buller (BR) (Figure 71: star).

Habitat. unknown.

Sagola sp. nov. 30-4

Type Material. Holotype. New Zealand: Mid Canterbury (MC): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, MC Prices Valley 5-24. iii. 1981 J.W.Early Malaise trap”.

Diagnosis. This species is separated from other species of group 19 by the following combination of characters: larger body, length 2.2 mm; ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts; eye large and prominent, slightly longer than temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.2 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 70e). *Head.* Head as long as wide, widest across eyes (Figure 70e). Ventral surface of head with reversed triangular process bearing dense setae behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–8 subquadrate, 9–10 transverse, 4–11 bearing tubercles. Frontal sulcus reaching one-third length of eye. Anterior frontal fovea round and partially covered by frontal rostrum. Posterior frontal fovea round. Eye large and prominent, slightly longer than temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 70e). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe divided vertically, minor lobe as long as wide (Figure 70j). Phallobase of median lobe symmetrical and rounded (Figure 70j). Paramere symmetrical, apical lobe rectangular with setae (Figure 70j).

Distribution. Mid Canterbury (MC) (Figure 71: white circle).

Habitat. The holotype was collected using a malaise trap.

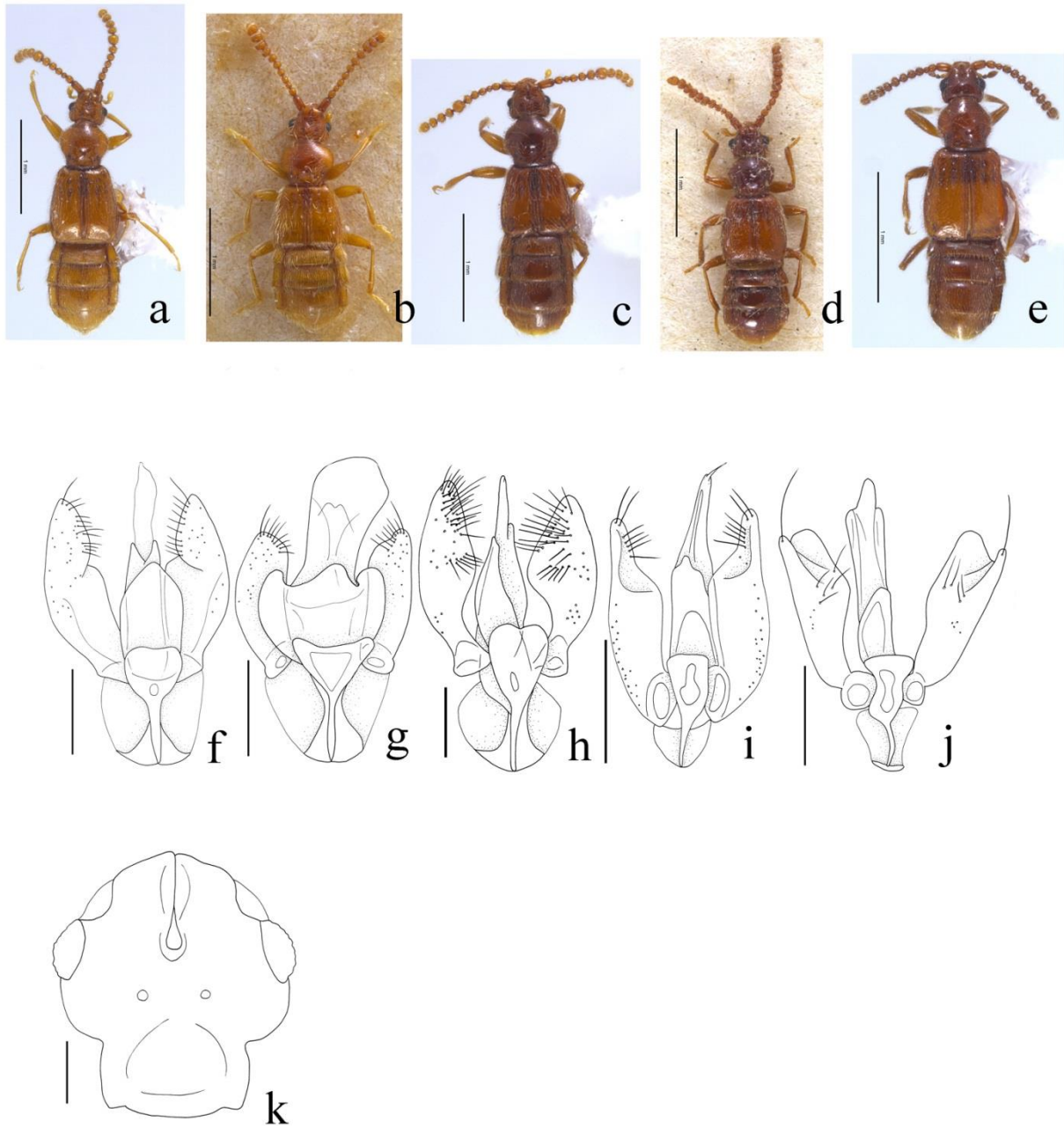


Figure 70. Habitus of group 19, dorsal views. a) *Sagola socia* Broun; b) *S. sp. nov. 36*; c) *S. sp. nov. 40*; d) *S. sp. nov. 30-3*; e) *S. sp. nov. 30-4*; Scale bars = 1 mm. Aedeagus, dorsal view. f) *S. socia*; g) *S. sp. nov. 36*; h) *S. sp. nov. 40*; i) *S. sp. nov. 30-3*; j) *S. sp. nov. 30-4*; k) dorsal head of *S. socia*; Scale bars = 0.1 mm.

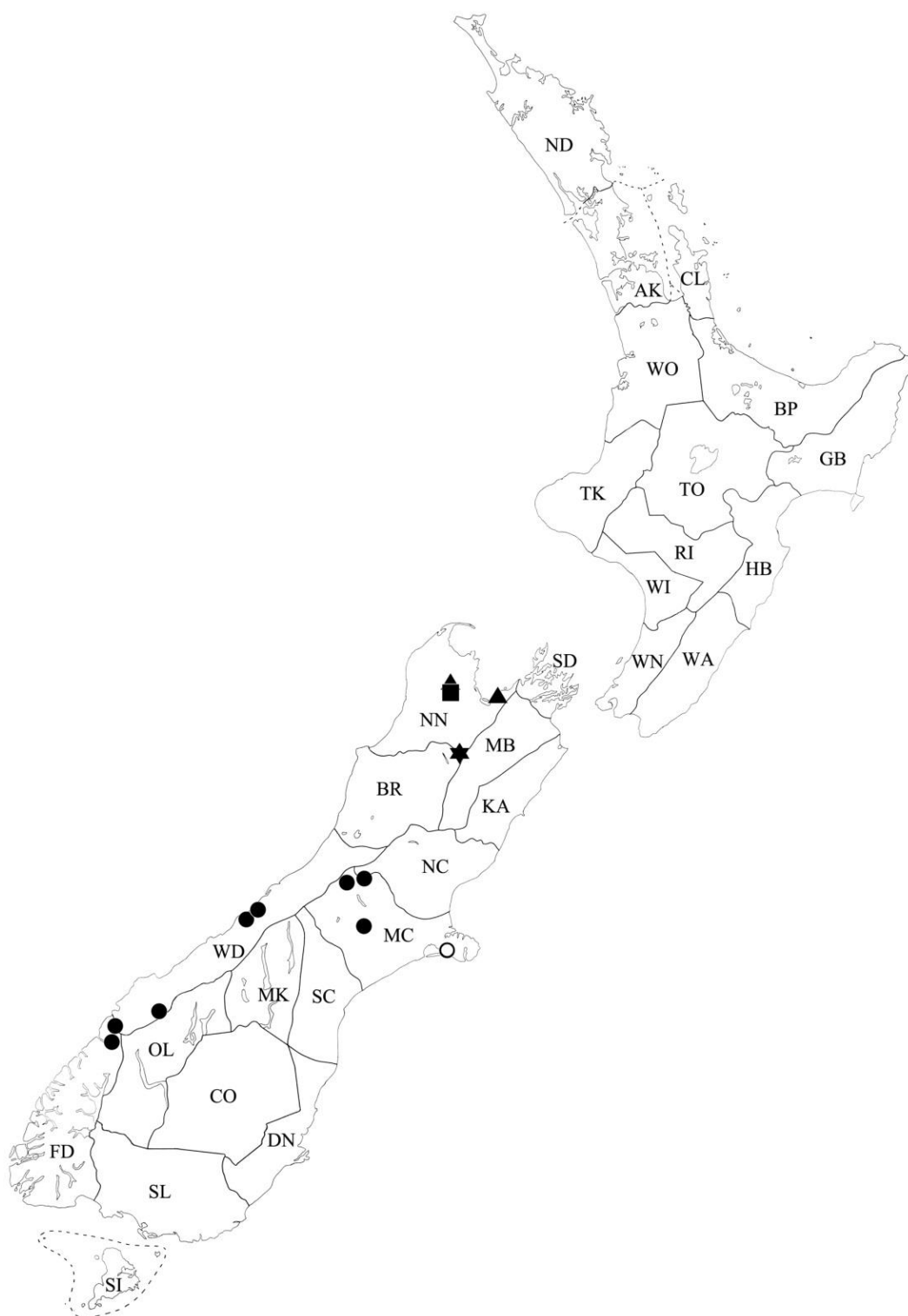


Figure 71. Locations where *Sagola socia*, *S. sp. nov. 36*, *S. sp. nov. 40*, *S. sp. nov. 30-3* and *S. sp. nov. 30-4* specimens have been collected in New Zealand. *S. socia*: black circles; *S. sp. nov. 36*: triangles; *S. sp. nov. 40*: black square; *S. sp. nov. 30-3*: star; *S. sp. nov. 30-4*: white circle.

Group 20 (2 species)

Key to species of *Sagola* group 20

The key is based on male specimens because female specimens are not known.

1. Frontal rostrum bluntly rectangular (Figure 72e); gular depression without process (Figure 72f); median lobe of genitalia bent to left and parameres deeply divided (Figure 72c).....*S. sp. nov.* 51-1
1'. Frontal rostrum bluntly triangular; gular depression with small process from anterior middle; median lobe of genitalia straight and right paramere shallowly divided (Figure 72d).....*S. sp. nov.* 51-3

Diagnosis. The members of group 20 may be separated from other *Sagola* groups by the following combination of characters: body length 1.8–2.3 mm; antennomere 1 approximately 2 times longer than wide with dull surface; anterior frontal fovea oval and partially covered by frontal rostrum, posterior frontal fovea oval (Figure 72e); hind wings well developed; abdominal tergites IV–VI with discal carinae; parameres divided (Figures 72c–d).

Sagola sp. nov. 51-1

Type Material. Holotype. New Zealand: Waikato (WO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “Beech litter, Desert Rd, 10ml. N. Waioru 17. ii. 1973 R. M. Emberson”. **Paratype (1 male). New Zealand: Waikato (WO):** ♂ (slide-mounted), Waikato-Haipakihi Junction, 3 km s of Turangi, 915m, 19 II 1979, L. A. Moond, litter 79/22 (NZAC).

Diagnosis. This species is separated from other species of group 20 by the following combination of characters: body length 2.3 mm; frontal rostrum bluntly rectangular; gular transversely depressed; shape of genitalia unique to species.

Description of male. Length 2.3 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 72a). *Head.* Male head round, widest across eyes. Gular transversely depressed with dense setae (Figure 72f). Antennomere 1 approximately 2.5 times longer than wide with dull surface, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal rostrum bluntly rectangular (Figure 72e). Frontal sulcus deep, slightly exceed eye (Figure 72e). Anterior frontal fovea oval and partially covered by frontal rostrum (Figure 72e). Posterior frontal fovea oval (Figure 72e). Eye prominent, one-third length of temple (Figure 72e). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 72a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe bent left with point apical lobe (Figure 72c). Phallobase of median lobe asymmetrical and triangular (Figure 72c). Paramere asymmetrical and deeply divided (Figure 72c).

Distribution. Waikato (WO) (Figure 74: black circle).

Habitat. Specimens of this species were collected by sifting beech and leaf litter.

Sagola sp. nov. 51-3

Type Material. Holotype. New Zealand: Gisborne (GB): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: GB: Lake Waikaremoana 17 I 1972, G.W. Ramsay Litter 72/21”.

Diagnosis. This species is separated from other species of group 20 by the following combination of characters: smaller body, length 1.8 mm; frontal rostrum bluntly triangular; gular depression with small process from anterior middle; shape of genitalia unique to species.

Description of male. Length 1.8 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 72b). *Head.* Head as long as wide, widest across eyes (Figure 72b). Gular transversely depressed with small process medially and bearing dense setae. Antennomere 1 approximately 2.5 times longer than wide with dull surface, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal rostrum bluntly triangular. Frontal sulcus deep, reaching posterior end of eye. Anterior frontal fovea oval and partially covered by frontal rostrum. Posterior frontal fovea oval. Eye prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 72b). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe straight and slender (Figure 72d). Phallobase of median lobe asymmetrical and rounded (Figure 72d). Paramere asymmetrical, left divided and apical lobe of major lobe arrow head shaped, right shallowly divided (Figure 72d).

Distribution. Gisborne (GB) (Figure 74: triangle).

Habitat. The holotype was collected by sifting leaf litter.

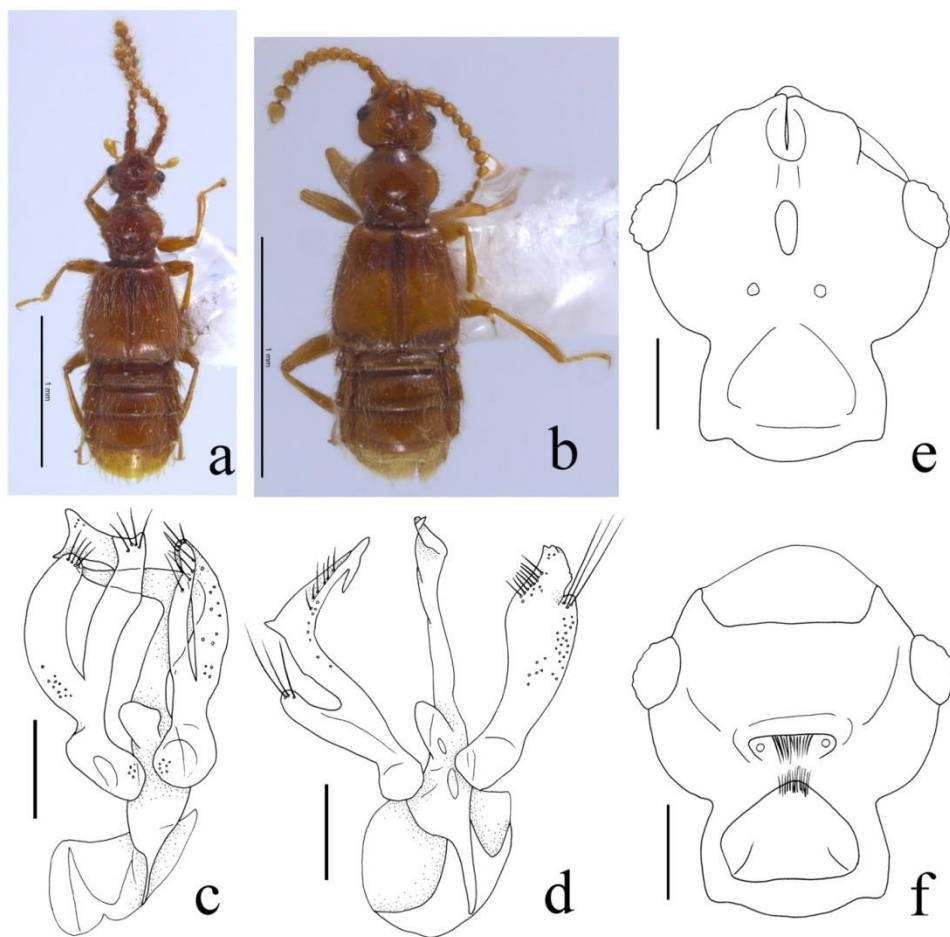


Figure 72. Habitus of group 20, dorsal views. a) *Sagola* sp. nov. 51-1; b) *S.* sp. nov. 51-3; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S.* sp. nov. 51-1; d) sp. nov. 51-3; Scale bars = 0.1 mm. Male *S.* sp. nov. 51-1. e) dorsal head; f) ventral head; Scale bars = 0.1 mm.

Group 21 (1 species)

Diagnosis. The members of group 21 may be separated from other *Sagola* groups by the following combination of characters: body length 1.9 mm; antennomere 1 approximately 2 times longer than wide; ventral surface of male head with a pair of cone-shaped temporal depressions and small triangular process medially (Figure 73c); hind wings well developed; abdominal tergites IV–VI with discal carinae.

Sagola sp. nov. 72

Type Material. Holotype. New Zealand: Wairarapa (WA): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND MB Pongaroa 31 Dec 1980 J.C. Watt. Wood mould 80/158”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from others by the following combination of characters: body length 1.9 mm; head bluntly transverse; ventral surface of male head with a pair of cone-shaped temporal depressions and small triangular process medially; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.9 mm. Body yellowish brown, maxillary palpi paler, elytra, legs paler (Figure 73a). *Head.* Head bluntly transverse, widest across eyes (Figure 73a). Ventral surface of head with a pair of cone-shaped temporal depressions and small triangular process in center (Figure 73c). Antennomere 1 approximately 2 times longer than wide, 2–5 longer than wide, 6–10 subquadrate. Frontal rostrum prominent and cover anterior frontal fovea. Frontal sulcus reaching behind eye. Posterior frontal sulcus deep and oval. Eye large and prominent, one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately long rectangular (Figure 73a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe twisted with point apical lobe (Figure 73b). Phallobase of median lobe symmetrical and rounded (Figure 73b). Paramere symmetrical, apical lobe broad and round with long and dense setae (Figure 73b).

Distribution. Wairarapa (WA) (Figure 74: black square).

Habitat. The holotype was collected by sifting wood mould.

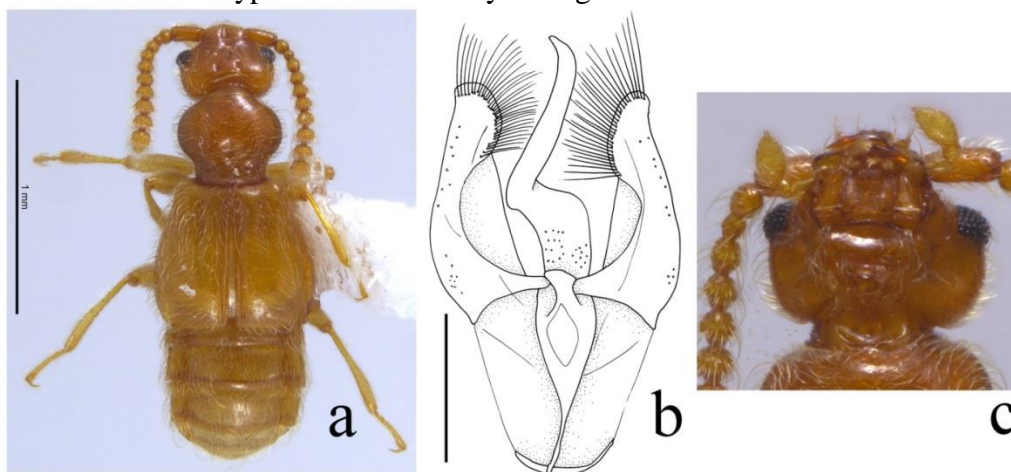


Figure 73. *Sagola* sp. nov. 72. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) ventral head; Scale bars = 0.1 mm.

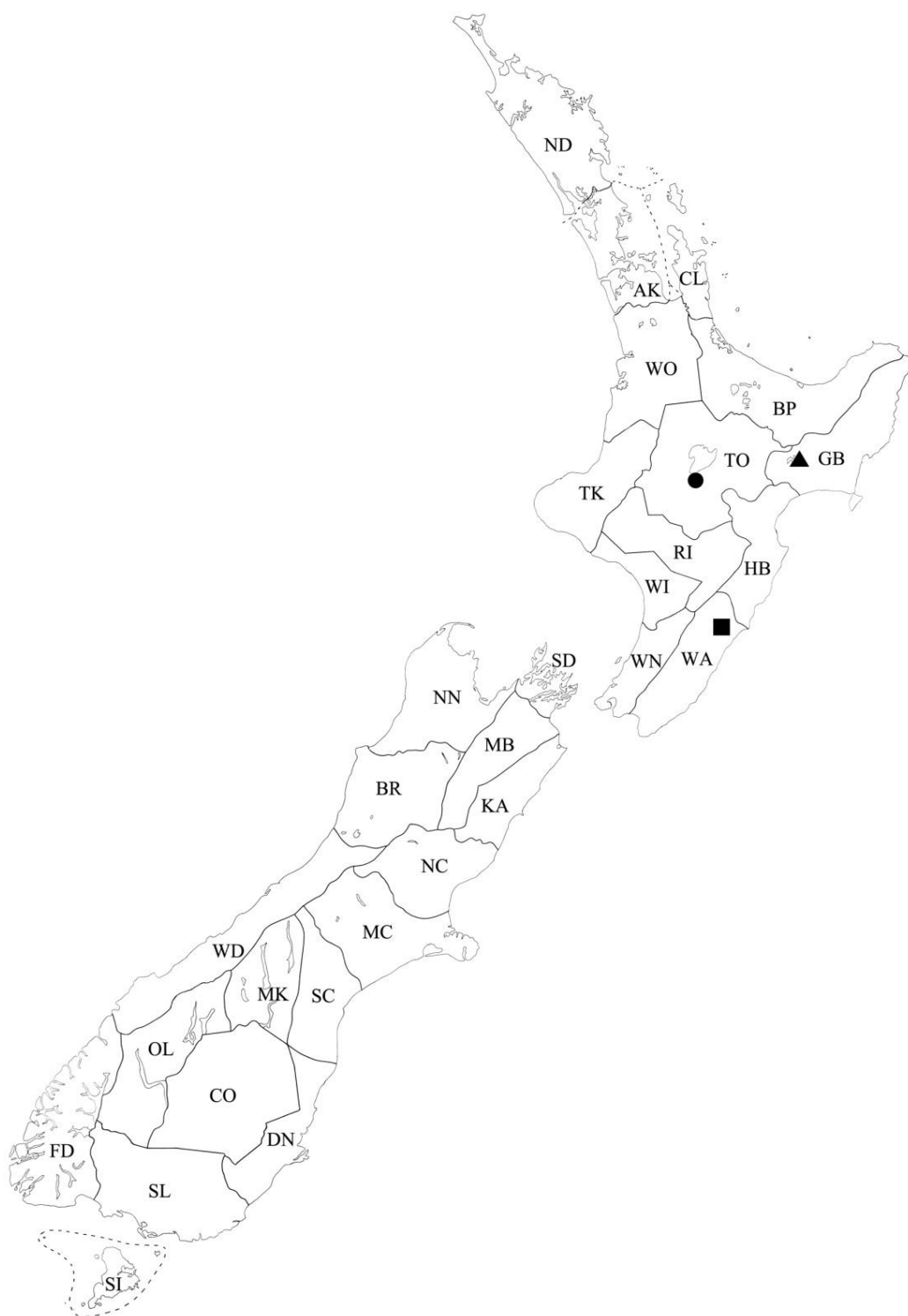


Figure 74. Locations where *Sagola* sp. nov. 51-1, *S. sp. nov.* 51-3 and *S. sp. nov.* 72 specimens have been collected in New Zealand. *S. sp. nov.* 51-1: black circle; *S. sp. nov.* 51-3: triangle; *S. sp. nov.* 72: black square.

Group 22 (6 species)

Key to species of *Sagola* group 22

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Frontal sulcus reversed V-shaped (Figure 75r); eye large, as long as temple (Figure 75r); antennomeres 4–5 subquadrate.....2
- 1'. Frontal sulcus reversed Y-shaped (Figure 75p); eye small, approximately one-third length of temple (Figure 75p); antennomeres 4–5 longer than wide.....3
- 2 (1). Apical lobe of genitalia with V-shaped depression (Figure 75k).....*Sagola ignota* Broun
- 2'. Apical lobe of genitalia blunt apically (Figure 75l).....*S. sp. nov.*35
- 3 (1). Median lobe of genitalia at least 3 times broader than paramere (Figure 75g).....*S. furcata* Broun
- 3'. Median lobe of genitalia as wide as paramere.....4
- 4 (3). Median lobe of genitalia twisted (Figure 75h).....*S. punctulata* Raffray
- 4'. Median lobe of genitalia curved vertically.....5
- 5 (4). Only apical part of median lobe of genitalia hook-shaped (Figure 75i).....*S. sp. nov.*34-3
- 5'. Entire lobe of median lobe of genitalia hook-shaped (Figure 75j).....*S. sp. nov.*34-4

Diagnosis. The members of group 22 may be separated from other *Sagola* by the following combination of characters: body small, length 1.8–2.2 mm; frontal sulcus reversed Y or V-shaped, divided and each posterior end meet to vertexal fovea (Figures 75p, r); ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts (Figures 75q, s); hind wings fully developed; abdominal tergites IV–VI with discal carinae; male abdominal ventrites V–VI weakly depressed or flatten medially and bearing dense setae; only known from South Island.

Sagola furcata Broun

Sagola furcata Broun, 1921a: 495. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. New Zealand: Nelson (NN): ♂, glued on rectangular card, “4005.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Belgrove. 24.10.1914.” [white label, handwritten]; “*Sagola* ♂ *furcata*.” [white label, handwritten].

Additional Material (n= 14; 10 males, 4 female). New Zealand: Nelson (NN): 1♂1♀, 20km nw Motueka, Riwaka River Res, 28 V 1982, FMHD#2005-605, mixed forest litter, S. Peck; 2♂♂, Slaters Road, 0.7km s Whangamoa Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* forest, A. Newton, M. Thayer, 703, FIT&window trap; 1♂1♀, Dun Track, 14 II 1942, E.S. Gourlay; 1♂, Dun Mt., 1850', 4 IV 1966, J.C. Watt, fungus in *Nothofagus* forest; 1♀, Dun Mt., 2000', 11 IV 1943, E.S. Gourlay; 1♂, Upper Maitai, 19 X 1941, E.S. Gourlay; **Marlborough Sounds (SD):** 1♂1♀, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer, litter; 1♂, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer, window trap; 1♂, Tennyson Inlet, e side Duncan Bay, 30m, 15 XII 1984– 5 I 1985, podo-*Nothofagus* forest, A. Newton, M. Thayer 709, FIT&window trap; 1♂, Port Underwood saddle, 17 XII 1968, J.C. Watt.

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–6 longer than wide; frontal sulcus reversed Y-shaped; eye prominent, approximately one-third length of temple; male abdominal ventrites V–VI weakly depressed medially and surrounded with dense setae; shape of genitalia unique to species.

Redescription. Length 1.8–2.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75a). *Head.* Head weakly transverse, widest across eyes (Figure 75a). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus reversed Y-shaped. Anterior frontal fovea rectangular covered by frontal rostrum. Posterior frontal fovea absent. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75a). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI weakly depressed on middle with dense setae. *Aedeagus.* Median lobe of genitalia broader with hook-shaped lobe at tip (Figure 57g). Phallobase of median lobe symmetrical and rounded (Figure 57g). Paramere symmetrical with serrate outer edge of apical lobe and setae inside (Figure 57g).

Type locality. Belgrave, near Nelson (NN), New Zealand.

Distribution. Nelson (NN), Marlborough Sounds (SD) (Figure 76: black circles).

Habitat. Specimens of this species were collected using flight intercept, window traps, or by sifting leaf litter in podocarp or *Nothofagus* forests.

Sagola punctulata Raffray

Sagola punctulata Raffray, 1893: 21; 1904: 497; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Additional Material (n= 20; 16 males, 4 females). **New Zealand: Buller (BR):** 1 ♂, 18km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 718, litter; 3 ♂♂, Tawhai SF, 6 III 1972, J. McBurney, litter 72/125; 1 ♂, Tawhai SF, 6 III 1972, J.S. Dugdale, litter 72/121; **Nelson (NN):** 1 ♂, Kongahu, XI 1980, J. Jones, Malaise trap near swamp; 1 ♂ (slide-mounted), 0.6km e Gowanbrige, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap; **Westland (WD):** 5 ♂♂ 1 ♀ (1 ♂, slide-mounted), 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, FIT&window trap; 2 ♂♂ 1 ♀, 1.8km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 718, FIT&window trap; 1 ♂ 1 ♀, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap; 1 ♂, Okuku Scen Res, 2 VIII 1981, R.M. Emberson, litter LUNZ 81/6; 1 ♀, Lake Kaniere, 6 II 1984, J.C. Watt, dead tree fern.

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–7 longer than wide; frontal sulcus reversed Y-shaped; eye prominent, approximately one-third length of temple; male abdominal ventrites V–VI weakly depressed medially and surrounded with dense setae; shape of genitalia unique to species.

Redescription. Length 1.9–2.2 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75b). *Head.* Head weakly transverse, widest across eyes (Figure 75p). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts (Figure 75q). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus reversed Y-shaped (Figure

50o). Anterior frontal fovea rectangular covered by frontal rostrum (Figure 75p). Posterior frontal fovea absent (Figure 75p). Eye prominent, approximately one-third length of temple (Figure 75p). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75b). Meso- and metathorax trapezoidal, longer wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI weakly depressed on middle with dense setae. *Aedeagus*. Median lobe of genitalia slender and twisted (Figure 75h). Phallobase of median lobe symmetrical and rounded (Figure 75h). Paramere symmetrical with serrate outer edge of apical lobe and setae inside (Figure 75h).

Type locality. New Zealand (specific locality unknown).

Distribution. Buller (BR), Nelson (NN), Westland (WD) (Figure 76: triangles).

Habitat. Most specimens of this species were collected using flight intercept and window traps, or by sifting leaf litter in hardwood, nikau, podocarp or *Nothofagus* forests. One specimen was collected from dead tree ferns.

Sagola sp. nov. 34-3

Type Material. Holotype. New Zealand: Nelson (NN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: So. Island, 13 km W Collingwood, Mangarakau, 20 V 1982, FMHD#82-589, mixed forest litter, S. Peck”. **Paratypes (n=2; 1 male, 1 female):** New Zealand: Nelson (NN): 2♀♀ (1♀, slide-mounted), same data as holotype (FMNH).

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–5 longer than wide; frontal sulcus reversed Y-shaped; eye prominent, approximately one-third length of temple; male abdominal ventrites V–VI weakly depressed medially and surrounded with dense setae; shape of genitalia unique to species.

Description. Length 1.9–2.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75c). *Head*. Head weakly transverse, widest across eyes (Figure 75c). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–9 subquadrate, 10 weakly transverse. Frontal sulcus reversed Y-shaped. Anterior frontal fovea rectangular covered by frontal rostrum. Posterior frontal fovea absent. Eye prominent, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75c). Meso- and metathorax trapezoidal, longer wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI weakly depressed on middle with dense setae. *Aedeagus*. Median lobe of genitalia slender with hook-shaped apical lobe (Figure 75i). Phallobase of median lobe symmetrical and rounded (Figure 75i). Paramere symmetrical with serrate outer edge of apical lobe and setae inside (Figure 75i).

Distribution. Nelson (NN) (Figure 76: black square).

Habitat. Specimens of this species were collected by sifting mixed forest litter.

Sagola sp. nov. 34-4

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, NN Mt Burnett 450m 8.ii.1981 C.A.Muir sweeping ferns”. **Paratype (1 male):** New Zealand: Nelson (NN): 1♂ (slide-mounted)

Whanganui Inlet, Kaihoka Lakes Tr, 17 XII 2007, K. Marske, J. Allwood. Hand collected ex fungus-encrusted dead wood, S 40.33.220', E 172.36.247', 52m (NZAC).

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–5 longer than wide; frontal sulcus reversed Y-shaped; eye prominent, approximately one-third length of temple; male abdominal ventrites V–VI weakly depressed medially and surrounded with dense setae; shape of genitalia unique to species.

Description of male. Length 1.8–2.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75d). *Head.* Head weakly transverse, widest across eyes (Figure 75d). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus reversed Y-shaped. Anterior frontal fovea rectangular covered by frontal rostrum. Posterior frontal fovea absent. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75d). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI weakly depressed on middle with dense setae. *Aedeagus.* Median lobe of genitalia slender and curved as C-shaped (Figure 75j). Phallobase of median lobe symmetrical and rounded (Figure 75j). Paramere symmetrical and enlarged apical lobe with serrate mid-line and setae (Figure 75j).

Distribution. Nelson (NN) (Figure 76: stars).

Habitat. Specimens of this species were collected from tree ferns or fungusy dead woods.

Sagola ignota Broun

Sagola ignota Broun, 1921a: 495. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Holotype. New Zealand: Otago Lakes (OL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “4004.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Routeburn. 16.2.1914.” [white label, handwritten]; “*Sagola ignota*.♂” [white label, handwritten].

Additional Material (n=15; 8 males, 7 females) New Zealand: Dunedin (DN): 1♂, Woodside Glen Outram, 30 XI 2005, J. Nunn, in moss and lichen on tree trunk; **Fiordland (FD):** 2♂♂ (1♂, slide-mounted), Borland Saddle, c 1050m, 16 XII 1998, in moss on *Nothofagus* bole, J. Nunn; 3♀♀, Borland Saddle, 24 I 2008, J. Nunn, sifted moss (JTN); 2♀♀, W. Olivine Ra, Simonin Pass, 23 I 1975, G.W. Ramsay, litter 75/35 (NZAC); 1♀, Outer Gilbert 2, Breaksea Sound, Nov 1985, on Kiekie (JTN); 1♂, Fiordland NP, S Borland V Biv, 730m, 2–6 II 1982, J.W. Early, Malaise trap at *Nothofagus* forest edge (LUNZ); 1♂, Gertude V, Milford Rd, 23 I 2008, J. Nunn, in moss on beech tree (JTN); 1♂, Barrier Ra, Little Red Hill, Mt. Allison, 4 II 1972, J.S. Dugdale, litter 75/52 (NZAC); **Stewart Island (SI):** 1♂, ne Big Cape I, 122m, 18 XI 1968, G. Kuschel, litter 68/191 (NZAC); 1♀, Island Hill Homestead, 2–8 II 1991, C.J. Vink, J.W. Early, yellow pan trap in bush (LUNZ); **Southland (SL):** 1♂, 1km S Longwood Trig, 700m, Longwood Ra, 1 II 1976, L.L. Deitz, mats 76/12 (NZAC).

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–7 subquadrate; frontal sulcus reversed V-shaped; eye prominent, as long as temple; male abdominal ventrites V–VI flattened roundly surrounded with dense setae; shape of genitalia unique to species.

Redescription. Length 1.9–2.2 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75e). *Head.* Head bluntly triangular, widest across eyes (Figure 75r). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts (Figure 75s). Antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate. Frontal sulcus reversed V-shaped (Figure 75r). Anterior frontal fovea rectangular covered by frontal rostrum (Figure 75r). Posterior frontal fovea absent (Figure 75r). Eye prominent, approximately as long as temple (Figure 75r). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75e). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI flatten roundly on middle with dense setae. *Aedeagus.* Median lobe of genitalia weakly curved and long with V-shaped depression (Figure 75k). Phallobase of median lobe symmetrical and rounded (Figure 75k). Paramere symmetrical and as long as median lobe with setae at tip (Figure 75k).

Distribution. Dunedin (DN), Fiordland (FD), Stewart Island (SI), Southland (SL) (Figure 76: white circles).

Habitat. Specimens of this species were collected using malaise, yellow pan traps, or by sifting leaf, moss and leaf litter in *Nothofagus* forests.

Sagola sp. nov. 35

Type Material. Holotype. New Zealand: Buller (BR): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: BR: Lewis, Pass Nat. Res., 11.9km ese Springs Junction, 540m, 17 XII 84-21 I 85, *Nothofagus* spp. forest, A. Newton/M. Thayer 715, window trap”. **Paratypes (2 males): New Zealand: Buller (BR):** 1♂ (slide-mounted), same data as holotype; **Nelson (NN):** 1♂, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT site 1159.

Diagnosis. This species is separated from other species of group 22 by the following combination of characters: antennomeres 4–7 subquadrate; frontal sulcus reversed V-shaped; eye prominent, as long as temple; male abdominal ventrites V–VI flatten roundly and surrounded with dense setae; shape of genitalia unique to species.

Description of male. Length 1.8–2.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 75f). *Head.* Head bluntly triangular, widest across eyes (Figure 75f). Ventral surface of male head with reversed triangular process bearing dense setae behind mouth parts. Antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate. Frontal sulcus reversed V-shaped. Anterior frontal fovea rectangular covered by frontal rostrum. Posterior frontal fovea absent. Eye prominent, approximately as long as temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 75f). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal ventrites V–VI flatten roundly on middle with dense setae. *Aedeagus.* Median lobe of genitalia weakly curved vertically and long with blunt apical lobe (Figure 75l, m). Phallobase of median lobe symmetrical and rounded (Figure 75l, m). Paramere symmetrical and as long as median lobe with setae at tip (Figure 75l, m).

Distribution. Buller (BR), Nelson (NN) (Figure 76: white squares).

Habitat. Specimens of this species were collected using flight intercept or window traps in *Nothofagus* forests.

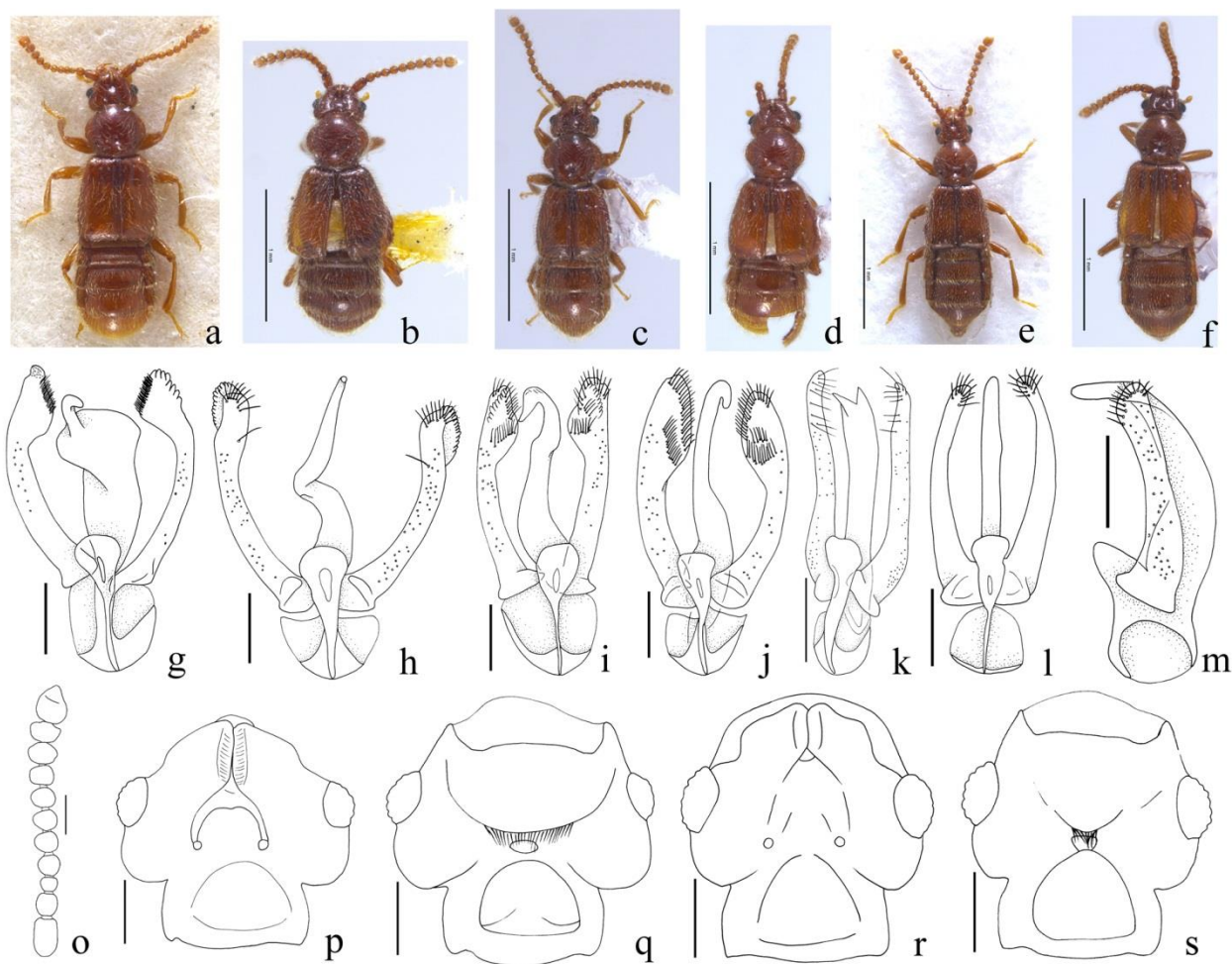


Figure 75. Habitus of group 22, dorsal views. a) *Sagola furcata* Broun; b) *S. punctulata* Raffray; 36; c) *S. sp. nov.* 34-3; d) *S. sp. nov.* 34-4; e) *S. ignota* Broun; f) *S. sp. nov.* 35; Scale bars = 1 mm. Aedeagus, dorsal view. g) *S. furcata*; h) *S. punctulata*; i) *S. sp. nov.* 34-3; j) *S. sp. nov.* 34-4; k) *S. ignota*; l) *S. sp. nov.* 35; m) *S. sp. nov.* 35, lateral view. o) antenna of *S. ignota*. Scale bars = 0.1 mm. *S. punctulata*. p) dorsal head; q) ventral head. Scale bars = 0.1 mm. *S. ignota*. r) dorsal head; s) ventral head. Scale bars = 0.1 mm.

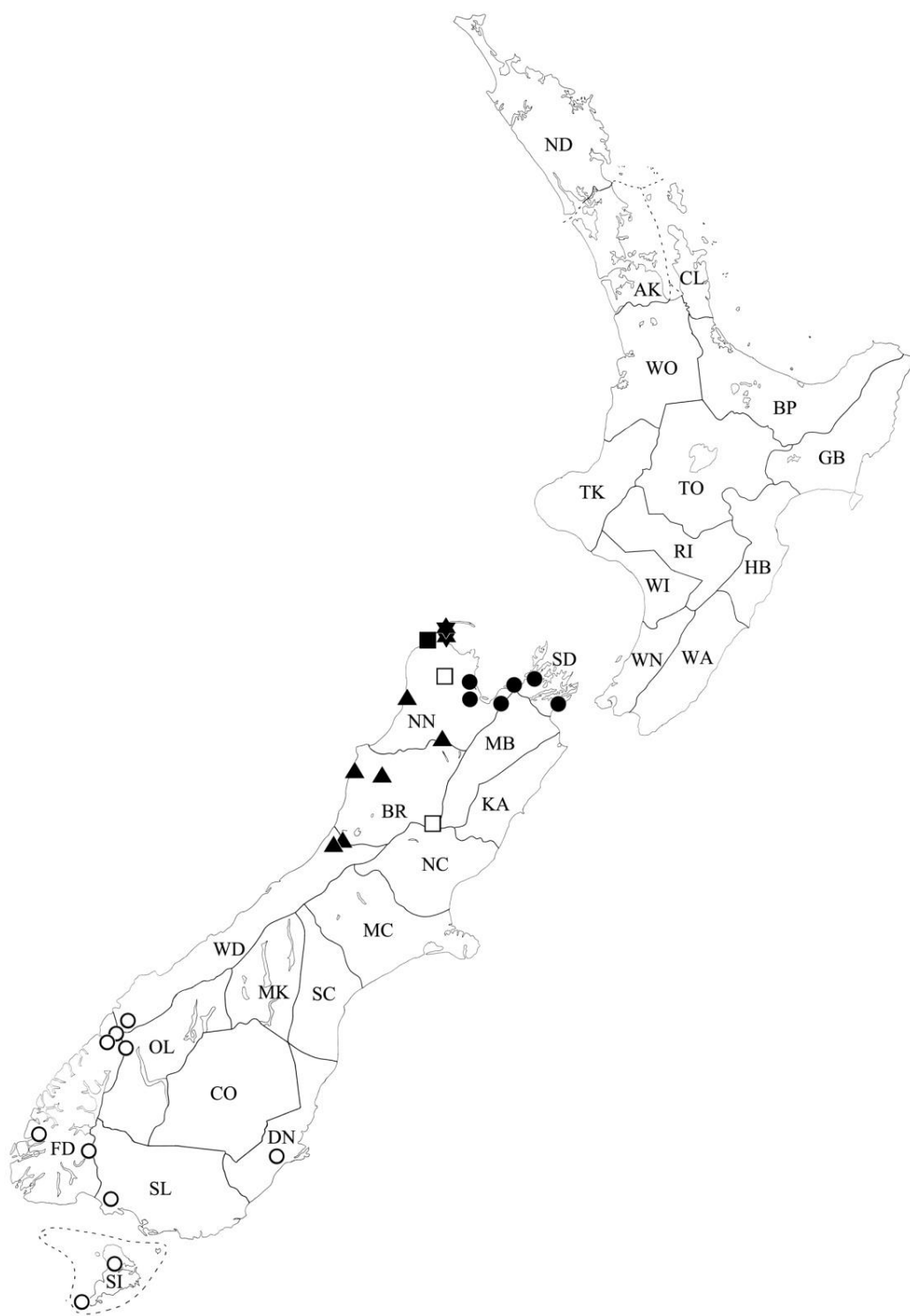


Figure 76. Locations where *Sagola furcata*, *S. punctulata*, *S. sp. nov. 34-3*, *S. sp. nov. 34-4*, *S. ignota* and *S. sp. nov. 35-1* specimens have been collected in New Zealand. *S. furcata*: black circles; *S. punctulata*: triangles; *S. sp. nov. 34-3*: black square; *S. sp. nov. 34-4*: stars; *S. ignota*: white circles; *S. sp. nov. 35-1*: white squares.

Group 23 (2 species)

Key to species of *Sagola* group 23

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Larger size, length 2.5–2.9 mm; male abdominal tergite V distinctly depressed with triangular processes from anterior and posterior margin (Figure 77f).....*Sagola excavata* Broun 1’.
- Smaller size, length 1.9–2.2 mm; male abdominal tergite V distinctly depressed with rectangular processes from anterior and posterior margin.....*S. sp. nov.* 56

Diagnosis. The members of group 23 may be separated from other *Sagola* by the following combination of characters: body small, length 1.9–2.9 mm; frontal sulcus deep and reaching vertexal fovea (Figure 77e); anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea key hole-shaped (Figure 77e); hind wings fully developed; abdominal tergites IV–VI with discal carinae; male abdominal tergite V distinctly depressed with processes from anterior and posterior edge with long and dense setae between processes (Figures 77a–b, f); only known from North Island (Figure 78).

Sagola excavata Broun

Sagola excavata Broun, 1886: 884. Raffray, 1893: 35; 1904: 497; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola brevitarsis Broun, 1886: 887. Raffray, 1893: 38; 1904: 497; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New**

Synonym.

Sagola citima Broun, 1893a: 177. Hudson, 1923: 365; 1934: 47. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola cognata Broun, 1911: 494. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola diversa Broun, 1911: 495. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola parallela Broun, 1893b: 1053. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: Auckland (AK): ♂, glued on rectangular card, “Type” [red label, printed]; “1574.♂” [white label, handwritten]; “Paparua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola excavata*” [white label, handwritten]. **Holotype of *Sagola brevitarsis*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “Paparua” [white label, printed]; “1579.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola brevitarsis*” [white label, handwritten]. **Holotype of *Sagola citima*: New Zealand: Wellington (WN):** ♀, glued on rectangular card, “Type” [red label, printed]; “2721.♀” [white label, handwritten]; “Wellington” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola citima*” [white label, handwritten]. **Holotype of *Sagola cognata*: New Zealand: Coromandel (CL):** ♀, glued on rectangular card, “Type” [red label, printed]; “3365.” [white label, handwritten]; “Tairua” [white label, printed]; “New Zealand

Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola cognata*” [white label, handwritten]. **Holotype of *Sagola diversa*: New Zealand: Taranaki (TK):** ♀, glued on rectangular card, “Type” [red label, printed]; “3366.” [white label, handwritten]; “Midhirst” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola diversa*.” [white label, handwritten]. **Holotype of *Sagola parallela*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “1883.♀” [white label, handwritten]; “Hunua. Clevedon” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola parallela*” [white label, handwritten].

Additional Material (n= 56; 30 males, 26 female). New Zealand: Auckland (AK): 1♂1♀, Waitakere Ra, Cascade-Kauri Park tr, 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap; 1♂, Waitakere Ra, Cascade-Kauri Park, Up. Kauri tr, 170m, 23 XI–8 XII 1984, kauri-podo-hdwd, A. Newton, M. Thayer 680, litter; **Bay of Plenty (BP):** 1♂1♀, Lake Rotoiti, Otaramarae, 29 XII 1977, J.S. Dugdale, dead logs; 1♀, Lottin Point, Otanga, 27 I 1993, J.S. Dugdale, litter; **Gisborne (GB):** 1♂, Karakatuwhero V, Waipiata, 1 V 1993, G. Hall, rotten wood; 1♂, East Cape, Rangiatea, 17 III–30 IV 1993, G. Hall, pit trap; **Hawkes Bay (HB):** 3♀♀, Waipatiki Res, 23 XII 1983, J.C. Watt, sifted wood mould 83/144; **Wellington (WN):** 12♂♂12♀♀, Tinakori Hill, Wellington, 5 VI 1991–20 VI 1993, J. Nunn, decayed wood; 2♂♂1♀ (1♂, slide-mounted), Karori Reservoir, 4 XI 1994, J. Nunn, decayed wood; 2♂♂, Lake Papaitonga Res, Levin, 30 VII 1995, J. Nunn, under bark of dead fallen branch; 1♂, Khandallah Domain, 19 IX 1992, decayed wood with white rot; 1♂, Karori Res, 21 XII 1994, J. Nunn; 1♂, Brooklyn, Wellington, 9 IV 1995, in garden compost, J. Nunn; 6♂♂6♀♀, Karori Res, 8 I 1995, decayed *Nothofagus* wood, J. Nunn; **Waikato (WO):** 1♂1♀, Hapuakohe Ra, Maungakawa, 400m, 3 I 1984, J.C. Watt, *Knightia* wood mould 84/2.

Diagnosis. This species is separated from other species of group 23 by the following combination of characters: larger size, length 2.5–2.9 mm; male abdominal tergite V distinctly depressed with triangular processes from anterior and posterior margin (Figure 77f); shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.5–2.9 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 77a). *Head.* Head round, as long as wide, widest across eyes (Figure 77e). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–8 subquadrate, 9–10 transverse. Frontal sulcus deep and reaching vertexal fovea (Figure 77e). Anterior frontal fovea round and partially covered by frontal rostrum (Figure 77e). Posterior frontal fovea key hole-shaped (Figure 77e). Eye prominent, approximately one-half length of temple (Figure 77e). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 77a). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal tergite V distinctly depressed with triangular processes from anterior and posterior margin with long and dense setae between processes (Figure 77f). *Aedeagus.* Median lobe of genitalia rectangular and shorter than parameres (Figure 77c). Phallobase of median lobe symmetrical and reversed triangular (Figure 77c). Paramere symmetrical with setae from tip to midpoint of parameres (Figure 77c).

Type locality. Pararoa district, south of Auckland (AK), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Gisborne (GB), Hawkes Bay (HB), Taranaki (TK), Wellington (WN), Waikato (WO) (Figure 78: black circles).

Habitat. Specimens of this species were collected using flight intercept, window traps, or by sifting dead logs and wood litter in kauri, podocarp or *Nothofagus* forests.

Comments. Male specimens of *S. excavata* can be separated from those of other species by shape of abdominal tergite V. Female specimens are not easy to distinguish from others, but the shapes of antennomeres is diagnostic. The type specimens of *S. brevitarsis*, *S. citima*, *S. cognata*, *S. diversa* and *S. parallela* share these diagnostic characters, and these species have been collected at or near the type locality. Moreover, the proximity of the collections to the type locality or the localities of additional specimens of *S. excavata* and the absence of males of any other species from these areas suggest a single species. For these reasons, I have placed *S. brevitarsis*, *S. citima*, *S. cognata*, *S. diversa* and *S. parallela* in synonymy with *S. excavata*.

***Sagola* sp. nov. 56**

Type Material. Holotype. New Zealand: Auckland (AK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND AK Lynfield Wattle Bay 8 Oct 1986 G. Kuschel”, “Sifted rotten wood 86/21”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=2; 1 male, 1 female): New Zealand: Auckland (AK):** 1♀, same data as holotype (NZAC); 1♂, Waikowhai Park, 5 X 1051, dead wood, P328 (NZAC).

Diagnosis. This species is separated from other species of group 23 by the following combination of characters: smaller size, length 1.9–2.2 mm; male abdominal tergite V distinctly depressed with rectangular processes from anterior and posterior edge; shapes of antennomeres and genitalia unique to species.

Description. Length 1.9–2.2 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 77b). *Head.* Head round, as long as wide, widest across eyes (Figure 77b). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–7 subquadrate, 8–10 transverse. Frontal sulcus deep and reaching vertexal fovea. Anterior frontal fovea round and partially covered by frontal rostrum. Posterior frontal fovea key hole-shaped. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 77b). Meso- and metathorax trapezoidal, longer wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Male abdominal tergite V distinctly depressed with rectangular processes from anterior and posterior edge with long and dense setae between processes. *Aedeagus.* Median lobe of genitalia slender, longer than parameres (Figure 77d). Phallobase of median lobe symmetrical and reversed triangular (Figure 77d). Paramere symmetrical with three setae from tip (Figure 77d).

Distribution. Auckland (AK) (Figure 78: triangle).

Habitat. Specimens of this species were collected from rotten woods.

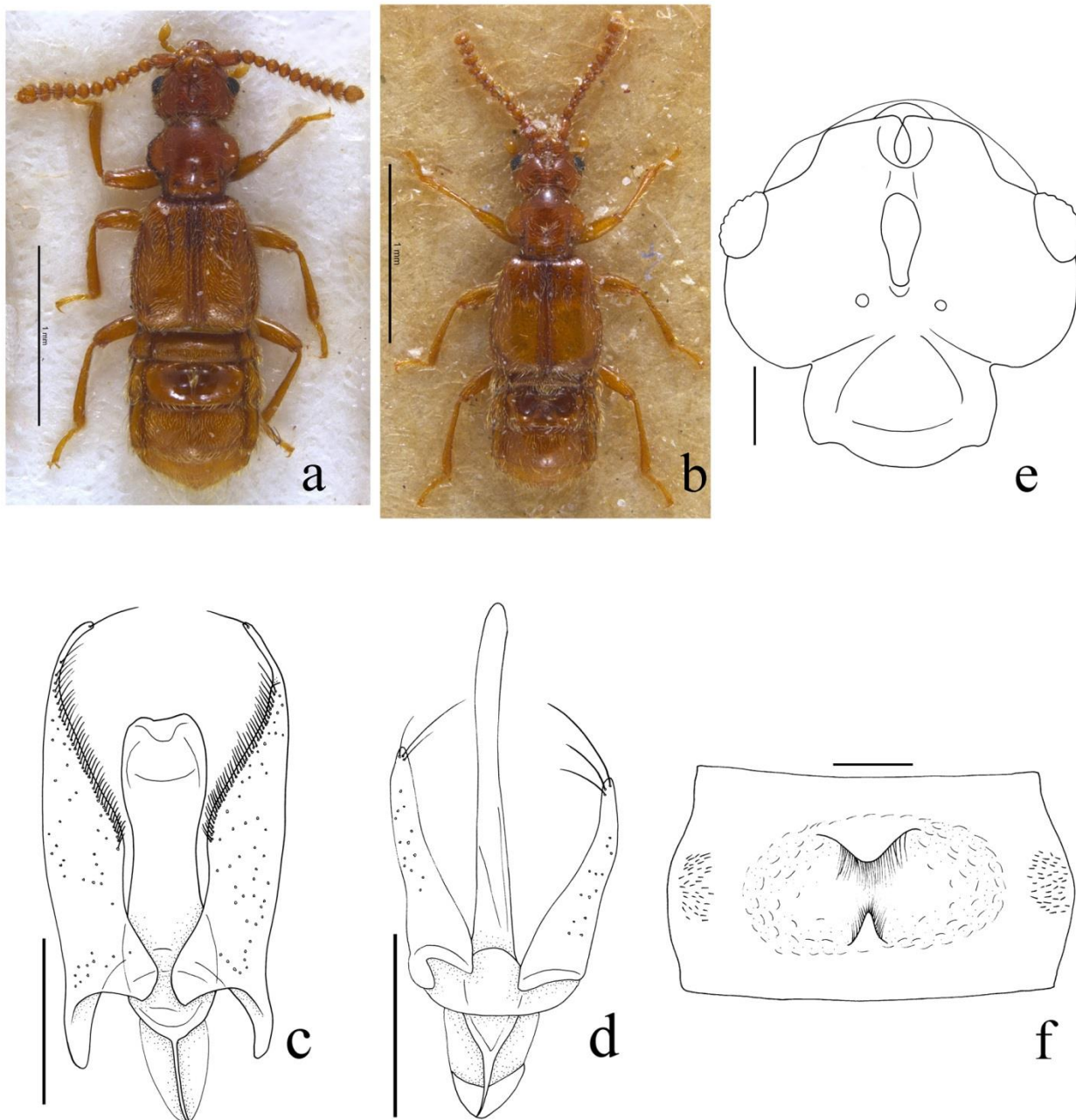


Figure 77. Habitus of group 23, dorsal views. a) *Sagola excavata* Broun; b) *S. sp. nov. 56*; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S. excavata*; d) *S. sp. nov. 56*. Scale bars = 0.1 mm. *S. excavata*. e) dorsal head; f) male abdominal tergite V, dorsal view; Scale bars = 0.1 mm.

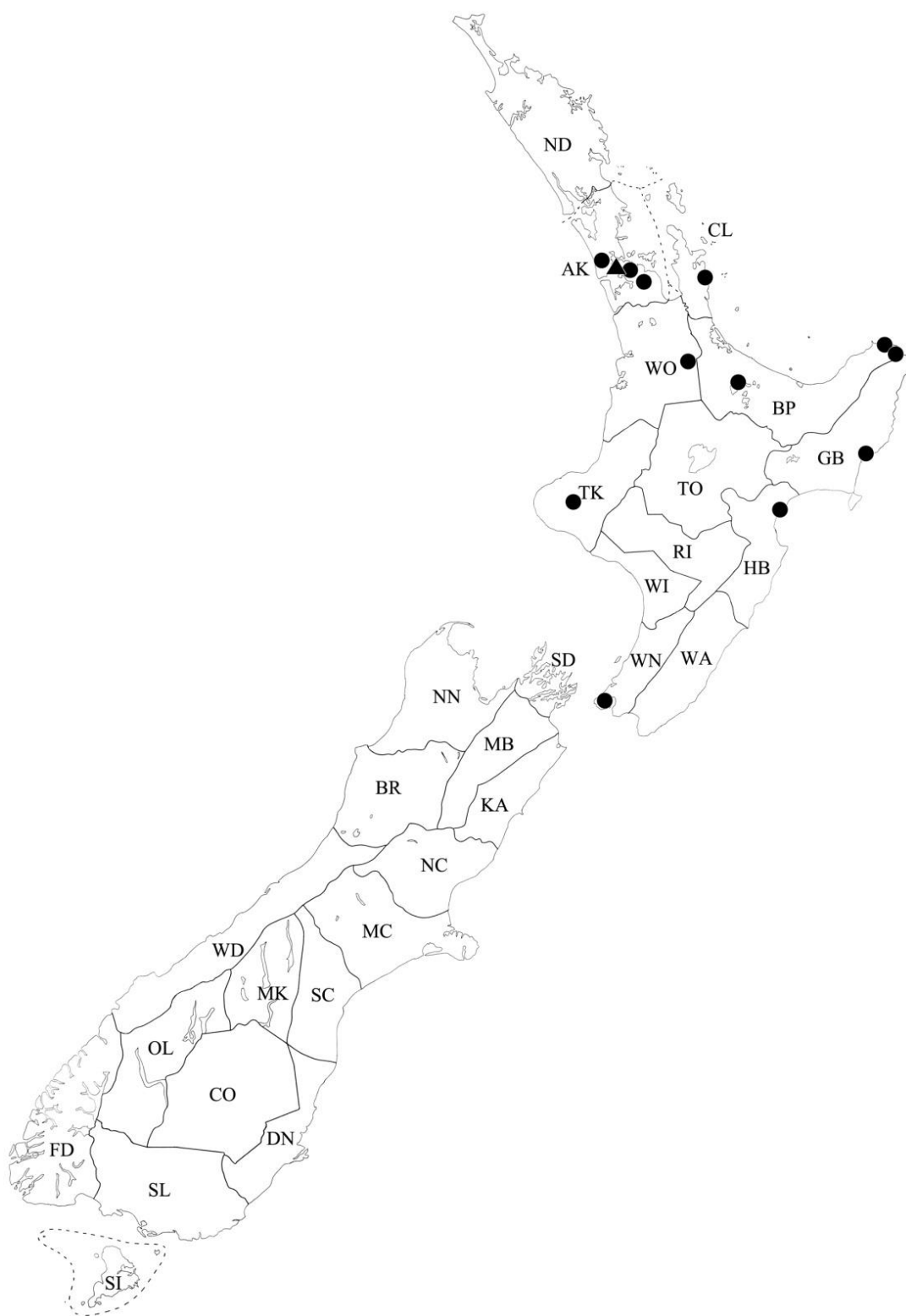


Figure 78. Locations where *Sagola excavata* and *S. sp. nov. 56* specimens have been collected in New Zealand. *S. excavata*: black circles; *S. sp. nov. 56*: triangle.

Group 24 (3 species)

Key to species of *Sagola* group 24

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Antennomere 8 enlarged; male fore-femur with weak semicircular depression; only known from North Island.....2
1'. Antennomeres 4–6 enlarged (Figure 79g); male fore-femur simple; only known from South Island (Figure 80: triangles).....*Sagola monstrosa* Reitter
2 (1). Antennomeres 4–7 longer than wide; known from north to midpoint of North Island (Figure 80: black circles).....*S. notabilis* Broun
2'. Antennomeres 4–7 subquadrate, 4–6 weakly enlarged in male; only known from Wellington (Figure 80: black squares).....*S. sp. nov.* 59

Diagnosis. The members of group 24 may be separated from other *Sagola* by the following combination of characters: body length 2.4–3.0 mm; antennomere 1 approximately twice longer than wide (Figure 79g); frontal sulcus deep and reaching posterior margin of eye (Figure 79h); anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea elongate (Figure 79h); ventral surface of male head distinctly depressed with a pair of processes (Figure 79i); hind wings fully developed; hind-femur as wide as tibia (Figure 79j); hind-claws enlarged (Figure 79k); abdominal tergites IV–VI with discal carinae; male abdominal ventrites VI–VII with triangular and rectangular depression, respectively (Figure 79l).

Sagola notabilis Broun

Sagola notabilis Broun, 1880: 137. Schaufuss, 1888: 85. Raffray, 1893: 32; 1904: 496; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola electa Broun, 1914a: 91. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola fulvipennis Broun, 1915: 289. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola macronyx Broun, 1893b: 1418. Raffray, 1904: 497; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Lectotype. New Zealand: Coromandel (CL): ♂, glued on rectangular card, “Type” [red label, printed]; “251” [white label, printed]; “Tairua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola notabilis*” [white label, handwritten]. **Paratype (1 male):** 1♂, Tairua, New Zealand, Sharp Coll. 1905–313 (BMNH). **Holotype of *Sagola electa*: New Zealand: Taupo (TO):** ♂, glued on rectangular card, “Type” [red label, printed]; “3400.♂” [white label, handwritten]; “Erua. Jany. 1911.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola electa*.♂.” [white label, handwritten]. **Holotype of *Sagola fulvipennis*: New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “3705.♂” [white label, handwritten]; “Tairua. Novr. 1875.” [white label, handwritten]; “*Sagola* ♂. *fulvipennis*” [white label, handwritten]. The original description indicates that the specimen collected in December 1874, but I found a single specimen collected in November 1875. One of them may be

misspelled. **Holotype of *Sagola macronyx*: New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “♂” [white label, printed]; “977” [white label, printed]; “Hunua” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola macronyx*” [white label, handwritten].

Additional Material (n= 72; 27 males, 45 females). New Zealand: Auckland (AK): 23♂♂34♀♀, Lynfield, G. Kuschel, 23 XI 1974–29 III 1981, malaise trap or litter; 2♂♂, Waitakere Range, 260m, Nohoanga Scenic Res, 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap; 1♀, Hunua Ranges, Vining Res, Mangatangi tr, 240m, 37°07,747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus*-*Agathis*-*Phyllocladus* *trichomanoides*, etc, FMHD#2005-005, FIT, A. Newton, M. Thayer et al, ANMT site 1141; 2♀♀, Orere Saddle, 2 I 1984, J.C. Watt, bark and subcortical debris 84/1; 1♀, Manurewa, Murphy’s Bush, 2 III 1981, G. Kuschel, rotten wood 81/59; 1♀, Papatoetoe, Murphy’s Bush, 17 VIII 1978, D.W. Helmore, woodmould 78/204; **Bay of Plenty (BP):** 1♂, Mt Te Aroha Summit, 1000m, 3 XI 1977, B.M. May, dead trunk; 1♂, Te Aroha, 19 III 1975, G. Kuschel, sifted rotten wood bottom stream; 1♀, Okere Falls Scenic Res, 21 X 1979, J.S. Dugdale, liverworts 79/99; **Gisborne (GB):** 2♀♀, Gray’s Bush, 30 VII 1951, under bark; **Northland (ND):** 2♀♀, Omahuta Kauri Sanctuary, 4 II 1975, G. Kuschel, rotten wood; **Rangitikei (RI):** 1♀, Ruahine Range, Armstrong Saddle, 10 II 1980, C.F. Butcher, litter 80/11.

Diagnosis. This species is separated from other species of group 24 by the following combination of characters: body length 2.4–2.7 mm; male antennomere 8 enlarged; male fore-femur with weak semicircular depression; shape of ventral surface of male head and genitalia unique to species; only known from North Island.

Redescription. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 79a). *Head.* Head round, as long as wide, widest across eyes (Figure 79a). Antennomere, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 5–10 subquadrate, 8 enlarged in male. Eye prominent, approximately two-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 79a). Meso- and metathorax trapezoidal, longer than wide. Male fore-femur with shallow semicircular depression. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia triangular and shorter than parameres (Figure 79d). Phallobase of median lobe symmetrical and rectangular (Figure 79d). Paramere symmetrical with setae from tip to midpoint of parameres (Figure 79d).

Type locality. Tairua (CL), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Gisborne (GB), Northland (ND), Rangitikei (RI) (Figure 80: black circles).

Habitat. Specimens of this species were collected using malaise, flight intercept, window traps or by sifting dead logs and wood litter in hardwood, podocarp or *Nothofagus* forests.

Comments. Male specimens of *S. notabilis* can be separated from those of other species by enlarged male antennomere 8 and modification of ventral surface of male head. The type specimens of *S. electa*, *S. fulvipennis* and *S. macronyx* share these diagnostic character, and these species have been collected at or near the type locality. For these reasons, I have placed *S. electa*, *S. fulvipennis* and *S. macronyx* in synonymy with *S. notabilis*.

***Sagola monstrosa* Reitter**

Sagola monstrosa Reitter, 1880: 168. Schaufuss, 1888: 84. Raffray, 1893: 17; 1904: 497; 1911: 5; 1924: 231. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola bifoveiceps Broun, 1912b: 629. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232.

Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola biimpressa Broun, 1912b: 630. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232.

Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola nitida Broun, 1911: 492. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton &

Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: ♂, glued on rectangular card, “New Zealand. Helms Reitter”, “15”, “MP”, “monstrosa AR”. **Holotype of *Sagola bifoveiceps*: New Zealand: Buller (BR):** ♂, glued on rectangular card, “Type” [red label, printed]; “20.” [white label, handwritten], “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “*Sagola* ♂. foveiceps” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola biimpressa*: New Zealand: Buller (BR):** ♀, glued on rectangular card, “Type” [red label, printed]; “21.” [white label, handwritten], “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “*Sagola* ♂. *biimpressa*” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola nitida*: New Zealand: Buller (BR):** ♀, glued on rectangular card, “Type” [red label, printed]; “3364.♂.” [white label, handwritten], “Greymouth, New Zealand. Helms.” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Greymouth.-Lewis.” [white label, handwritten]; “*Sagola nitida*” [white label, handwritten]. The original label indicates this specimen is a male, but it is female.

Additional Material (n= 92; 40 males, 52 female). New Zealand: Buller (BR):

1♂6♀♀, Nelson Lake NP, n slope Mt Robert, Pinchgut tr, 950m, 15 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, window trap; 1♂1♀, Lewis Pass NR, 0.6km s Lewis Pass, 870m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 714, FIT&window trap; 1♂4♀♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap; 4♀♀, Lewis Pass NR, 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 715, window trap; 1♂2♀♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap; 2♀♀, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469’S, 172°48.311’E, 30 XI–17 XII 2005, *Nothofagus* forest, FMHD#2005-059, FIT, A. Newton, M. Thayer, ANMT site 1161; 1♂1♀, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713, FIT&window trap; 1♂, Nelson Lakes NP, n slope Mt. Robert, Speargrass tr, 880m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 704, window trap; 1♂, Nelson Lakes NP, Mt. Robert, 660m, 26 XII 1984–6 I 1985, *Leptospermum-Nothofagus* scrub, A. Newton, M. Thayer 722, FIT&window trap; 1♂, Lake Rotoiti, 600m, 8 II 1978, A.K. Walker, ant nest in *Nothofagus* forest; 1♀, Nelson Lakes NP, Lake Rotoroa, Braeburn tr, 470m, 16 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 712, window trap; 1♀, Nelson Lakes NP, St. Arnaud tr, Lake Rotoiti, 610–650m, 24–26 III 1980, *Nothofagus* forest, A. Newton, M. Thayer, fogging; 1♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, A. Newton, M. Thayer 705, fogging; **Dunedin (DN):** 2♂♂, Mt. Cargill, 12 VII 2003, J. Nunn, dead *Pseudopanax* bole; 1♀, Leith Saddle, Waitati rd, 17 I 2008, J. Nunn, decayed wood; 1♂, Leith Saddle, 27 I 2001, under bark, J. Nunn; 1♂, Cloud Forest of Leith tr, 19 VIII 2010, J. Nunn, wood mould and frass under bark dead tree; **Fiordland (FD):** 1♀, Keplar track start, Te Anau, 22 I 2008, J. Nunn; moss; **Mid Canterbury (MC):** 3♂♂,

Banks Peninsula, Ahuriri Sce Res, 480m, 1 IV 1982, G. Kuschel, litter and rotten wood 82/48; 1♂, McClennans Bush, 12km nw Methven, 560m, 3 III 2010, R. Emberson, sift leaf litter; 1♂, Kowhai Bush, Springfield, 24 IV 2005, J. Nunn, decayed wood; 1♂, Banks Peninsula, Hay Scen Res, Pigeon Bay, 25m, 11 XII 1984–22 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 702, window trap; 1♂, Craigieburn SF, Dracophyllum Flat tr, 43°10'S, 171°42'E, FIT, 11–27 I 1998, C. Carlton, R. Leschen; 1♂, Banks Peninsula, Mt. Sinclair Scen Res, 775m, 43°42.977'S, 172°51.098'E, 3–16 XII 2005, ridgetop mixed broadleaf w/emergent *podocarpus totara*, FMHD#2005-070, FIT, A. Newton, M. Thayer, ANMT site 1163; 1♀, Banks Peninsula, Ahuriri Scen Res, 450m, 43°39.971'S, 172°37.427'E, 3–16 XII 2005, ridgetop mixed broadleaf w/emergent *podocarpus totara*, FMHD#2005-066, FIT, A. Newton, M. Thayer, ANMT site 1162; 1♀, Banks Peninsula, Peraki Saddle Scen Res, 500m, 11 XII 1984 hdwd-*podocarpus elfin* forest, A. Newton, M. Thayer 701, litter; 8♂♂4♀♀, Cooper's Knobs nr Christchurch, 1800', rotten wood, 18 X 1951; **North Canterbury (NC)**: 1♂, 4.5km se Arthur's Pass, 725m, #044, 42°55'S, 171°33'E, under bark, 11 I 1998, C. Carlton, R. Leschen; **Nelson (NN)**: 2♂♂2♀♀ (1♂, slide-mounted), 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap; 1♂, Kahurangi NP, Cobb Ridge, above Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT site 1159; 6♀♀, Slaters Rd, 0.7km s Whangamoia Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 703, window trap; 1♂, Upper Maitai, 14 II 1943, E.S. Gourlay; **Otago Lakes (OL)**: 1♂1♀, 2km se Kinioch, 14 I 2006, R. Leschen, T. Burkley, R. Hoare, under rotten logs, RL170, 44.51S, 168.20E; 1♂, 19km nw Glenorchy, #098, 44°41'S 168°27'E, under bark, rotten logs, 20 I 1998, C. Carlton, R. Leschen; 1♂, Makarora, 21 I 1978, G. Kuschel, litter and rotten wood 78/47; 1♀, 17km nw Glenorchy (beyond Paradise), 44°41'S, 168°20'E, #100, under bark, under log, 20 I 1998, C. Carlton, R. Leschen; 1♂, Mt. Aspiring NP, 12.5km nne Makarora, 370m, 11–17 I 1985, *Nothofagus menziesii*-hdwd-podocarp forest, A. Newton, M. Thayer 740, FIT&window trap; 2♀♀, Lake Hawea, Hunter Valley rd, Sawyer Burn, 400m, 10–17 I 1985, *Nothofagus solandri* forest, A. Newton, M. Thayer 737, FIT&window trap; 1♀, Mt. Aspiring NP, se of Haast Pass, 600m, 11–17 I 1985, *Nothofagus menziesii* forest, A. Newton, M. Thayer 739, window trap; **Marlborough Sounds (SD)**: 4♀♀, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd, A. Newton, M. Thayer 710, FIT&window trap; 1♂1♀, Tennyson Inlet, west side Duncan Bay, 30m, 15 XII 1984–5 I 1985, *Nothofagus*-podocarp forest, A. Newton, M. Thayer 709, FIT&window trap; 1♀, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 708, window trap; **Westland (WD)**: 1♂, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, FIT&window trap; 1♂, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, litter; 1♀, Okuku Scen Res, 9.2km sse Kumara, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 731, FIT&window trap; 1♀, Haast Pass w of summit, 550m, 24 I 1978, G. Kuschel, sifted litter and rotten wood 78/52.

Diagnosis. This species is separated from other species of group 24 by the following combination of characters: body length 2.4–2.7 mm; male antennomere 4–6 enlarged; shape of ventral surface of male head and genitalia unique to species; only known from South Island.

Redescription. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 79b). *Head.* Head round, as long as wide, widest across eyes (Figure 79h). Antennomere, 2 longer than wide, 3–10 subquadrate, 4–6 enlarged in male. Eye prominent,

approximately two-third length of temple (Figure 79h). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 79b). Meso- and metathorax trapezoidal, longer than wide. Male fore-femur with shallow semicircular depression. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia triangular and shorter than parameres (Figure 79e). Phallobase of median lobe symmetrical and rectangular (Figure 79e). Paramere symmetrical with process on one-third length with setae from tip and processes (Figure 79e).

Type locality. New Zealand (specific locality not mentioned).

Distribution. Buller (BR), Dunedin (DN), Fiordland (FD), Mid Canterbury (MC), North Canterbury (NC), Nelson (NN), Otago Lakes (OL), Marlborough Sounds (SD), Westland (WD) (Figure 80: triangles).

Habitat. Specimens of this species were collected using flight intercept, window traps, or by sifting dead logs and wood litter in mostly *Nothofagus* forests. One specimen was found in an ant nest.

Comments. Male specimens of *Sagola monstrosa* can be separated from those of other species by antennomeres 3–10 subquadrate and enlarged male antennomere 4–6 and modification of ventral surface of male head. The type specimens of *S. bifoveiceps*, *S. biimpressa* and *S. nitida* share these diagnostic characters. For these reasons, I have placed *S. bifoveiceps*, *S. biimpressa* and *S. nitida* in synonymy with *S. monstrosa*.

Sagola sp. nov. 59

Type Material. Holotype. New Zealand: Wellington (WN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: WN: Tararua Forest Park, above Akatarawa Saddle, 455m, 40°56.936’S, 175°06.529’E, 26 XI–21 XII 2005, broadleaf-podocarp forest on slope; FMHD#2005-0112, flight intercept trap, A. Newton & M. Thayer; ANMT site 1151”. **Paratypes (n= 12; 7 males, 5 females):** New Zealand: Wellington (WN): 1♂, same data as holotype (FMNH); 2♂♂, Pakurarahi Forks, Kaitoke, 24 VII 1993, dead kiekie stream, J. Nunn (JTN); 1♂1♀, Manawatu Gorge, 17 XI 1991, J. Nunn (JTN); 1♂1♀, Keith George Park, Silverstream, 5 V 1995, J. Nunn, decayed wood (JTN); 1♂, Waiotauru rd, Tararua FP, 23 IV 1995, J. Nunn, decayed wood (JTN); 1♂, Graces Stream tr, Rimutaka FP, 15 VIII 1993, J. Nunn, decayed wood (JTN); 1♀, Wainui Trig, Wainuiomata, 14 VII 1993, J. Nunn, decayed wood (JTN); 1♀, West Lake Wairarapa Res, 20 IV 1997, J. Nunn, subhumified wood (JTN); 1♀, Trentham Memorial Park, 7 VIII 1993, J. Nunn, decayed wood (JTN).

Diagnosis. This species is separated from other species of group 24 by the following combination of characters: larger size, length 2.7–3.0 mm; male antennomeres 4–6 weakly enlarged, 8 enlarged; male fore-femur with weak semicircular depression; shapes of ventral surface of male head and genitalia unique to species; only known from Wellington of North Island.

Description. Length 2.7–3.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 79c). *Head*. Head round, as long as wide, widest across eyes (Figure 79c). Antennomere, 2 longer than wide, 3–10 subquadrate, 4–6 weakly enlarged in male, 8 enlarged in male. Eye prominent, approximately two-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 79c). Meso- and metathorax trapezoidal, longer than wide. Male fore-femur with shallow semicircular depression. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided vertically, major lobe triangular and minor lobe oval

(Figure 79f). Phallobase of median lobe symmetrical and rectangular (Figure 79f). Paramere symmetrical with triangular membranous process on one-third length with setae from tip (Figure 79f).

Distribution. Wellington (WN) (Figure 80: black squares).

Habitat. Specimens of this species were collected mostly by sifting decayed wood litter or using flight intercept traps.

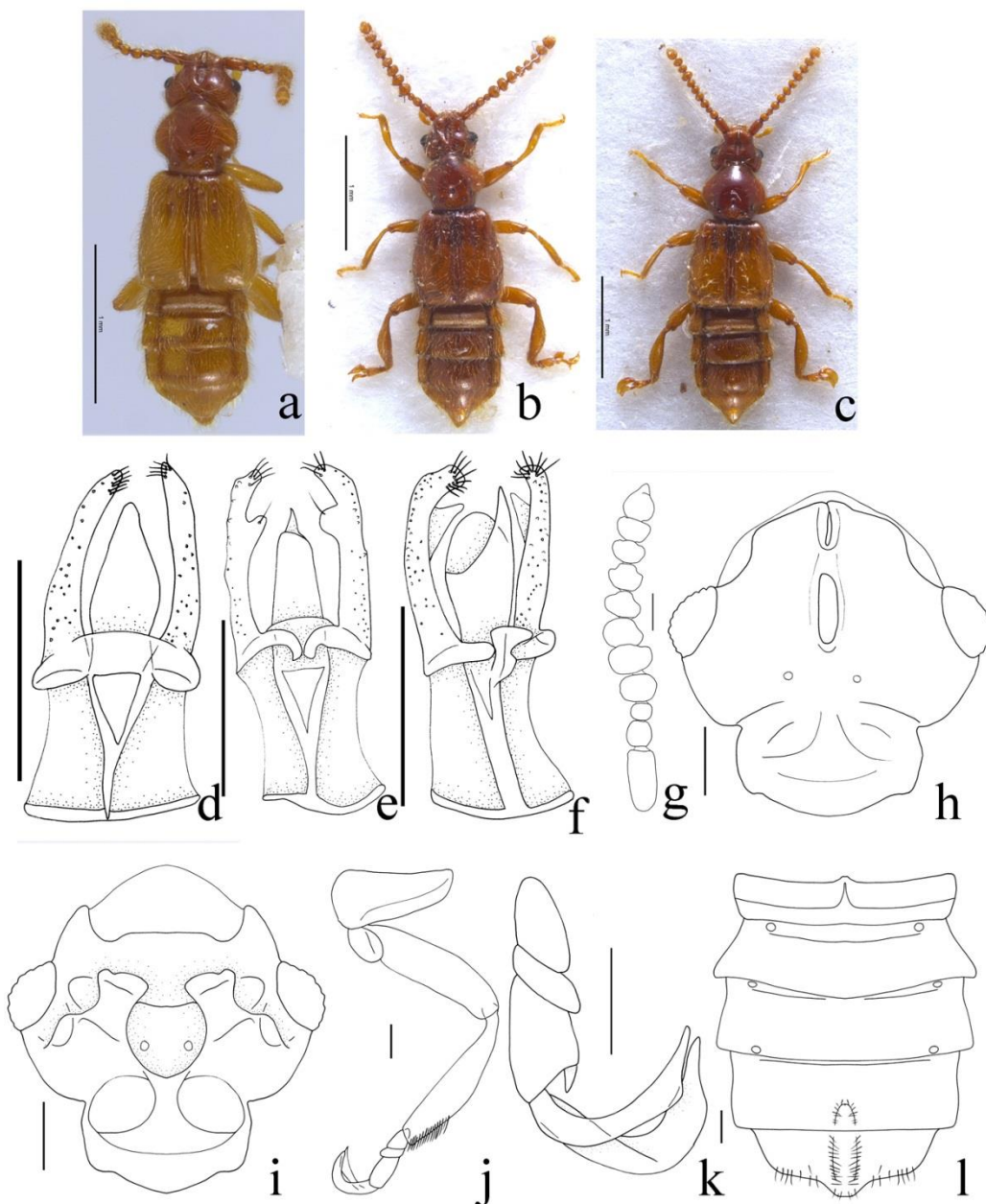


Figure 79. Habitus of group 24, dorsal views. a) *Sagola notabilis* Broun; b) *S. monstrosa* Reitter; c) *S. sp. nov.* 59; Scale bars = 1 mm. Aedeagus, dorsal view. d) *S. notabilis*; e) *S. monstrosa*; f) *S. sp. nov.* 59. Scale bars = 0.1 mm. Male *S. monstrosa*. g) antenna; h) dorsal head; i) ventral head; j) hind leg, lateral view; k) hind claw, lateral view; l) abdomen, ventral view. Scale bars = 0.1 mm.

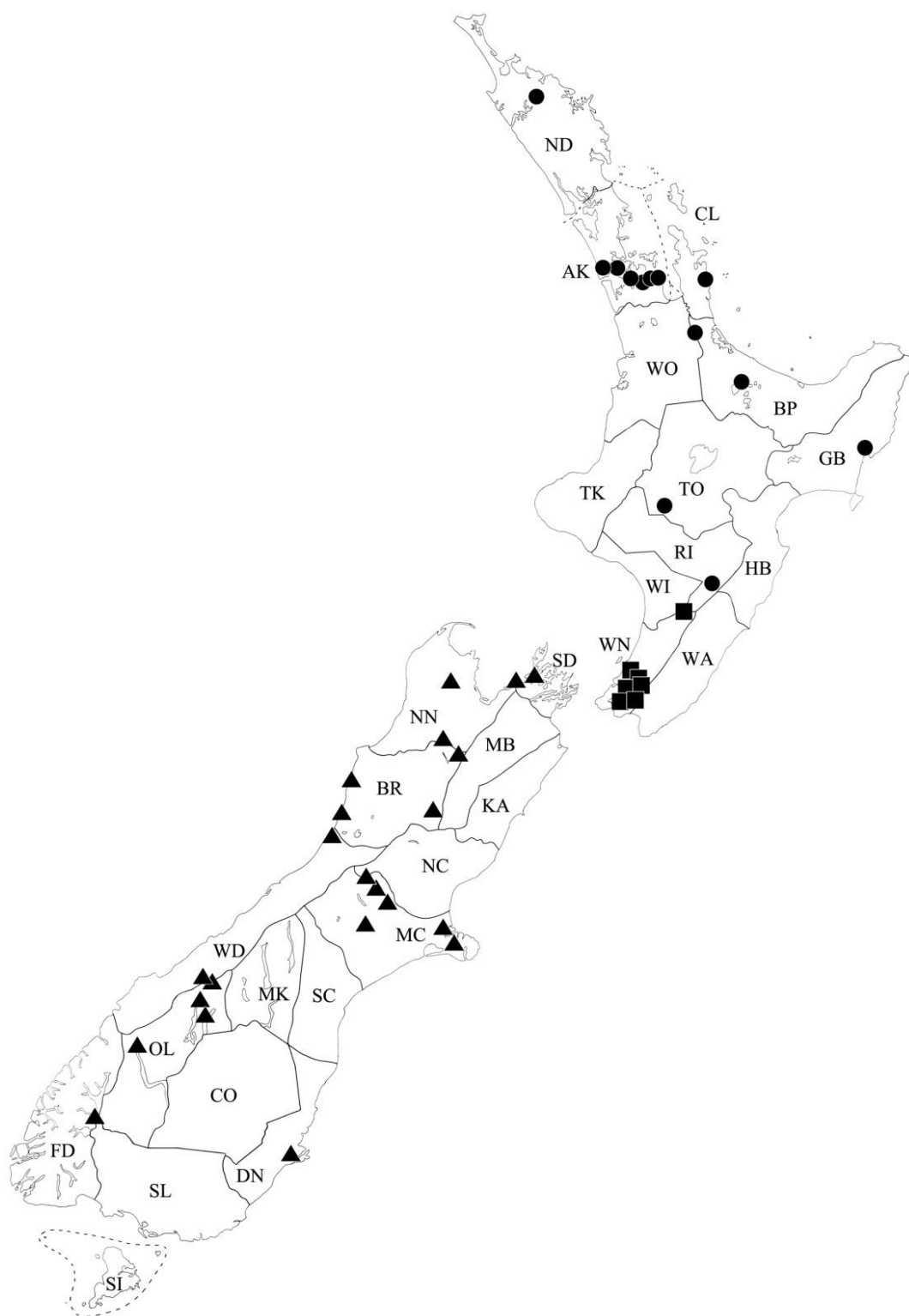


Figure 80. Locations where *Sagola notabilis*, *S. monstrosa* and *S. sp. nov. 59* specimens have been collected in New Zealand. *S. notabilis*: black circles; *S. monstrosa*: triangles; *S. sp. nov. 59*: black squares.

Group 25 (13 species)

Key to species of *Sagola* group 25

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

- 1. Eye small, approximately one-third length of temple.....2
- 1'. Eye large, approximately one-half length of temple.....8
- 2 (1). Apical lobe of genitalia arrowhead-shaped (Figure 82b).....*Sagola bituberata* Broun
- 2'. Apical lobe of genitalia not arrowhead-shaped.....3
- 3 (2). Major process of median lobe of genitalia S-shaped (Figure 82a).....*S. misella* Sharp
- 3'. Median lobe of genitalia not curved.....4
- 4 (3). Median lobe of genitalia triangular with membranous tube (Figure 82c).....*S. prisca* Sharp
- 4'. Median lobe of genitalia more complicate than triangular.....5
- 5 (4). Median lobe of genitalia depressed left apical and as long as paramere.....6
- 5'. Median lobe of genitalia divided, minor lobe longer than major lobe and paramere.....7
- 6 (5). Paramere depressed apically (Figure 82d); only known from Nelson (Figure 84: triangle).....*S. sp. nov.*42-1
- 6'. Paramere blunt; known from Fiordland (Figure 85: star).....*S. sp. nov.*52
- 7 (5). Male abdominal ventrite VII with small and acute process; major lobe of male median lobe of genitalia slender and simple (Figure 82g).....*S. sp. nov.*50-2
- 7'. Male abdominal ventrite VII without process; major lobe of male median lobe of genitalia diamond-shaped and broad (Figure 82f).....*S. sp. nov.*50-1
- 8 (1). Male elytra subquadrate, male hind wings reduced to small pads.....*S. sp. nov.*64-5
- 8'. Male elytra rectangular, male hind wings fully developed.....9
- 9 (8). Male antennomeres 4–8 longer than wide.....*S. sp. nov.* 64-6
- 9'. Male antennomeres 4–8 subquadrate.....10
- 10 (9). Median lobe of genitalia twisted with membranous tube (Figure 82i).....*S. sp. nov.*64-2
- 10'. Median lobe of genitalia not twisted without tube.....11
- 11 (10). Apical lobe of genitalia rectangular vertically (Figure 82j–k).....*S. sp. nov.*64-3
- 11'. Apical lobe of genitalia acute.....12
- 12 (11). Median lobe of genitalia C-shaped vertically (Figure 82e).....*S. sp. nov.*50
- 12'. Median lobe of genitalia S-shaped vertically (Figure 82l).....*S. sp. nov.*54-4

Diagnosis. The members of group 25 may be separated from other *Sagola* by the following combination of characters: body length 2.1–3.3 mm; antennomere 1 approximately 1.5–2.0 times longer than wide, male antennomeres enlarged; frontal rostrum rectangular, lobes continuous reaching posterior frontal fovea (Figure 82o); frontal sulcus reaching midpoint of eye, posterior frontal fovea present (Figure 82o); female hinds wings reduced to small pads; abdominal tergites IV–VI with discal carinae.

Sagola misella Sharp

Sagola misella Sharp, 1874: 508. Broun, 1880: 136. Schaufuss, 1888: 84. Raffray, 1893: 26; 1904: 498; 1911: 6; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola foveiventris Broun, 1921a: 492. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Type Material. Holotype. New Zealand: ♀, glued on rectangular card, “Type” [red label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “Sagola misella. ♂? Type. D.S.” [white label, handwritten]; “Sex ♀ DSC ‘87” [white label, handwritten]. **Paratypes: New Zealand:** 14♀♀, same data as holotype. **Holotype of *Sagola foveiventris*: New Zealand: Otago Lakes (OL):** 2♂♂, glued on rectangular card, “4000. ♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Hollyford. 19.2.1914.” [white label, written]; “Sagola ♂. foveiventris.” [white label, handwritten].

Additional Material (n= 157; 70 males, 87 females). New Zealand: Fiordland (FD): 4♂♂2♀♀, Fiordland NP, Borland rd, Borland saddle vic, 980m, 45°44.81’S, 167°22.88’E, 10 XII 2005, *Nothofagus menziesii* forest in ravine, FMHD#2005-090, litter, A. Newton, ANMT site 1171; 2♂♂, Fiordland NP, Milford Sound rd, Tutoko tr, 70m, 44°40.517’S, 167°57.895’E, 9 XII 2005, very mossy *Nothofagus* forest, emergent podocarp, FMHD#2005-086, litter, A. Newton, M. Thayer, ANMT site 1168; 1♂2♀♀, Fiordland NP, Borland rd, Mt. Burns Tops tr, above Borland Saddle, 1075m, 45°44.883’S, 167°22.938’E, 10 XII 2005, subalpine tussockland, FMHD#2005-096, unsifted litter at bases of shrubs (*Dracophyllum*, possibly *Filifolium*), M. Thayer, ANMT site 1173; 1♂, Fiordland NP, Kepler tr, below Mt. Luxmore Hut, 900m, 45°24.86’S, 167°38.675’E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-101, litter, A. Solodovnikov, D. Clarke, ANMT site 1176; 3♀♀, Fiordland NP, Kelper tr, above Brod Bay, 680m, 45°24.37’S, 167°39.105’E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-102, litter, A. Solodovnikov, D. Clarke, ANMT site 1177; 1♀, Fiordland NP, Milford Sound rd, Gertrude Saddle car park area, 800m, 44°46.13’S, 168°00.16’E, 9 XII 2005, very mossy *Nothofagus menziesii* forest, FMHD#2005-087, litter, A. Newton, M. Thayer, ANMT site 1169; 1♀, Fiordland NP, Borland rd, Mt. Burns Tops tr, above Borland Saddle, 1035m, 45°44.82’S, 167°22.87’E, 10 XII 2005, short ridgetop *Nothofagus menziesii* forest near timberline, FMHD#2005-098, litter, M. Thayer, ANMT site 1174; 4♂♂♀♀, Doubtful Sound, 1571, 5 IV 1953, R. Hornabrook; 2♂♂5♀♀, W. Olivine ra, Simonin Pass, 1067m, 27 I 1975, G.W. Ramsay, litter 75/38; 1♂2♀♀, W. Olivine ra, Simonin Pass, 23 I 1975, G.W. Ramsay, litter 75/35; 1♂, Wilmot Pass, 630m, 26 I 1970, G.W. Ramsay, litter 70/93; 1♀, Wilmot Pass, 630m, 24 I 1970, J.S. Dugdale, mats 70/94; 1♂, Turret Ra, Wolfe Flat, 900m, 22 I 1970, A.C. Eyles, litter 70/90; 1♂, Doubtful Sound, Wilmot Pass, 21 I 1970, A.C. Eyles, litter 70/64; 1♂, Hollyford V, Hd L. Marion, 640m, 13 XII 1966, A.K. Walker, litter 66/510; 2♂7♀♀, Hump Ridge, Fairburn, 12 III 1939; 3♂♂, Secretary I, Grono Bay, 28 XI 1981, C.F. Butcher, litter; 1♂1♀, W. Olivine ra, 1220-1463m, 25 I 1975, G.W. Ramsay, litter; 1♀, W. Olivine ra, 1067m, 23 I 1975, G.W. Ramsay, litter; 4♂7♀♀, Fiordland NP, Murchison Mts, 1 XII 1980-9 XII 1983, R.M. Emberson, C.A. Muir; 1♂4♀♀, Lower Hollyford rd, 44°44’S 168°08’E, #111, *Nothofagus*/coastal forest leaf litter berlese, 22 I 1998, C. Carlton, R. Leschen; 1♂1♀, Camp 1020m, Tutoko Bench, Darran Mts, 15 I 1977, T.K. Crosby, litter 77/10; 1♂1♀, Percy Stm, 460m, 5 II 1982, J.W. Early, *Nothofagus fusca* forest; 2♂♂, Secretary I, Gut Bay, 23 XI 1981, C.F. Butcher, litter; 1♂, Dusky Sound, Passage I, 8 III 1983, C.F. Butcher, litter; 1♂, W. Olivine ra, Tempest Spur Summit, 1463m, 30 I 1975, G.W. Ramsay, litter; 1♂, Wilmot Pass, 670m, 5 II 1983, J.W. Early, litter; 1♂, Hollyford tr, #110, 44°42’S 168°08’E, *Nothofagus* coastal forest litter, 22 I 1998, C. Carlton, R. Leschen; 3♀♀, Breaksea Sound, Gilbert I, 6 V 1982, C.F. Butcher, litter; 1♀, Borland saddle, Hunter Mtns, 28 I 2011, litter, 45°44.765’S, 167°22.709’E, 1015m, J. Nunn; 1♀, Borland rd, Borland Saddle tr, 45°46’S 167°23’E, #138, *Nothofagus* leaf litter, 24 I 1998, C. Carlton, R. Leschen; 1♀, Beside Tutoko R, 60m, 13 II 1980, J.W. Early, litter in *Nothofagus menziesii* forests; **North Canterbury (NC):** 1♂, Lake Marion, Holly rd, 2000’ 13 XII 1966, A.K. Walker,

fern litter 66/514; **Otago Lakes (OL):** 1♂6♀♀, McKerrow range. Makarora, 1000m, 23 I 1978, G. Kuschel, litter; 2♂♂1♀, nr Dart Hut, 940m, 12–20 II 1980, J.C. Watt, pit fall; 1♂2♀♀, Haast Pass summit, 560m, 22 I 1978, G. Kuschel, litter; 1♂, Makarora, 21–24 I 1978, S. Peck, J. Peck, malaise trap; 1♂, Dart Hut, 13–14 II 1980, J.S. Dugdale, pan trap in bush; 1♂, Makarora, 20 I 1996, J. Nunn; in beech forest; 1♀, Makarora, 23–24 I 1978, 500m, S. Peck, J. Peck, litter; 1♀, Makarora, 350m–400m, 22 I 1978, S. Peck, J. Peck, litter; 1♀, Haast River, 1000m, Sunny Flat, 25 I 1978, G. Kuschel, litter; 1♂, Paradise, 10 I 1945, E.S. Gourlay; **Stewart Island (SI):** 10♂♂4♀♀, Codfish I, N.W. Bay, 15 XII 1966, A.H. Whittaker, litter; 1♂2♀♀, Pegasus Creek, 24 II 1968, G. Kuschel, litter; 1♂, Pegasus Creek, 24 XI 1968, G. Kuschel, litter; 2♂♂, Christmas Village, J.I. Townsend, 28 I 1962, litter; 2♂♂, N.E. Big S. Cape I, 121m, 18 XI 1968, G. Kuschel, litter; 1♂ (slide-mounted), Codfish I, Valley tr, 25 XI 1981, B.A. Holloway, litter; **Southland (SL):** 2♀♀, Manapouri, 21 I 1970, G.W. Ramsay, litter; 2♀♀, Spence Burn Basin, 1150m, Takirimu mtns, 17–18 I 2000, J. Nunn, tussock litter; 1♀, Bluff Hill, Bluff, 7 VII 2002, J. Nunn, litter in kamahi forest; 1♀, Orepuki, 450' 7 II 1968, litter, J.I. Townsend; **Westland (WD):** 2♂♂, Mt. Aspiring NP, Douglas ck at hwy. 6, 65m, 11–18 I 1985, *Nothofagus menziesii*-hdwd-podocarp forest, A. Newton, M. Thayer 738, FIT&window trap; 1♂, Lower Haast, 16 III 1966, J. Nunn; 2♀♀, 2.7km s Franz Josef Glacier, #063, Trailhead of Alex Knob, 43°25S 173°10E, 150m, coastal forest leaf litter, 15 I 1998, C. Carlton, R. Leschen; 1♀, 2km se Fox Glacier, 225m, #066, 43°29S 170°01E, litter, 16 I 1998, C. Carlton, R. Leschen; 2♀♀, 11.2km ne Franz Josef Glacier, nr Lake Mapourika, 150m, Otto's Corner picnic area, 43°18S 170°14E, #064, coastal forest leaf litter, 15 I 1998, C. Carlton, R. Leschen; 2♀♀, 3.2km ne Haast, 14m, Haast River Walk, 43°52S 169°03E, #072, *Nothofagus*/podocarp forest litter, 17 I 1998, C. Carlton, R. Leschen; 1♀, Doughboy Creek, 6km sw Mahitahi, 5 II 1984, J.C. Watt, sifted wood mould; 3♂♂, Mt Aspiring NP, Arawata Blv, 840m, 5 II 1989, J.W. Early, R.M. Emberson, scrub litter.

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: body length 2.9–3.7 mm; male antennomeres 5–10 weakly enlarged bearing tubercles; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.9–3.7 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81a). *Head.* Head round, as long as wide, widest across eyes (Figure 81a). Male antennomere 1 approximately 1.5 times longer than wide, 2–4 longer than wide, 5–10 subquadrate and weakly enlarged, 5–11 with tubercles. Female antennomeres 2–8 longer than wide, 9–10 subquadrate, 7–11 with tubercles. Frontal rostrum rectangular, lobes continuous (Figure 82o). Frontal sulcus reaching midpoint of eye (Figure 82o). Posterior frontal fovea drop-shaped (Figure 82o). Eye prominent, approximately one-third length of temple (Figure 82o). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum (Figure 82p). Male elytra rectangular (Figure 81a), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia, absent in female. *Aedeagus.* Median lobe of genitalia divided, major lobe curved as S-shaped, minor lobe longer and membranous (Figure 82a). Phallobase of median lobe symmetrical and rounded (Figure 82a). Paramere symmetrical longer than median lobe with setae from tip (Figure 82a).

Type locality. New Zealand (Specific locality not mentioned).

Distribution. Fiordland (FD), North Canterbury (NC), Otago Lakes (OL), Stewart Island (SI), Southland (SL), Westland (WD) (Figure 83: black circles).

Habitat. Specimens of this species were collected mostly by sifting leaf litter. A few male specimens were collected using flight intercept or window traps.

Comments. Specimens of *S. misella* can be separated from those of other species by the shape of antennomeres. The type specimens of *S. foveiventris* share these diagnostic characters. For these reasons, I have placed *S. foveiventris* in synonymy with *S. misella*.

***Sagola bituberata* Broun**

Sagola bituberata Broun, 1914b: 160. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. One syntypes. New Zealand: Buller (BR): ♂, glued on rectangular card, “Type” [red label, printed]; “3525.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Greymouth. J.H. Lewis” [white label, handwritten]; “*Sagola* ♂. *bituberata*” [white label, handwritten].

Additional Material (n= 52; 24 males, 28 females). New Zealand: Buller (BR): 3♂♂, Lake nr Mt. Priestly, Paparoa Ra, 1060m, 10 XII 1969, J. McBurney, litter; 1♂, Fletchers ck, 6km sw of Rotokohu, 25 I 1972, J.M. McBurney, litter; 1♀, Relax Shelter, Mt Robert Ridge, 1 X 2005, J. Nunn, moist tussock litter at 1410m; 1♂, Arthur Pass, Kellys ck, 8 XI 2005, R. Leschen, S. Nomura, litter, 42°47'S, 171°24'E; **Nelson (NN):** 2♂♂3♀♀, Canaan, 18 IV 1966, J.I. Townsendm litter; 1♂, Mt. Domett, 1250m, 30 XI 1971, G. Kuschel, litter; 2♀♀, Canaan, Harwoods tr, 4 II 1965, L.P. Marchant, litter; **Otago Lakes (OL):** 1♂1♀, Haast River, 100m, Sunny Flat, 25 I 1978, G. Kuschel, litter; 2♀♀, Mt. Aspiring NP, 5.5km, 11–17 I 1985, *Nothofagus menziesii* forest, A. Newton, M. Thayer 741, window trap; **Westland (WD):** 4♂♂8♀♀, Kellys Creek, Otira, 22 III 2009, J. Nunn, mossy forest floor litter; 1♂2♀♀, Kellys Creek, Otira, 25 II 1989, J. Nunn; 1♀, Haast Pass n of summit, 550m, 24 I 1978, G. Kuschel, sifted litter and rotten wood; 1♂2♀♀, Okuku ck, 11.3km sse Kumara, 60m, 18–22 III 1980, podocarp-broadlf, A. Newton, M. Thayer, litter; 3♂♂, Franz Joseps. 24 II 1989, J. Nunn; 2♀♀, Lake Wombat tr, Franz Joseph, 7 II 2009, J. Nunn, washed soil sample, tree fern/broadleaf forest; 2♂♂, Jackson Bay, Smoothwater tr, 14 II 1977, T.K. Crosby, litter; 1♂, Kellys cr, Otira Vly, 9 IV 2010, J. Nunn, litter in kamahi forest; 1♂, 2.7km s Franz Josef Glacier, #063, Trailhead of Alex Knob, 43°28'S 1173°10'E, 150m, coastal forest litter, 15 I 1998, C. Carlton, R. Leschen; 1♂, Mt. Aspiring NP, 5.5km nne Makarora, 330m, 11–17 I 1985, *Nothofagus menziesii* forest, A. Newton, M. Thayer 741, FIT&window trap; 1♂, Mt. Aspiring NP, Douglas Creek at Hwy. 6, 65m, 11–18 I 1985, *Nothofagus menziesii*-hdwd-podocarp forest, A. Newton, M. Thayer 738, FIT&window trap; 1♀, Open Bay I, Taumaka I, 27 IX 1976, D.S. Horning, litter; 1♀, Mt Tuhua, 1067m, e side of L. Kaniere, 20 XI 1984, C.F. Butcher, litter; 1♀, Lake Ianthe, 7 II 1984, J.C. Watt, sifted litter and wood mould; 1♀, Doughboy Creek, 6km sw Mahitahi, 5 II 1984, J.C. Watt, sifted wood mould.

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.5–3.1 mm; male antennomeres 4–10 enlarged; male abdominal ventrite V with weak process medially; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.5–3.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81b). *Head.* Head round, as long as wide, widest across eyes (Figure 81b). Male antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate, 4–10 enlarged, 5–11 with tubercles. Female antennomeres 2–8 longer than wide, 9–10 subquadrate, 5–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea drop-shaped. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular

(Figure 81b), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of transverse patches of microtrichia, absent in female. Male abdominal ventrite V with weak process medially.

Aedeagus. Apical lobe of genitalia arrowhead-shaped (Figure 82b). Phallobase of median lobe symmetrical and rounded (Figure 82b). Paramere asymmetrical right paramere longer than left with setae at tip (Figure 82b).

Type locality. Greymouth (BR), New Zealand .

Distribution. Buller (BR), Nelson (NN), Otago Lakes (OL), Westland (WD) (Figure 83: triangles).

Habitat. Specimens of this species were collected mostly by sifting leaf litter, and a few male specimens were from flight intercept or window traps.

Sagola prisca Sharp

Sagola prisca Sharp, 1874: 507. Broun, 1880: 136. Reitter, 1880: 167. Schaufuss, 1888: 85.

Raffray, 1893: 24; 1904: 498; 1911: 5; 1924:231. Hudson, 1923: 365; 1934: 183. Jeannel, 1950: 45. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola acuminata Broun, 1921a: 498. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola disparata Broun, 1914b: 160. Hudson, 1923: 365. Hudson, 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola fuscipalpis Broun, 1914b: 159. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola rufescens Broun, 1921a: 499. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Sagola striatifrons Broun, 1921a: 492. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244. **New Synonym.**

Type Material. Holotype. New Zealand: ♂, left specimen glued on rectangular card, “Type” [red label, printed]; “N. Zeal.” [white label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “Sagola prisca ♂ Type. D.S.” [white label, handwritten]. **Paratypes: New Zealand:** 4♂♂2♀♀, same data as holotype. **Holotype of Sagola acuminata: New Zealand: Otago Lakes (OL):** ♂, glued on rectangular card, “4009.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Routerburn. 16.2.1914.” [white label, written]; “Sagola ♂. acuminata.” [white label, handwritten]. **One of two syntypes of Sagola disparata: New Zealand: Central Otago (CO):** ♂, glued on rectangular card, “3524.♂” [white label, handwritten]; “Old Man Range.” [white label, written]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂. disparata” [white label, handwritten]. **Syntypes of Sagola fuscipalpis: New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “type” [red label, printed]; “3523.♂” [white label, handwritten]; “Mt. Hutt. 12.4.1912” [white label, written]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂. fuscipalpis” [white label, handwritten]. 1♂, glued on rectangular card, “3523.♂” [white label, handwritten]; “Mt. Hutt. 12.4.1912” [white label, written]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂. fuscipalpis” [white label, handwritten]. 1♀, glued on rectangular card, “var. 3523.♀.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Hutt. 12.4.1912” [white label, written]. **Holotype of Sagola rufescens: New Zealand: Central Otago (CO):** ♀, glued on rectangular card, “4010.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus.

1922–482.” [white label, printed]; “Staircase. 13.3.1914.” [white label, written]; “Sagola rufescens.” [white label, handwritten]. **Syntypes of *Sagola striatifrons*: New Zealand: Otago Lakes (OL):** ♀, glued on rectangular card, “4001.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Harris Saddle. 13.2.1914.” [white label, written]; “Sagola ♀ striatifrons.” [white label, handwritten]. ♀, glued on rectangular card, “4001.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Harris Saddle. 13.2.1914.” [white label, written]; “Sagola striatifrons.” [white label, handwritten]. ♀, glued on rectangular card, “4001.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hollyford. 19.2.1914.” [white label, written]; “Sagola striatifrons.” [white label, handwritten]. ♂, glued on rectangular card, “4001.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hollyford. 19.2.1914.” [white label, written]; “Sagola ♂ striatifrons.” [white label, handwritten]. ♀, glued on rectangular card, “4001. var.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hollyford. 19.2.1914.” [white label, written].

Additional Material (n= 157; 81 males, 76 females). New Zealand: Buller (BR): 2♂♂, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, Nothofagus forest, A. Newton, M. Thayer 713, FIT&window trap; 1♂, Nelson Lakes NP, Lake Rotoiti St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, Nothofagus forest, A. Newton, M. Thayer 706, FIT&window trap; 1♀, Bell Hill Scenic Res, 11 V 1996, K.W. Drew & E.B. Spurr, bait trap; **Dunedin (DN):** 1♂, Dunstan Ra, 1646m, Summit, 13 I 1971, J.S. Dugdale, moss; 2♂♂, Lake Alta, The Remarkables, 21 I 2008, 1♂, Carrick Ra, Watts rk, 1300m, 5–8 II 1986, J.W. Early, yellow pan trap in tussock grassland; 2♂♂3♀♀, Leith Saddle, Leith triq tr, 420m, 26 IX 2011, washed soil, J. Nunn; 1♂6♀♀, Mt. Cargill, 400–450m, 21 IX 1981, J.C. Watt, litter; 2♂♂2♀♀, Mt. Cargill Sec Res, Organ Pipes tr, nr. Mt. Cargill summit, 600m, 45°48.505’S, 170°33.999’E, 5 XII 2005, podocarp-broadleaf forest, FMHD#2005-076, litter, A. Solodovnikov, D. Clarke, ANMT site 1165; 1♂4♀♀, Leith Saddle, 17 V 2010, J. Nunn, litter; 1♂1♀, Mt. Cargill, 30 VII 2000, litter, J. Nunn; 1♂, Allison Res nr Akatore, 1 IV 2001, J. Nunn, J. Nunn; 1♂, Leith Saddle, 20 V 2006, J. Nunn, washing soil; 1♂, Leith Saddle, J. Nunn, litter; 1♂, Leith Saddle, 11 XI 2000, J. Nunn, litter; 1♂, Leith Saddle, Leith triq tr, 24 IX 2010, J. Nunn, washed soil; 1♂1♀, Leith triq, 430m, 17 X 2010, J. Nunn, litter; 1♂, Allison Res, nr Akatore, 1 IV 2001, J. Nunn, litter; **Gisborne (GB):** 2♂♂16♀♀, Urewera NP, Maungapohatu rd, 3.2km e Taupeupe Saddle, 1110m, 38°36.975’S 177°02.753’E, 22 XI 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-027, litter, A. Newton, M. Thayer, ANMT site 1148; 3♀♀, Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351’S 172°41.658’E, 29 XI 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-055, litter, M. Thayer, ANMT site 1159; **Fiordland (FD):** 3♂♂5♀♀, Secretary I, Grono Bay, 24 III 1984, C.F. Butcher, litter; 1♂6♀♀, Lake Hauroko, 2 II 1966, F.D. Alack, litter; 1♂, Fiordland NP, Milford Sound rd, Gertrude Saddle car park area, 800m, 44°46.13’S 168°00.16’E, 9 XII 2005, mossy *Nothofagus menziesii* forest, FMHD#2005-088, recent flood debris floating in stream, J. Nunn, A. Newton, ANMT site 1169; 1♂, Cameron Mts, Lake Mike, 488m, 13 II 1963, J.I. Townsend, litter; 3♂♂1♀ (2♂♂1♀, slide-mounted), Lower Hollyford rd, 44°44’S 168°08’E, #111, *Nothofagus*/coastal forest leaf litter, 22 I 1998, C. Carlton, R. Leschen; **Mid Canterbury (MC):** 2♂♂, Mt. Hutt, McClellan’s Bush, 11 XII 1973, G. Kuschel, litter; **Nelson (NN):** 9♂♂1♀, Kahurangi NP, Cobb Ridge, Above Cobb Reservoir, 1050m, 41°06.351’S, 172°41.658’E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT

site 1159; 6♂♂10♀♀, Kahurangi NP, Cobb Ridge, Above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-055, litter, M. Thayer, ANMT site 1159; 1♂1♂, Kahurangi NP, Cobb Ridge, Above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus menziesii* & *N. solandri cliffortioides* forest, FMHD#2005-053, pitfall trap (5), A. Solodovnikov, D. Clarke, ANMT site 1159; 3♂♂2♀♀, Kahurangi NP, Mt. Arthur tr, ca. 1400m, 28 XI 2005, above treeline, FMHD#2005-050, alpine tussock litter, D. Clarke, ANMT site 1158; 1♂, Cobb Ridge, east of Cobb Reservoir, 990m, 2 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 728, litter; 1♀, Kahurangi NP, Mt. Arthur tr, below Mt. Arthur Hut, 1200m, 28 XI 2005, *Nothofagus* forest, FMHD#2005-049, litter, A. Solodovnikov, D. Clarke, ANMT site 1157; 4♂♂, Mt. Arthur, 1220m, 20 III 1964, J.I. Townsend, litter; **Otago Lakes (OL)**: 1♂2♀♀, Rees Saddle, 1600m, 14 II 1980, J.S. Dugdale, swards; 2♂♂1♀, Headlong pk, 1680m–1830m, 13–19 II 1980, J.C. Watt, pit fall; **Rangitikei (RI)**: 1♀, Ruahine Ra, Triplex, 10 II 1980, C.F. Butcher, litter; **Stewart Island (SI)**: 1♂, Kundy I, 17 XII 1981, S.L. Lobb, litter; **Taranaki (TK)**: 1♂, Dawson Falls, 914m, 23 I 1972, G.W. Ramsay, litter; 1♂, Pouakai Ra, 1067m, Ahukawakawa tr, 11 I 1978, litter & moss, J.C. Watt; 1♂, Pouakai Trig, Pouakai ra, 3 XII 1975, J.S. Dugdale, litter; **Westland (WD)**: 3♂♂1♀, At. Aspiring NP, Arawata blv, 840m, 31 I–5 II 1989, J.W. Early, yellow pan trap; 7♂♂4♀♀, Open Bay I, Taumaka I, 1 VIII 1975–27 IX 1976, R.H. Mattlin & D.S. Horning, litter; 2♂♂, Doughboy Creek, 6km sw Mahitahi, 5 II 1984, J.C. Watt, wood mould; 1♂1♀, Mt. Tuhua, 1067m, e side of L. Kaniere, 20 XI 1984, C.F. Butcher, litter; 1♂, 2.7km se Lake Moeraki, 30m, 10–18 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 736, FIT&window; 1♂, Lake Ianthe, 7 II 1984, J.C. Watt, litter & wood mould; 1♀, Okuku cr, 11.3km sse Kumara, 60m, 18-22 III 1980, podocarp-broadlf, A. Newton, M. Thayer, litter; **Wellington (WN)**: 1♂1♀, Taranua Ra, Dundas Hut Ridge, 950m, 3 XII 1984, R.C. Craw, litter; 1♀, Taranua Ra, Dundas Hut Ridge, 800m, 13 II 1985, G.W. Ramsay, litter.

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.4–3.8 mm; male antennomeres 4–10 enlarged; male abdominal ventrite V with weak process medially; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.4–3.8 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81c). *Head.* Head round, as long as wide, widest across eyes (Figure 81c). Male antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate, 4 longer than wide, 5–10 subquadrate, 4–10 enlarged, 5–11 with tubercles. Female antennomeres 2–6 longer than wide, 7–10 subquadrate, 6–11 with tubercles. Frontal rostrum rectangular, meet each other. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea drop-shaped. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular (Figure 81c), subquadrate in female and some male. Male meso- and metathorax trapezoidal, longer than wide, female and some male as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia, absent in female and some male. Male abdominal ventrite V with weak process medially. *Aedeagus.* Apical lobe of genitalia triangular with membranous tube (Figure 82c). Phallobase of median lobe symmetrical and rounded (Figure 82c). Paramere symmetrical as long as median lobe with setae at tip (Figure 82c).

Type locality. New Zealand (Specific locality not mentioned).

Distribution. Buller (BR), Dunedin (DN), Gisborne (GB), Fiordland (FD), Mid Canterbury (MC), Nelson (NN), Otago Lakes (OL), Rangitikei (RI), Stewart Island (SI), Taranaki (TK), Westland (WD), Wellington (WN) (Figure 84: black circles).

Habitat. Specimens of this species were collected using pitfall, yellow pan, flight intercept, window traps, or by sifting leaf and wood litter mostly in *Nothofagus* forests.

Comments. Male specimens of *Sagola prisca* can be separated from those of other species by the shape of antennomeres. The type specimens of *S. acuminata*, *S. disparata*, *S. fuscipalpis*, *S. rufescens* and *S. striatifrons* share these diagnostic characters. For these reasons, I have placed *S. acuminata*, *S. disparata*, *S. fuscipalpis*, *S. rufescens* and *S. striatifrons* in synonymy with *S. prisca*.

This species exhibits polymorphism in the shape of antennomeres, length of male elytra and size of genitalia. However, these characters do not covary sufficiently to warrant separating the complex into additional species.

Sagola sp. nov. 42-1

Type Material. Holotype. New Zealand: Nelson (NN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND NN Mt Murchison 914m 26 mar 1975 K.W. Walker”, “Tussock Litter 75/123”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 female): New Zealand: Nelson (NN):** 1 ♀, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.4–2.6 mm; male antennomere not enlarged; male elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Nelson.

Description. Length 2.4–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81d). *Head.* Head round, as long as wide, widest across eyes (Figure 81d). Antennomere 1 approximately 2 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea drop-shaped. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 81d). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe of genitalia divided, minor lobe membranous (Figure 82d). Phallobase of median lobe symmetrical and rounded (Figure 82d). Paramere symmetrical as wide as median lobe with setae at tip (Figure 82d).

Distribution. Nelson (NN) (Figure 84: triangle).

Habitat. Specimens of this species were collected by sifting tussock litter.

Sagola sp. nov. 50

Type Material. Holotype. New Zealand: Fiordland (FD): ♂, “NEW ZEALAND FD Secretary I ridge towards Mt Grono 853m 30 Nov 1981”, “C.F. Butcher moss & mats 81/189”, “Duplicate specimens in alcohol”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 20; 10 males, 10 females): New Zealand: Fiordland (FD):** 2 ♀♀, same data as holotype (NZAC); 3 ♂♂ 5 ♀♀, Secretary I, Mt. Grono, 853m, 27 XI 1981, C.F. Butcher, mats, moss & tussock (NZAC); 1 ♂, Secretary I, Grono Bay, 24 III 1984, C.F. Butcher, litter (NZAC); 1 ♂, Secretary I, Grono Bay, 29 III 1984, T. Haslam, mats

plants (NZAC); 1♀, Secretary I, Grono Bay, 28 XI 1981, C.F. Butcher, litter (NZAC); 1♂, Fiordland NP, Borland Saddle, 940m, 2 II 1982, J.W. Early, sweeping tussock (LUNZ); 1♂1♀, summit, Tempest Spur, w Olivine ra, 1463m, 25 I 1975, G.W. Ramsay, litter (NZAC); **Marlborough (MB)**: 1♂, Richmond ra, Fell pk, 1311m, 18 III 1969, A.C. Eyles, litter (NZAC); **Westland (WD)**: 2♂♂1♀, Mt. Cook NP, 1500m, 23 I 1977, W.J. Sweney (LUNZ).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger size, 2.6–3.0 mm; male antennomere 4–10 enlarged; eye larger, approximately one-half length of temple; male abdominal ventrite V–VI medially flattened; shape of genitalia unique to species.

Description. Length 2.6–3.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81e). *Head.* Head round, as long as wide, widest across eyes (Figure 81e). Male antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate, 4–10 enlarged, 6–11 tubercles. Female antennomeres 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate, 6–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea drop-shaped. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular (Figure 81e), subquadrate in female and some male. Male meso- and metathorax trapezoidal, longer than wide, female and some male as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female and some male. Male abdominal ventrite V–VI medially flatten. *Aedeagus.* Apical lobe of genitalia point (Figure 82e). Phallobase of median lobe symmetrical and rounded (Figure 82e). Paramere asymmetrical, right longer than left with setae at tip (Figure 82e).

Distribution. Fiordland (FD), Marlborough (MB), Westland (WD) (Figure 85: black circles).

Habitat. Specimens of this species were collected mostly by sifting forest litter.

Sagola sp. nov. 50-1

Type Material. Holotype. New Zealand: Fiordland (FD): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “**New Zealand: FD:** Hunter Mts., N. Mt. Burns 1300m, 10 I 1970 J.I. Townsend, mats 70/6”. **Paratypes (n= 5; 2 males, 3 females): New Zealand: Fiordland (FD):** 3♀♀, Hunter Mts, S. Borland, 760m, 14 I 1970, J.I. Townsend, mats 70/106 (NZAC); 1♂, Mt. Burns, Hunter Mtns, 10 XII 2005, J. Nunn, in tussock litter (JTN); 1♂, Fiordland NP, Borland rd, Borland Saddle vic, 980m, 45°44.81’S 167°22.88’E, 10 XII 2005, *Nothofagus menziesii* forest in ravine, FMHD#2005-090, litter, A. Newton, ANMT site 1171 (FMNH).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.1–2.5 mm; male antennomeres 5–10 weakly enlarged; posterior frontal fovea elongate; male elytra subquadrate; male abdominal ventrite V medially flattened, VII small with acute process medially; shapes of antennomeres and genitalia unique to species.

Description. Length 2.1–2.5 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81f). *Head.* Head round, as long as wide, widest across eyes (Figure 81f). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–10 subquadrate, 5–10 weakly enlarged, 6–11 with tubercles. Female antennomeres 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate, 6–11 with tubercles. Frontal rostrum

rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea elongate. Eye prominent, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 81f). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV without patches of microtrichia. Male abdominal ventrite V medially flatten, VII small with acute process medially. *Aedeagus*. Apical lobe of genitalia divided, major lobe diamond-shaped (Figure 82f). Phallobase of median lobe symmetrical and rounded (Figure 82f). Paramere symmetrical blunt with setae at tip (Figure 82f).

Distribution. Fiordland (FD) (Figure 85: triangles).

Habitat. Specimens of this species were collected by sifting tussock, and mats litter.

Sagola sp. nov. 50-2

Type Material. Holotype. New Zealand: **Fiordland (FD):** ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: FD: Hump Ridge, 1220m 6 II 1976, G.W. Ramsay Litter 76/38”. **Paratypes (n= 17; 7 males, 10 females):** New Zealand: **Fiordland (FD):** 4♂♂2♀♀, same data as holotype (NZAC); 1♂, Wilmot Pass, 630m, 26 I 1970, G.W. Ramsay, litter 70/93 (NZAC); 3♀♀, Turret ra, Wolfe Flat, 900m, 22 I 1970, A.C. Eyles, litter 70/90 (NZAC); 3♀♀, Hump Ridge, 12 III 1939, Fairburn (NZAC).

Southland (SL): 2♂♂1♀, MacLennan, 31m, 13 II 1968, J.I. Townsend, moss 68/30 (NZAC); 1♀, Manpouri, 21 I 1970, G.W. Ramsay, litter 70/96 (NZAC).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.6–2.9 mm; male antennomeres 6–10 enlarged; male elytra subquadrate; male abdominal ventrite V medially flattened, VII small with acute process medially; shapes of antennomeres and genitalia unique to species.

Description. Length 2.6–2.9 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81g). *Head*. Head round, as long as wide, widest across eyes (Figure 81g). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–10 subquadrate, 6–10 enlarged, 6–11 with tubercles. Female antennomeres 2–5 longer than wide, 6–10 subquadrate, 7–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea elongate. Eye prominent, approximately one-third length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 81g). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV without patches of microtrichia. Male abdominal ventrite V medially flatten, VII small with acute process medially. *Aedeagus*. Apical lobe of genitalia divided, major lobe shorter and slender (Figure 82g). Phallobase of median lobe symmetrical and rounded (Figure 82g). Paramere symmetrical blunt with setae at tip (Figure 82g).

Distribution. Fiordland (FD), Southland (SL) (Figure 85: black squares).

Habitat. Specimens of this species were collected by sifting moss and leaf litter.

Sagola sp. nov. 52

Type Material. Holotype. New Zealand: **Fiordland (FD):** ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND FD Secretary I Top of Ridge 29 May 1982 S. Brasch”, “Litter 82/65”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype1 (1 female):** New Zealand: **Fiordland (FD):** 1♀,

Secretary I, ridge towards, Mt Grono, 853m, 27 XI 1981, C.F. Butcher, Alpine mats, moss and tussock (NZAC).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.2–2.3 mm; male antennomeres 6–10 enlarged; male abdominal ventrite V medially flattened; shapes of antennomeres and genitalia unique to species; only known from Secretary Island in Fiordland.

Description. Length 2.2–2.3 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81h). *Head.* Head round, as long as wide, widest across eyes (Figure 81h). Male antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 weakly enlarged, 6–11 with tubercles. Female antennomeres 2–7 longer than wide, 8–10 subquadrate, 8–11 with tubercles. Frontal rostrum rectangular, meet each other. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea oval. Eye prominent, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 81h). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patches of microtrichia. Male abdominal ventrite V medially flatten. *Aedeagus.* Apical lobe of genitalia triangular (Figure 82h). Phallobase of median lobe symmetrical and rounded (Figure 82h). Paramere symmetrical blunt with setae at tip (Figure 82h).

Distribution. Fiordland (FD) (Figure 85: star).

Habitat. Specimens of this species were collected by sifting forest litter.

Sagola sp. nov. 64-2

Type Material. Holotype. New Zealand: Fiordland (FD): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: FD: Turret Ra., N of Percy Sdle 1250m, 16 I 1970, G.W. Ramsay, Grass 70/52”. **Paratypes (n= 10; 3 males, 7 females): New Zealand: Fiordland (FD):** 1♀, same data as holotype (NZAC); 1♂, Hunter Mts, W. Borland Sdle, 760m, 12 I 1970, J.I. Townsend, moss 70/10 (NZAC); **Marlborough (MB):** 1♀, Richmond ra, Johnson Pk, 1500m, 13 III 1969, J.C. Watt, litter 69/102 (NZAC); **Marlborough Sounds (SD):** 1♂1♀, Ship Cove, 30 XI 1972, J.S. Dugdale, litter 72/273 (NZAC); **Southland (SL):** 2♂♂1♀, Spence Burn Basin, 1150m, Takitimu Mtns, 18 I 2000, tussock litter, J. Nunn (JTN); 1♀, Spence Burn Basin, 1150m, Takitimu Mtn, 17 I 2000, J. Nunn, tussock litter (JTN); 1♀, Spence Basin, Takitimu Rng, 17 I 2000, J. Nunn, tussock litter (JTN).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.5–2.7 mm; male antennomeres 4–10 enlarged; eye larger, approximately one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description. Length 2.5–2.7 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81i). *Head.* Head round, as long as wide, widest across eyes (Figure 81i). Male antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate, 4–10 enlarged, 6–11 with tubercles. Female antennomeres 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate, 6–11 with tubercles. Frontal rostrum rectangular, lobe continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea elongate. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Male elytra rectangular (Figure 81i), subquadrate in female and some males. Male meso- and metathorax trapezoidal, longer than wide, female and some males as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia,

absent in females and some males. *Aedeagus*. Median lobe of genitalia twisted with membranous tube (Figure 82i). Phallobase of median lobe symmetrical and rounded (Figure 82i). Paramere asymmetrical, right longer than left with setae at tip (Figure 82i).

Distribution. Fiordland (FD), Marlborough (MB), Marlborough Sounds (SD), Southland (SL) (Figure 86: black circles).

Habitat. Specimens of this species were collected by sifting grass, moss and tussock litter.

Sagola sp. nov. 64-3

Type Material. Holotype. New Zealand: Central Otago (CO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand CO Ailsa Craig Lammermoor Rng 7-Dec-08”, “Sifted moss and tussock litter”. The original label does not mention who collect the type specimen, but it is collected by J. Nunn. **Paratypes (n= 11; 4 male, 7 females): New Zealand: Central Otago (CO):** 2♂♂7♀♀, same data as holotype (JTN); 2♂♂, Ailsa Craig, Lammerlaw Rng, 14 XII 2008, J. Nunn (JTN).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.6–2.8 mm; male antennomeres 4–10 enlarged; eye larger, approximately one-half length of temple; male abdominal ventrite V with round process medially; shapes of antennomeres and genitalia unique to species; known from Central Otago of South Island.

Description. Length 2.6–2.8 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81j). *Head*. Head round, as long as wide, widest across eyes (Figure 81j). Male antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate, 4–10 enlarged, 6–11 with tubercles. Female antennomeres 2 longer than wide, 3–10 subquadrate, 6–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea long. Eye prominent, approximately one-half length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 81j). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV without patches of microtrichia. Male abdominal ventrite V with round process medially. *Aedeagus*. Median lobe of genitalia triangular, apical lobe rectangular vertically (Figures 82j, k). Phallobase of median lobe symmetrical and rounded (Figure 82j). Paramere asymmetrical, right longer than left with setae at tip (Figure 82j).

Distribution. Central Otago (CO) (Figure 86: triangle).

Habitat. Specimens of this species were collected by sifting tussock litter.

Sagola sp. nov. 64-4

Type Material. Holotype. New Zealand: Southland (SL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand SL Croyden Bush Gore 5-Sep-04”, “Forest floor litter from area subject to flooding”, “76.03 Southland Hill’s Hokonui”. Original label does not mention who collect the type specimen, but it is collected by J. Nunn. **Paratype (1 male): New Zealand: Southland (SL):** 1♀, same data as holotype (JTN).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.7–2.8 mm; male antennomeres 4–10 enlarged; eye larger, approximately one-half length of temple; shapes of antennomeres and genitalia unique to species; only known from Southland.

Description of male. Length 2.7–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81k). *Head.* Head round, as long as wide, widest across eyes (Figure 81k). Antennomere 1 approximately 1.5 times longer than wide, 2–10 subquadrate, 4–10 enlarged, 6–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea elongate. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 81k). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV without a pair of patches of microtrichia. *Aedeagus.* Median lobe of genitalia triangular, curved as S-shaped vertically (Figure 82l). Phallobase of median lobe symmetrical and rounded (Figure 82l). Paramere asymmetrical, right longer than left with setae at tip (Figure 82l).

Distribution. Southland (SL) (Figure 86: black square).

Habitat. Specimens of this species were collected by sifting forest litter.

Sagola sp. nov. 64-5

Type Material. Holotype. New Zealand: Southland (SL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND Longwood Range 8 Feb 1976 G.W. Ramsay litter 76/36”, “Duplicate specimens in alcohol”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 2; 1 male, 1 female):** New Zealand: Southland (SL): 1♂1♀, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger size, 2.6–2.8 mm; male antennomeres 6–10 enlarged; eye larger, approximately one-half length of temple; male abdominal ventrites V–VI with round medial process, VII a pair of acute processes; shapes of antennomeres and genitalia unique to species; known from Southland.

Description. Length 2.6–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81l). *Head.* Head round, as long as wide, widest across eyes (Figure 81l). Male antennomere 1 approximately 1.5 times longer than wide, 2–4 longer than wide, 5–10 subquadrate, 6–10 enlarged, 6–11 with tubercles. Female antennomeres 2–7 longer than wide, 8–10 subquadrate, 5–11 with tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea elongate. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra subquadrate (Figure 81l). Male meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patches of microtrichia. Male abdominal ventrite V–VI with round medial process, VII a pair of acute processes. *Aedeagus.* Apical lobe of genitalia triangular with membranous tube (Figure 82m). Phallobase of median lobe symmetrical and rounded (Figure 82m). Paramere asymmetrical right wider than left, with setae at tip (Figure 82m).

Distribution. Southland (SL) (Figure 86: star).

Habitat. Specimens of this species were collected mostly by sifting leaf litter.

Sagola sp. nov. 64-6

Type Material. Holotype. New Zealand: Marlborough Sounds (SD): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: SD: Tennyson Inlet Road, 115-135m, 30 XII 84-5 I 85, forest streams. *hdwd.-podo.-nikau* for., A. Newton/M. Thayer 723, berl., leaf & log litter, forest floor”. **Paratype (1 male):** New Zealand: Westland

(WD): 1♂, 11.2km ne Franz Josef Glacier, nr Lake Mapourika, 150m, Otto's Corner picnic area, 43°18S 170°14E, #064, Coastal forest leaf litter berlese, 15 I 1998, C. Carlton, R. Leschen (LSAM).

Diagnosis. This species is separated from other species of group 25 by the following combination of characters: larger body, length 2.7–2.9 mm; male antennomeres 4–10 longer than wide and enlarged; eye larger, approximately one-half length of temple; male abdominal ventrites V–VI with round medial process, VII rounded concave process medially; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.7–2.9 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 81m). *Head.* Head round, as long as wide, widest across eyes (Figure 81m). Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate, 4–10 enlarged, 4–11 bearing tubercles. Frontal rostrum rectangular, lobes continuous. Frontal sulcus reaching midpoint of eye. Posterior frontal fovea drop-shaped. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 81m). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia. Male abdominal ventrite V–VI with round medial process, VII rounded concave process medially. *Aedeagus.* Apical lobe of genitalia rectangular vertically with membranous tube (Figure 82n). Phallobase of median lobe symmetrical and rounded (Figure 82n). Paramere asymmetrical, right longer than left with setae at tip (Figure 82n).

Distribution. Marlborough Sounds (SD), Westland (WD) (Figure 86: white circle).

Habitat. Specimens of this species were collected by sifting forest litter.

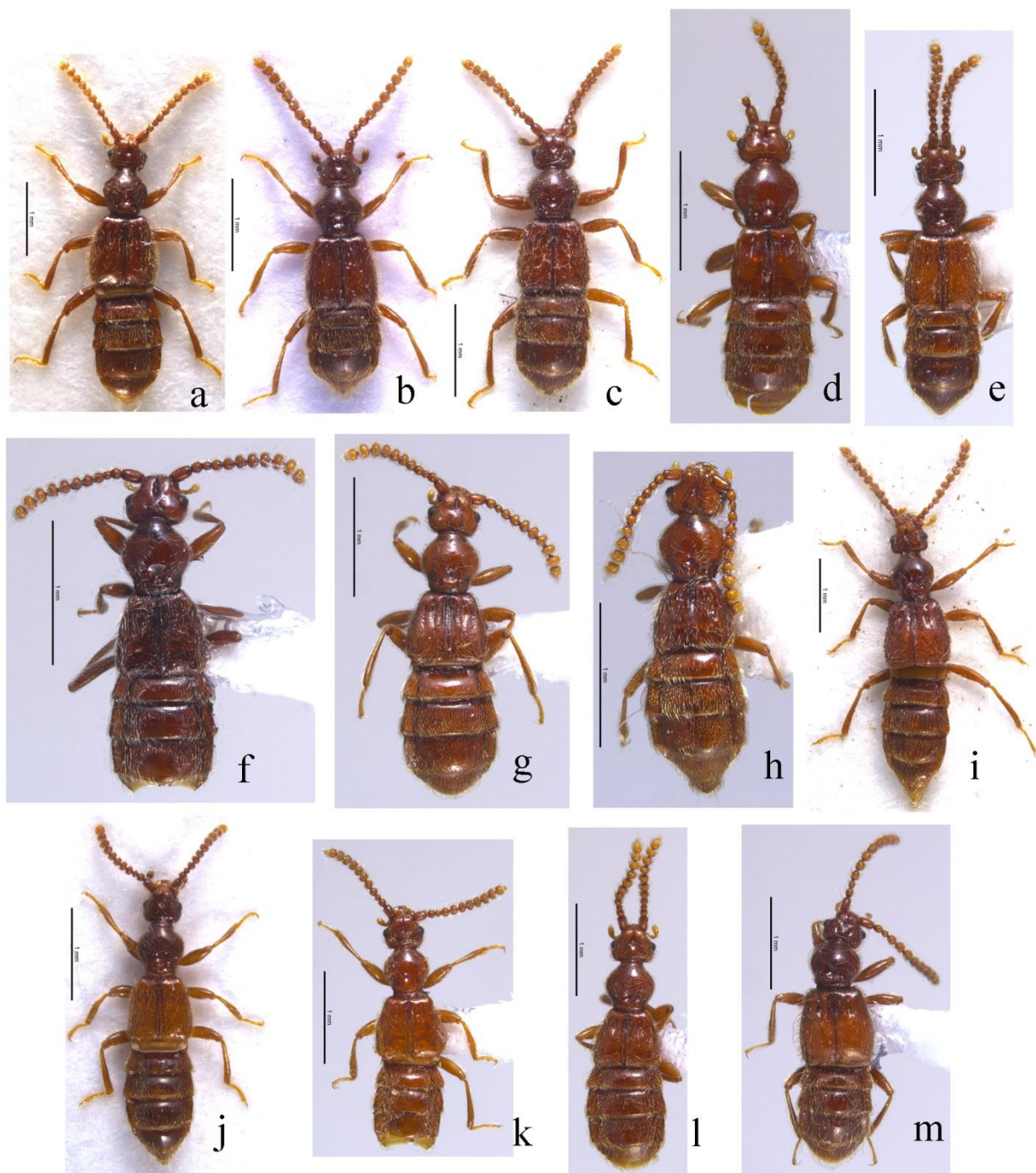


Figure 81. Habitus of group 25, dorsal views. a) *Sagola misella* Sharp; b) *S. bituberata* Broun; c) *S. prisca* Sharp; d) *S. sp. nov. 42-1*; e) *S. sp. nov. 50*; f) *S. sp. nov. 50-1*; g) *S. sp. nov. 50-2*; h) *S. sp. nov. 52*; i) *S. sp. nov. 64-2*; j) *S. sp. nov. 64-3*; k) *S. sp. nov. 64-4*; l) *S. sp. nov. 64-5*; m) *S. sp. nov. 64-5*; Scale bars = 1 mm.

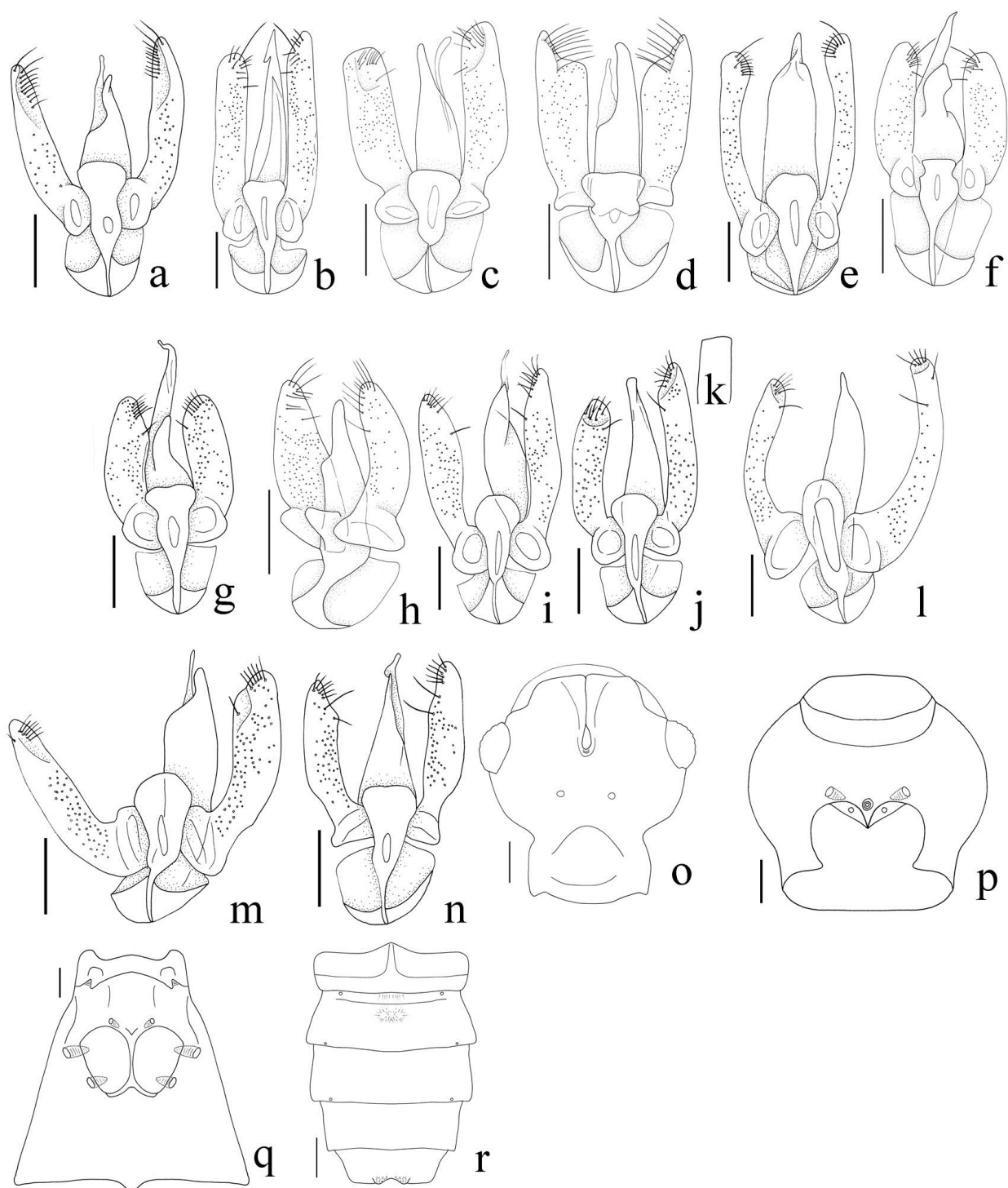


Figure 82. Aedeagus, dorsal view of group 25. a) *Sagola misella* Sharp; b) *S. bituberata* Broun; c) *S. prisca* Sharp; d) *S. sp. nov.* 42-1; e) *S. sp. nov.* 50; f) *S. sp. nov.* 50-1; g) *S. sp. nov.* 50-2; h) *S. sp. nov.* 52; i) *S. sp. nov.* 64-2; j) *S. sp. nov.* 64-3; k) Apical lobe of *S. sp. nov.* 64-3, lateral view; l) *S. sp. nov.* 64-4; m) *S. sp. nov.* 64-5; n) *S. sp. nov.* 64-5; Scale bars = 0.1 mm. *S. misella*. o) dorsal head; p) prosternum, ventral view; q) meso- and metaventrite, ventral view; r) abdomen, ventral view; Scale bars = 0.1 mm.

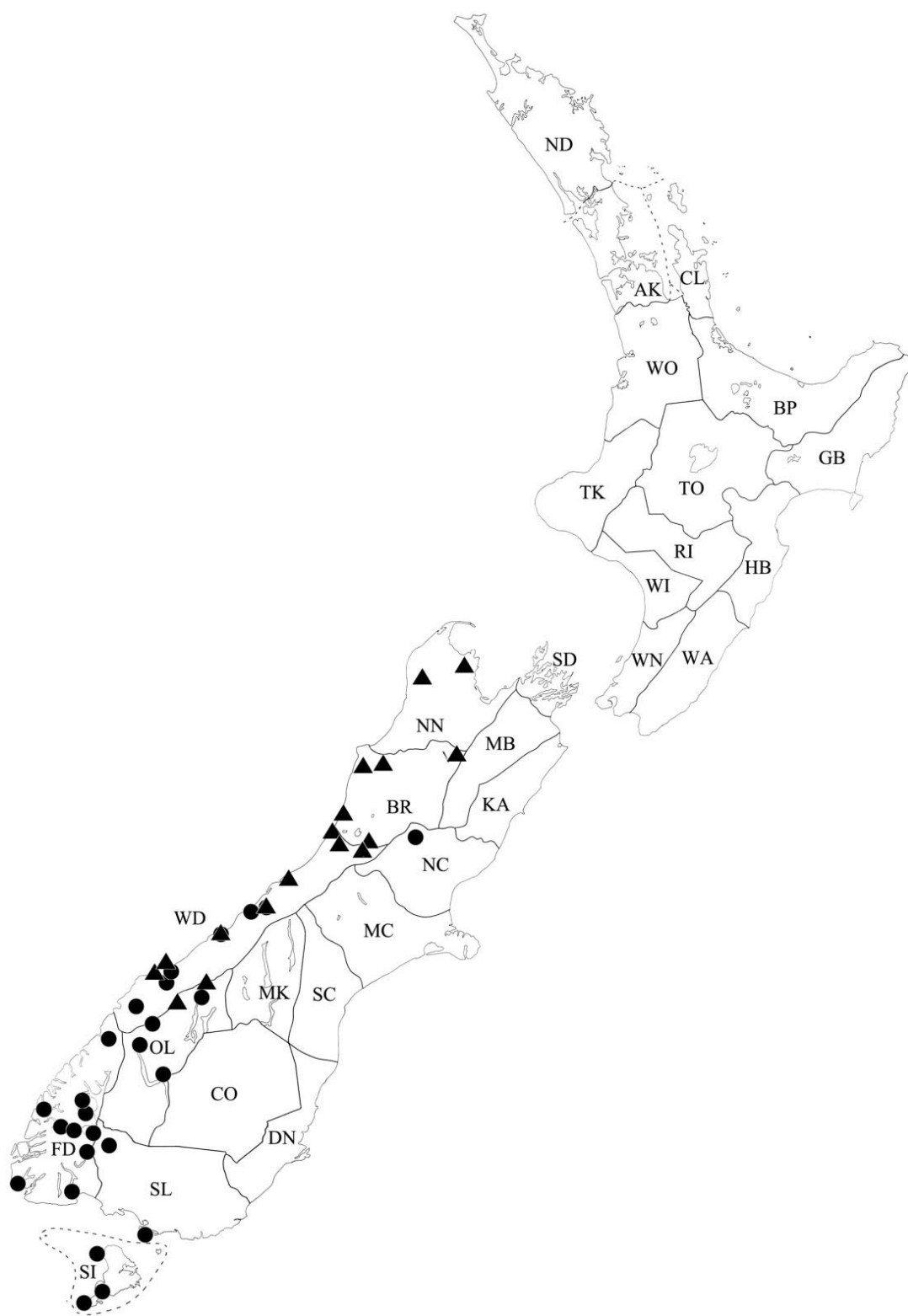


Figure 83. Locations where *Sagola misella* and *S. bituberata* specimens have been collected in New Zealand. *S. misella*: black circles; *S. bituberata*: triangles.

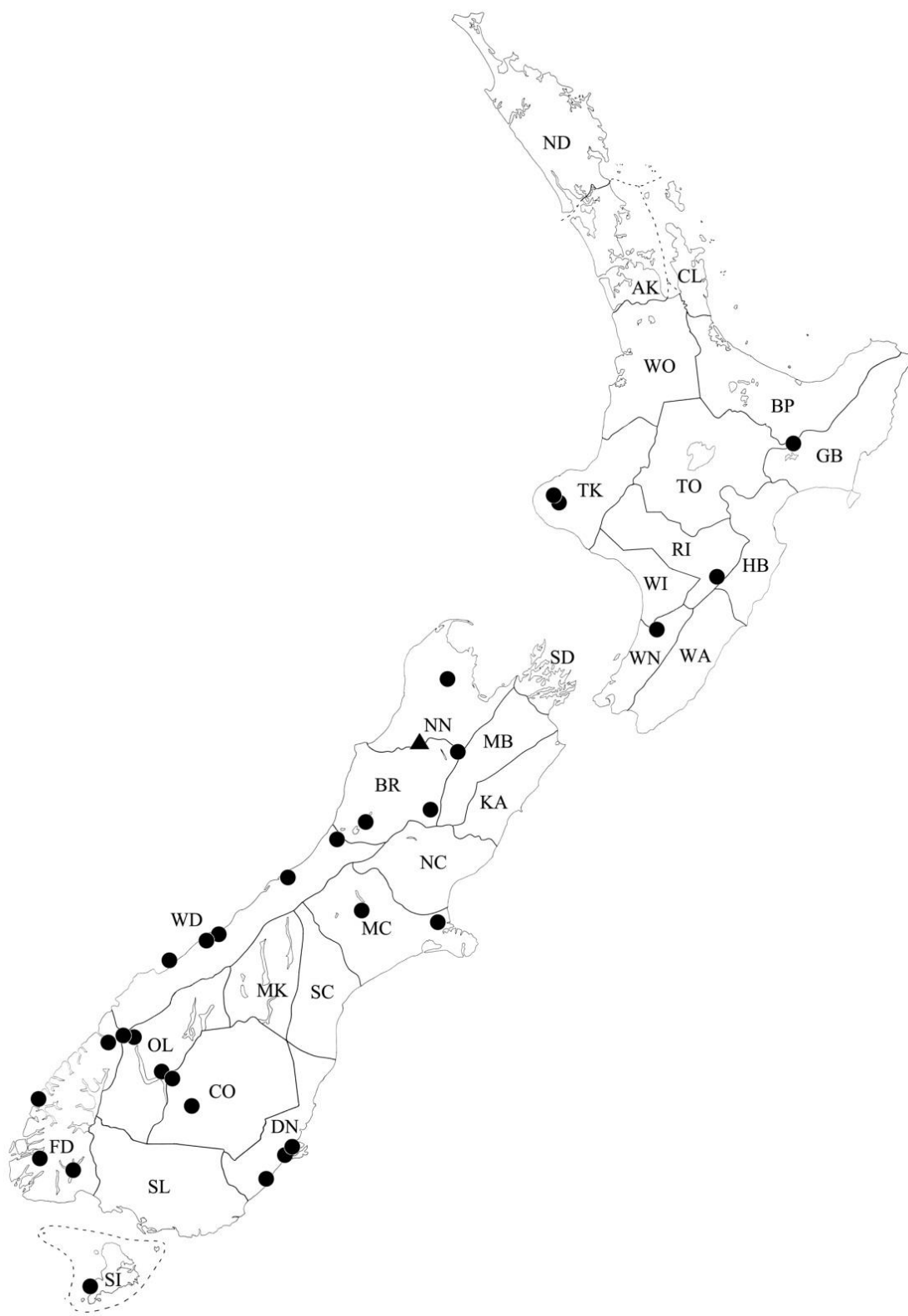


Figure 84. Locations where *Sagola prisca* and *S. sp. nov. 42-1* specimens have been collected in New Zealand. *S. prisca*: black circles; *S. sp. nov. 42-1*: triangle.

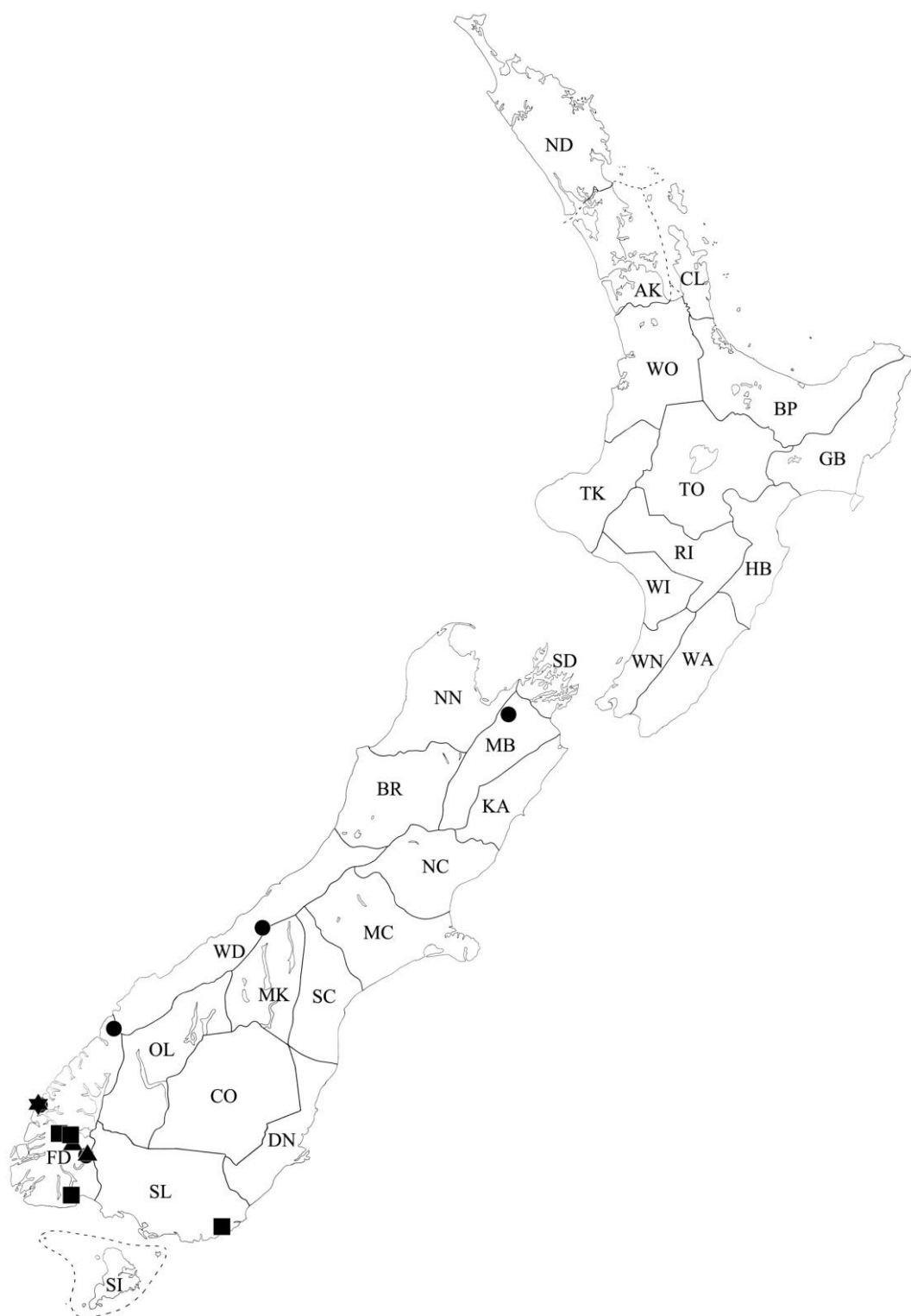


Figure 85. Locations where *Sagola* sp. nov. 50, *S. sp. nov. 50-1*, *S. sp. nov. 50-2* and *S. sp. nov. 52* specimens have been collected in New Zealand. *S. sp. nov. 50*: black circles; *S. sp. nov. 50-1*: triangles; *S. sp. nov. 50-2*: black squares; *S. sp. nov. 52*: star.



Figure 86. Locations where *Sagola* sp. nov. 64-2, *S. sp. nov.* 64-3, *S. sp. nov.* 64-4, *S. sp. nov.* 64-5 and *S. sp. nov.* 64-6 specimens have been collected in New Zealand. *S. sp. nov.* 64-2: black circles, *S. sp. nov.* 64-3: triangle; *S. sp. nov.* 64-4: black square; *S. sp. nov.* 64-5: star; *S. sp. nov.* 64-6: white circles.

Group 26 (2 species)

Key to species of *Sagola* group 26

The key is based on male specimens because female specimens are indistinguishable based on external morphology.

1. Temporal lobes of ventral surface of head flattened (Figure 87e); median lobe of genitalia subquadrate and phallobase of genitalia subquadrate (Figure 87c); paramere divided narrowly (Figure 87d).....*Sagola* sp. nov.11-1
2. Temporal lobes of ventral surface of head concave; median lobe of genitalia rectangular and phallobase of genitalia triangular (Figure 87d); paramere divided broadly (Figure 87d).....*S.* sp. nov.11-2

Diagnosis. The members of group 26 may be separated from other *Sagola* groups by the following combination of characters: body length 2.5–2.8 mm; antennomere 1 approximately 2 times longer than wide with dull face; male head triangular with projecting temporal lobe (Figure 87f) and female head longer than wide; anterior frontal fovea oval, partially covered by frontal rostrum and posterior frontal fovea oval (Figure 87f); hind wings fully developed; abdominal tergites IV–VI with discal carinae; parameres divided (Figures 87c–d).

Sagola sp. nov. 11-1

Type Material. Holotype. New Zealand: Coromandel (CL): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND CL Mt Moehau 600m 16 Oct 1980 J.C. Watt Litter 80/89”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=6; 5 males, 1 female). New Zealand: Bay of Plenty (BP):** 1♂, Orete Forest, Te Puia Hut, 240m, 25 I 1993, J.W. Early, podocarp-broadleaf forest, yellow pan trap (AMNZ); 1♂ (slide-mounted), Papatea, NZMS 260 Y14 386806, 22 X 1992–25 I 1993, J.W. Marris, R.M. Emberson, pit trap, podocarp-broadleaf forest (LUNZ); 1♂, Upper Kaimai, 26 XII 1943, leaf mould, A.E. Brookes collection (NZAC); **Coromandel (CL):** 1♂, Moehau Ra, Mist Trust main ridge, 200m, 27 VI–18 VII 1999, Y. Forbes, Kanuka-broadleaf-rata forest, malaise trap L7169 (AMNZ); **Taupo (TO):** 1♀, Whirinaki Forest Park, Arohaki Lagoon tr, 500m, 38°40.82’S 176°40.032’E, 21 XI 2005, mixed broadleaf forest incl. *Belischmidia tawa*, FMHD#2005-024, litter, A. Newton, M. Thayer et al., ANMT site 1147 (FMNH); **Waikato (WO):** 1♂, Mahaukura tr, Mt. Pirongia, 18 XI 2005, J. Nunn (JTN).

Diagnosis. This species is separated from other species of group 26 by flat ventral projecting temporal lobe and smaller genitalia, <0.2 mm.

Description. Length 2.5–2.7 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 87a). *Head.* Male head triangular, widest across temples (Figure 87a). Ventral aspect of temple of male head projecting and flattened. Antennomere 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus reaching posterior margin of eyes. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 87a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of patches of microtrichia. *Aedeagus.* Male genitalia small, <0.2 mm (Figure 87c). Median lobe subquadrate (Figure 87c). Phallobase of median lobe symmetrical and subquadrate (Figure 87c). Paramere symmetrical and divided shallowly (Figure 87c).

Distribution. Bay of Plenty (BP), Coromandel (CL), Taupo (TO), Waikato (WO) (Figure 88: black circles).

Habitat. Specimens of this species were collected using malaise, pitfall traps, or by sifting leaf litter in broadleaf and podocarp forests.

***Sagola* sp. nov. 11-2**

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Mt Horokaka 518m Tangihua Ra 16 Aug 1977 J.S. Dugdale”, “moss and liverworts 77/96”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from other species of group 26 by the concave ventral projecting temporal lobe and larger genitalia, >0.3 mm.

Description of male. Length 2.8 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 87b). *Head.* Male head triangular, widest across temples (Figure 78b). Ventral aspect of temple of male head projecting and concave. Antennomere 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus reaching posterior margin of eyes. Eye small, approximately one-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 78b). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of patches of microtrichia. *Aedeagus.* Male genitalia larger, >0.3 mm (Figure 78d). Median lobe rectangular (Figure 78d). Phallobase of median lobe symmetrical and triangular (Figure 78d). Paramere symmetrical and divided broadly (Figure 78d).

Distribution. Northland (ND) (Figure 88: triangle).

Habitat. The holotype and only known specimen of this species was collected in moss and liverworts.

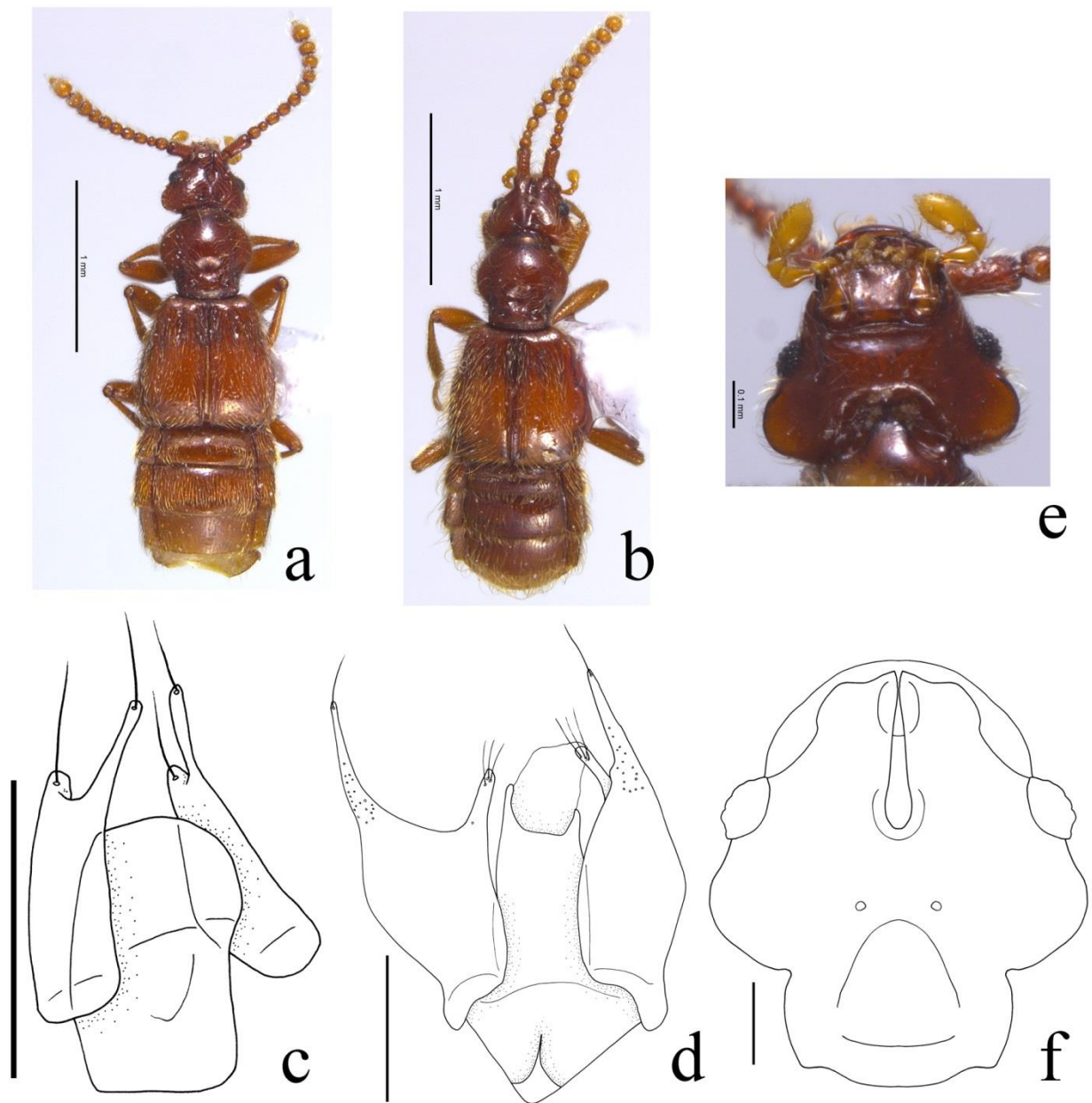


Figure 87. Habitus of group 26, dorsal views. a) *Sagola* sp. nov. 11-1; b) *S.* sp. nov. 11-2; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S.* sp. nov. 11-1; d) *S.* sp. nov. 11-2; Scale bars = 0.1 mm. Male *S.* sp. nov. 11-1. e) ventral head; f) dorsal head. Scale bars = 0.1 mm.

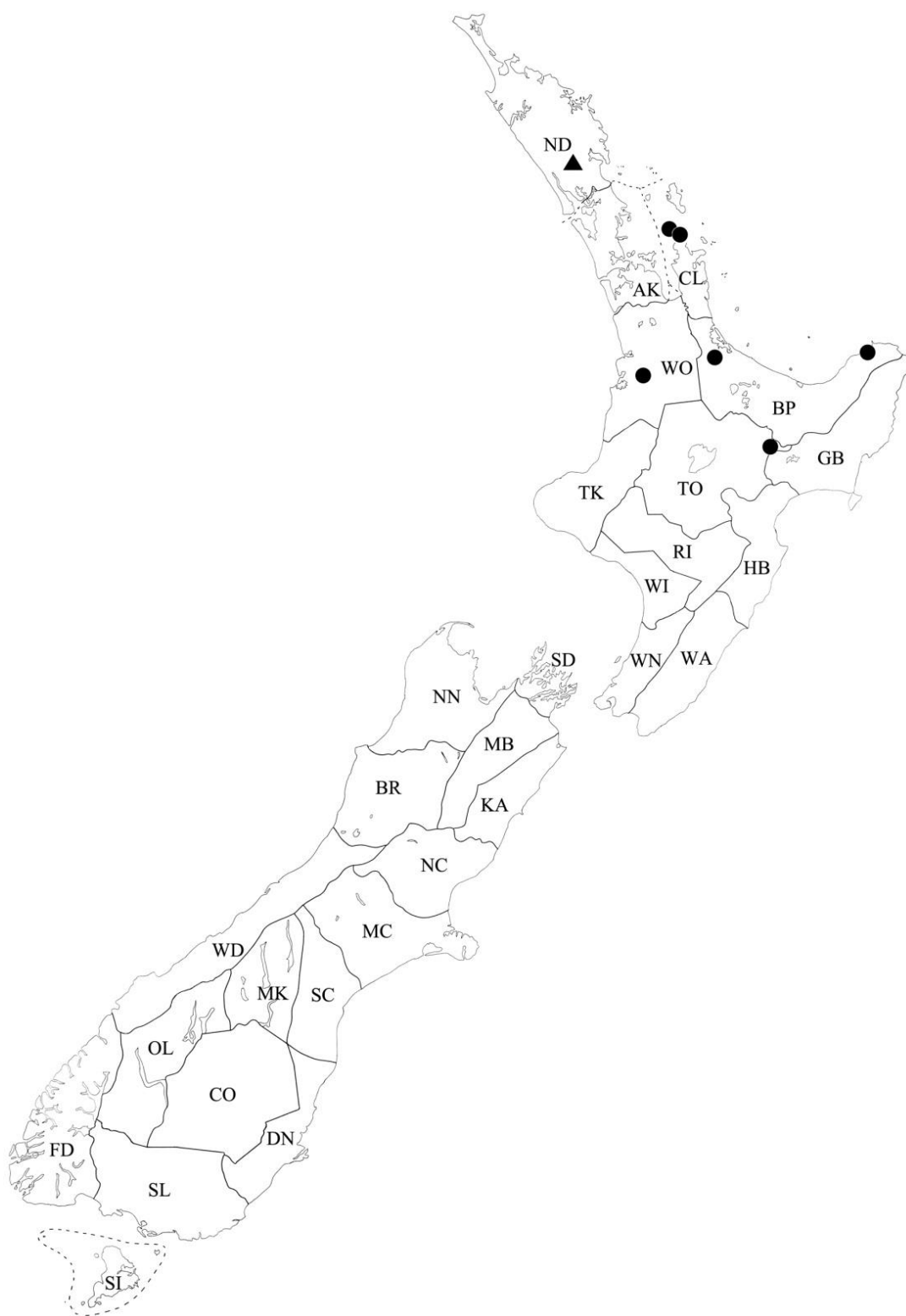


Figure 88. Locations where *Sagola* sp. nov. 11-1 and *S. sp. nov. 11-2* specimens have been collected in New Zealand. *S. sp. nov. 11-1*: black circles; *S. sp. nov. 11-2*: triangle.

Group 27 (6 species)

Key to species of *Sagola* group 27

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Frontal sulcus exceeding eyes; posterior frontal fovea elongate..... *Sagola triregia* Théry and Leschen
- 1'. Frontal sulcus reaching midpoint of eye; posterior frontal fovea oval.....2
- 2 (1). Fore-trochanter with acute triangular process (Figure 89m); male abdominal ventrite VIII with a pair of small processes.....*S. major* Sharp
- 2'. Fore-trochanter round; male abdominal ventrite VIII simple.....3
- 3 (2). Temporal lobe of ventral surface of head with pointy process; only known from Three Kings Island (Figure 90: black square).....*S. sp. nov.* 67-1
- 3'. Temporal lobe of ventral surface of head concave; known from North Island or South Island.....4
- 4 (3). Smaller size, length 1.5–1.7 mm (Figure 89e); antennomere 4 subquadrate; paramere narrower than median lobe of genitalia (Figure 89k).....*S. sp. nov.* 78-1
- 4'. Larger size, length >1.8 mm; antennomere 4 longer than wide; paramere broader than median lobe of genitalia.....5
- 5 (4). Median lobe of genitalia with rectangular process dorsally (Figure 89j); paramere widest at middle with setae from apex to midpoint (Figure 89j); only known from Auckland of North Island (Figure 90: star)*S. sp. nov.* 78
- 5'. Median lobe of genitalia without process, but divided vertically (Figure 89l); paramere widest at base with setae at tip (Figure 89l); known from South Island.....*S. sp. nov.* 91-2

Diagnosis. The members of group 27 may be separated from other *Sagola* by the following combination of characters: body small, length 1.5–2.8 mm; male head triangular, widest across temples (Figure 89n) and female head blunt triangular, widest across eyes; temple of male head depressed and projecting ventrally (Figures 89o–t); male neck with ventral patch of dense setae at tip (Figures 89o–t); male hind wings fully developed; abdominal tergites IV–VI with discal carinae; genitalia robust and convex (Figures 89g–l).

Sagola major Sharp

Sagola major Sharp, 1874: 507. Broun, 1880: 135. Schaufuss, 1888: 84. Raffray, 1893: 18; 1904: 497; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola elongata Broun, 1893b: 1423. Raffray, 1904: 498; 1911: 6. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola longipes Broun, 1915: 287. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Sagola mimica Broun, 1893b: 1419. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Sagola ruficeps Broun, 1893b: 1053. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: ♂, glued on rectangular card, “Type” [red label, printed]; “N. Zeal.” [white label, printed]; “Sharp. Coll. 1905-313.” [white label, printed]; “Sagola major ♂ Type. D.S.” [white label, handwritten]. **Holotype of *Sagola elongata*. New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “2472.” [white label, handwritten]; “Karaka.” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Sagola. elongata” [white label, handwritten]. **Holotype of *Sagola longipes*. New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “3702.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Woodhill. Waitakerei.” [white label, handwritten]; “Sagola longipes ♀.” [white label, handwritten]. **Holotype of *Sagola mimica*. New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “2467.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Hunua. Clevedon.” [white label, handwritten]; “Sagola mimica” [white label, handwritten]. **Syntypes of *Sagola ruficeps*. New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “1882.” [white label, handwritten]; “♀” [white label, handwritten]; “Hunua. Clevedon.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]; “Sagola ruficeps” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. ♂, glued on rectangular card, “1882.” [white label, handwritten]; “♂” [white label, handwritten]; “Hunua. Clevedon.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922-482.” [white label, printed]. 1♂, glued on rectangular card, “1882.” [white label, handwritten]; “N. Zealand. 93-56.” [white label, printed]; “*Sagola ruficeps* Broun” [white label, handwritten].

Additional Material (n= 25; 14 males, 14 female). New Zealand: Northland (ND): 1♂, Pekarau, Mangonui, A.E. Brookes, 24 III 1918; **Wellington (WN):** 13♂♂14♀♀ (1♂, slide-mounted), Waikawa Beach, 18 III 1990.

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body length 2.5–2.8 mm; eye large and prominent, two-third length of temple; ventral temple of male head with depressed and projecting temporal lobe and surface flattened; male fore-trochanter with pointy triangular process; male abdominal ventrites VIII with a pair of small processes; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.5–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 89a). *Head.* Male head triangular, widest across temples (Figure 89a). Female head blunt triangular, widest across eyes. Ventral temple of male head with depressed and projecting temporal lobe and surface flattened (Figure 89o). Antennomere 1 approximately 2.5 times longer than wide, 2–7 longer than wide, 8–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye. anterior frontal fovea oval, partially covered by frontal rostrum. Posterior frontal fovea oval. Eye large and prominent, two-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male fore-trochanter with pointy triangular process. Elytra rectangular (Figure 89a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, female absent. Male abdominal ventrites VIII with a pair of small processes. *Aedeagus.* Median lobe of genitalia broader apically with tube from tip (Figure 89g). Phallobase of median lobe symmetrical and rounded (Figure 89g). Paramere symmetrical broader than median lobe with setae from tip to midpoint (Figure 89g).

Type locality. New Zealand (specific locality not mentioned).

Distribution. Auckland (AK), Northland (ND), Wellington (WN) (Figure 90: black circles).

Habitat. Unknown.

Comments. Specimens of *Sagola major* can be separated from those of other species by shape of antennomeres, large eye, ventral temple of male head depressed and projected, surface flat; male fore-trochanter with pointy triangular process; male abdominal ventrites VIII a pair of small processes. The type specimens of *S. elongata*, *S. longipes*, *S. mimica* and *S. ruficeps* share these diagnostic character. For these reasons, I have placed *S. elongata*, *S. longipes*, *S. mimica* and *S. ruficeps* in synonymy with *S. major*.

Sagola triregia Théry and Leschen

Sagola triregia Théry and Leschen, 2013: 45.

Type Material. Paratype. New Zealand: ♀, glued on rectangular card, “NEW ZEALAND, TH Great Is, Tasman Valley along Tasman Stm 10 Nov 2008” [white label, printed]; “sifting leaf litter and rotten wood” [white label, printed]; “T. Buckley, R. Leschen TH053 34°09.733/172°08.610” [white label, printed]; “Paratype *Sagola triregia* Théry & Leschen 2012” [blue label, printed].

Additional Material (n= 97; 30 males, 67 females). New Zealand: Three Kings Islands (TH): 1♂1♀, Great I, Bald Hill, sifted litter 99/27, 13 IV 1999, T.K. Crosby; 1♂3♀♀, Great I, sifted litter 99/25, 13 IV 1999, T.K. Crosby; 2♂♂8♀♀, South West I, summit, 25 XI 1983, J.C. Watt, sifted litter 83/126; 1♂1♀, South West I, 26 XI 1983, J.C. Watt, litter 83/128; 2♂♂1♀, North East I, summit, 1 XII 1983, J.C. Watt, litter and humus 83/114; 1♀, South West I, 200m, 21–21 XI 1985, M. Potter, litter 85/81; 11♂♂21♀♀, Castaway Camp, 29 XI 1970, G.W. Ramsay, litter; 4♂♂10♀♀, South West Island, 1 XII 1970, G. Kuschel, litter 70/237; 2♂♂3♀♀, Tasman Valley, 26 XI 1970, J.C. Watt, litter 70/223; 1♂, Castaway Camp, 80m, 16 XI 1970, G. Kuschel, litter 70/188; 1♂, South West Is, 1 XII 1970, G.W. Ramsay, litter 70/240; 5♀♀, Castaway Camp, 85m, 16 XI 1970, G. Kuschel, litter 70/190; 2♀♀, Castaway Camp, 85m, 16 XI 1970, G. Kuschel, litter 70/191; 1♀, Castaway Camp, 85m, 12 XI 1970, G. Kuschel, litter 70/183; 1♀, Tasman Valley, 25 XI 1970, G. Kuschel, litter 70/215; 4♂♂9♀♀, South West I, summit ridge, 13 I 1951, E.G. Turbott, leaf litter under puka forest.

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body length 2.4–2.6 mm; eye one-half length of temple; ventral temple of male head with depressed and projecting temporal lobe and surface flattened; shapes of antennomeres and genitalia unique to species; only known from Three Kings Island.

Redescription. Length 2.4–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 89b). *Head.* Male head triangular, widest across temples (Figure 89b). Female head blunt triangular, widest across eyes. Ventral temple of male head with depressed and projecting temporal lobe and surface flattened (Figure 89p). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus shallow, bit exceed eye. Anterior frontal fovea round, partially covered by frontal rostrum. Posterior frontal fovea elongate. Eye prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 89b), female subquadrate. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, female absent. *Aedeagus.* Median lobe of genitalia funnel-shaped with round

process at middle (Figure 89h). Phallobase of median lobe symmetrical and rounded (Figure 89h). Paramere symmetrical with setae at tip and midpoint (Figure 89h).

Type locality. Three Kings Islands (TH), New Zealand.

Distribution. Three Kings Islands (TH) (Figure 90: triangle).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 67-1

Type Material. Holotype. New Zealand: Three Kings Islands (TH): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: TH: Castaway Camp 29 XI 1970, G.W. Ramsay Litter 70/234”. **Paratypes (7 males):** New Zealand: Three Kings Islands (TH): 7♂♂, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body length 2.2–2.4 mm; eye one-half length of temple; ventral temple of male head with depressed and weakly projecting temporal lobe and surface bearing small process; a pair of thick and dense setae bearing from gular depression; shapes of antennomeres and genitalia unique to species; only known from Three Kings Islands.

Description of male. Length 2.2–2.4 mm. Body, antennae, legs, maxillary palpi, elytra, paler (Figure 89c). *Head.* Head blunt triangular, widest across eyes (Figure 89c). Ventral temple of male head with depressed and weakly projecting temporal lobe and surface bearing small process (Figure 89q). A pair of thick and dense setae bearing from male gular depression. Antennomere 1 approximately 2 times longer than wide with dull surface, 2 longer than wide, 3–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea oval, partially covered by frontal rostrum. Posterior frontal fovea oval. Eye prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 89c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia rectangular with tube from tip (Figure 89i). Phallobase of median lobe symmetrical and rounded (Figure 89i). Paramere symmetrical broader than median lobe with setae from tip to midpoint (Figure 89i).

Distribution. Three Kings Islands (TH) (Figure 90: black square).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 78

Type Material. Holotype. New Zealand: Auckland (AK): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND AK Bethells Matuku Reserve 23 Jun 1987 R.C. Craw”, “Sifted rotten wood 87/9”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 4; 3 males, 1 female):** New Zealand: Auckland (AK): 1♂, same data as holotype (NZAC); 1♂1♀, Matuku Reserve, 45m, 6.5km w Waitakere end of Jonker’s Road, 2–5 IV 2010, L. Masner, yellow pan traps (DSC); 1♂, Waitakere Ra, Karekare, 14 II 2000, Wasp Survey, malaise trap (AMNZ).

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body length 1.8–2.0 mm; eye large, two-third length of temple; ventral temple of male head with depressed and projecting temporal lobe and surface concave; shapes of antennomeres and genitalia unique to species; only known from Auckland.

Description. Length 1.8–2.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 89d). *Head.* Male head triangular, widest across temples (Figure 89d). Female head

blunt triangular, widest across eyes. Ventral temple of male head with depressed and projecting temporal lobe and surface concave (Figure 89r). Thick and dense setae bearing from male gular depression. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea oval, partially covered by frontal rostrum. Posterior frontal fovea oval. Eye large and prominent, two-third length of temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 89d). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, female absent. *Aedeagus*. Median lobe of genitalia broader apically with long process dorsally and membranous tube from tip (Figure 89j). Phallobase of median lobe symmetrical and rounded (Figure 89j). Paramere symmetrical broader than median lobe with setae from tip to midpoint (Figure 89j).

Distribution. Auckland (AK) (Figure 90: star).

Habitat. Specimens of this species were collected using yellow pan, malaise traps or by sifting rotten woods.

Sagola sp. nov. 78-1

Type Material. Holotype. New Zealand: Wellington (WN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand WN Johnson’s Hill Karori 22 IV 1991”. The original label does not mention who collect the specimen, but it is collected by J. Nunn. **Paratypes (n=2; 1 male, 1 female): New Zealand: Wellington (WN):** 1♂, Johnson’s Hill, Karori, 17 VII 1988, J. Nunn (JTN); 1♀, Johnson’s Hill, Karori, 28 II 1987, J. Nunn (JTN).

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body small, length 1.5–1.7 mm; eye large and prominent, two-third length of temple; ventral temple of male head with depressed and distinctly projecting temporal lobe and surface concave; shapes of antennomeres and genitalia unique to species; only known from Wellington.

Description. Length 1.5–1.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 89e). *Head*. Male head triangular, widest across temples (Figure 89e). Female head blunt triangular, widest across eyes. Ventral temple of male head with depressed and distinctly projecting temporal lobe and surface concave (Figure 89s). Thick and dense setae bearing from male gular depression. Antennomere 1 approximately 2 times longer than wide with dull surface, 2 longer than wide, 3–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea oval, partially covered by frontal rostrum. Posterior frontal fovea oval. Eye large and prominent, two-third length of temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 89e). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia broader apically with tube from tip (Figure 89k). Phallobase of median lobe symmetrical and rounded (Figure 89k). Paramere symmetrical and narrower with process at midpoint and setae at tip and mid process (Figure 89k).

Distribution. Wellington (WN) (Figure 90: white circle).

Habitat. Unknown.

Sagola sp. nov. 91-2

Type Material. Holotype. New Zealand: Mackenzie (MK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand MK Hooker Valley Mt Cook NP 14-

Apr-06". **Paratypes** (n=5; 3 males, 2 females): **New Zealand: Mid Canterbury (MC)**: 1♂, Mt. Ida, 3000', Naseby, 8 XI 1968, J.I. Townsend, moss 68/161 (NZAC); 1♀, Mt Hutt, 1000m, Scotts Saddle, 27 XI 1981, R.M. Emberson, litter (LUNZ); 1♀, Mt. Hutt, 11 V 2003, A.C. Eyles 2003, mountain beech litter (NZAC); **Mackenzie (MK)**: 1♂, same data as holotype (JTN); 1♂, Tasman Vly, Mt. Cook NP, 3 II 2006 (JTN).

Diagnosis. This species is separated from other species of group 27 by the following combination of characters: body length 1.9–2.1 mm; eye one-half length of temple; ventral temple of male head with depressed and projecting temporal lobe and surface weakly concave; shapes of antennomeres and genitalia unique to species; found from South Island.

Description. Length 1.9–2.1 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 89f). *Head.* Male head triangular, widest across temples (Figure 89f). Female head blunt triangular, widest across eyes. Ventral temple of male head with depressed and projecting temporal lobe and surface weakly concave (Figure 89t). Thick and dense setae bearing from male gular depression. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus shallow, reaching midpoint of eye. Anterior frontal fovea oval, partially covered by frontal rostrum. Posterior frontal fovea oval. Eye large and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 89f), female subquadrate. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, female absent. *Aedeagus.* Median lobe of genitalia divided vertically, upper lobe narrow apically (Figure 89l). Phallobase of median lobe symmetrical and rounded (Figure 89l). Paramere symmetrical broader than median lobe with setae at tip (Figure 89l).

Distribution. Mid Canterbury (MC), Mackenzie (MK) (Figure 90: white squares).

Habitat. Specimens of this species were collected by sifting leaf litter.

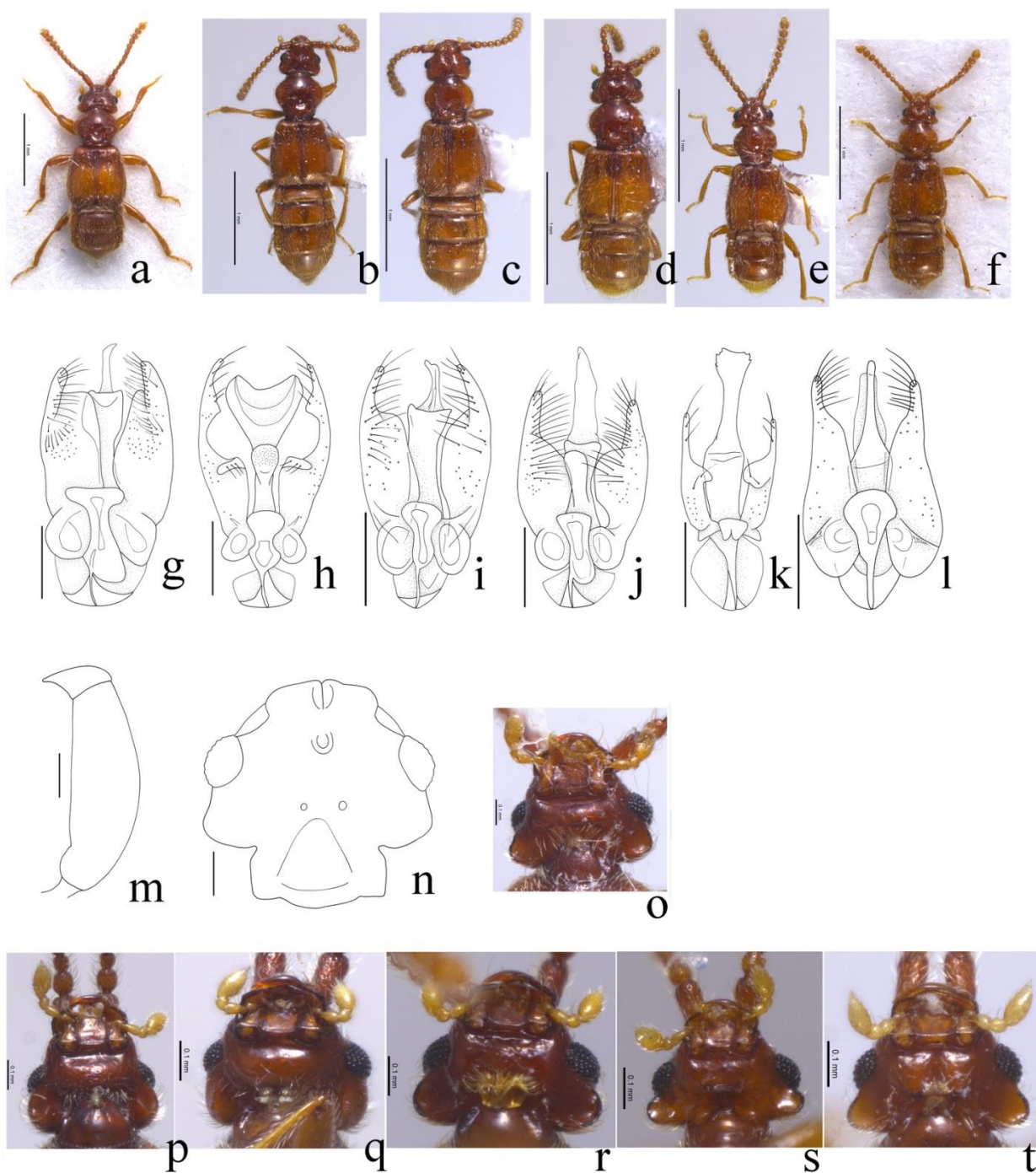


Figure 89. Habitus of group 27, dorsal views. a) *Sagola major* Sharp; b) *S. triregia* Théry and Leschen; c) *S. sp. nov.* 67-1; d) *S. sp. nov.* 78; e) *S. sp. nov.* 78-1; f) *S. sp. nov.* 91-2; Scale bars = 1 mm. Aedeagus, dorsal view. g) *S. major*; h) *S. triregia*; i) *S. sp. nov.* 67-1; j) *S. sp. nov.* 78; k) *S. sp. nov.* 78-1; l) *S. sp. nov.* 91-2; Scale bars = 0.1 mm. Male *S. major*. m) fore femur; n) dorsal head. Scale bars = 0.1 mm. Male head, ventral view. o) *S. major*; p) *S. triregia*; q) *S. sp. nov.* 67-1; r) *S. sp. nov.* 78; s) *S. sp. nov.* 78-1; t) *S. sp. nov.* 91-2. Scale bars = 0.1 mm.

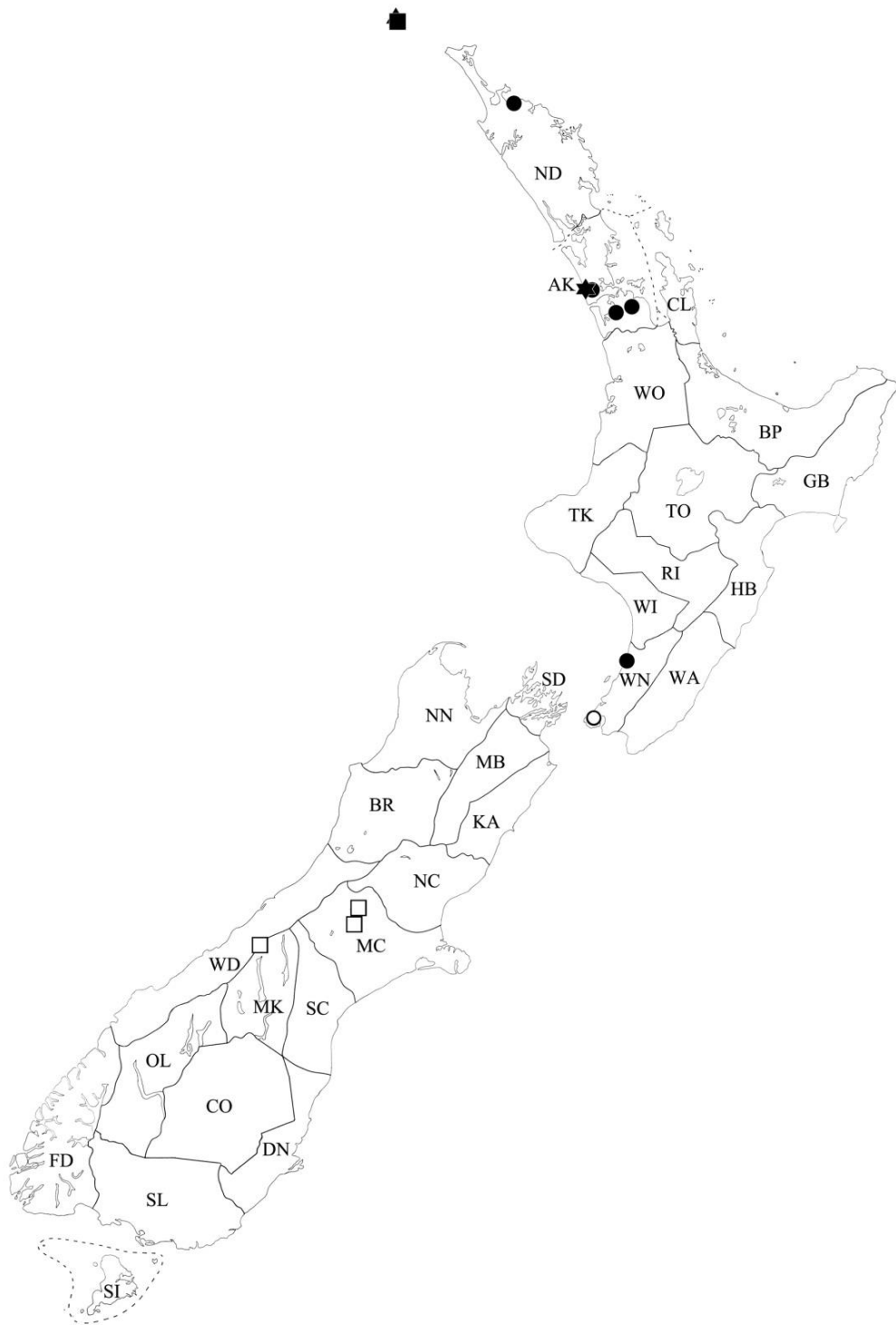


Figure 90. Locations where *Sagola major*, *S. triregia*, *S. sp. nov. 67-1*, *S. sp. nov. 78*, *S. sp. nov. 78-1* and *S. sp. nov. 91-2* specimens have been collected in New Zealand. *S. major*: black circles; *S. triregia*: triangle; *S. sp. nov. 67-1*: black square; *S. sp. nov. 78*: star; *S. sp. nov. 78-1*: white circle; *S. sp. nov. 91-2*: white squares.

Group 28 (24 species)

Key to species of *Sagola* group 28

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Anterior margin of temporal lobe depressed and L-shaped (Figures 92b, s).....2
- 1'. Anterior margin of temporal lobe straight or weakly curved.....3
- 2 (1). Apical lobe of genitalia triangular (Figure 93b); known from South Island (Figure 94: triangles).....*Sagola hectorii* Broun
- 2'. Apical lobe of genitalia round (Figure 93s); known from North Island (Figure 97: black circles).....*S. sp. nov.*84
- 3 (1). Temporal lobe of head weakly projecting, as long as eye or barely exceeding eye (Figure 93y).....4
- 3'. Temporal lobe of male head distinctly projecting, obviously exceeding eye (Figure 93z).....7
- 4 (3). Median lobe of genitalia with a pair of processes on lateral margins.....5
- 4'. Median lobe of genitalia without processes on lateral margins.....6
- 5 (4). Apical lobe of genitalia longer than wide (Figure 93c)..... *S. bipunctata* Broun
- 5'. Apical lobe of genitalia subquadrate (Figure 93f).....*S. robustula* Broun
- 6 (4). Elytra rectangular; median lobe of genitalia widest at midpoint (Figure 93g).....*S. pertinax* Broun
- 6'. Elytra subquadrate; median lobe of genitalia widest at one-third length (Figure 93k).....*S. sp. nov.*74
- 7 (3). Elytra rectangular.....8
- 7'. Elytra subquadrate.....18
- 8 (7). Median lobe of genitalia with a pair of acute processes laterally.....9
- 8'. Median lobe of genitalia without process.....14
- 9 (8). Apical lobe of genitalia with round depression tip.....10
- 9'. Apical lobe of genitalia with round or straight tip.....11
- 10 (9). Apical lobe of genitalia semicircular (Figure 93a).....*S. insignis* Broun
- 10'. Apical lobe of genitalia subquadrate (Figure 93d).....*S. angulifera* Broun
- 11 (9). A pair of acute processes of lateral margin of genitalia reaching apex of apical lobe (Figure 93m).....*S. sp. nov.*76
- 11'. A pair of acute processes of lateral margin of genitalia shorter than apex of apical lobe.....12
- 12 (11). A pair of acute processes of lateral margin of genitalia larger reaching one-third to one-fourth length of apical lobe.....13
- 12'. A pair of acute processes of lateral margin of genitalia tiny, not exceeding one-fifth length of apical lobe (Figure 93q).....*S. sp. nov.* 82
- 13 (12). Median lobe at least three times broader than paramere (Figure 93e); known from North Island (Figure 94: white circles).....*S. eminens* Broun
- 13'. Median lobe approximately twice broader than paramere (Figure 93i); known from South Island (Figure 95: black squares).....*S. laticeps* Broun
- 14 (8). Paramere with more than 10 setae at tip (Figure 93j).....*S. castanea* Broun
- 14'. Paramere with less than 5 setae at tip.....15
- 15 (14). Apical lobe of genitalia with semicircular depression at tip (Figure 93r).....*S. sp. nov.*83
- 15'. Apical lobe of genitalia without depression at tip.....16
- 16 (15). Apical lobe of genitalia rectangular (Figure 93l).....*S. sp. nov.*75

16'. Apical lobe of genitalia triangular.....	17
17 (16). Median lobe of genitalia widest at midpoint (Figure 93h).....	<i>S. monticola</i> Broun
17'. Median lobe of genitalia widest at base (Figure 93u).....	<i>S. sp. nov.</i> 84-2
18 (7). Apical lobe of genitalia with acute tip.....	19
18'. Apical lobe of genitalia with blunt tip.....	20
19 (18). Median lobe of genitalia with a pair of acute processes laterally (Figure 93n).....	<i>S. sp. nov.</i> 76-1
19'. Median lobe of genitalia without processes laterally (Figure 93p).....	<i>S. sp. nov.</i> 80-1
20 (18). Paramere triangular (Figure 93t).....	<i>S. sp. nov.</i> 84-1
20'. Paramere slender.....	21
21 (20). Apical lobe of genitalia triangular.....	22
21'. Apical lobe of genitalia rectangular.....	23
22 (21). Median lobe of genitalia widest at one-third length (Figure 93x); known from South Island.....	<i>S. sp. nov.</i> 91-1
22'. Median lobe of genitalia widest at midpoint (Figure 93o); known from North Island (Figure 96: black squares).....	<i>S. sp. nov.</i> 80
23 (21) Median lobe of genitalia widest at one-third length (Figure 93w); known from Stewart Island (Figure 97: white circles).....	<i>S. sp. nov.</i> 91
23'. Median lobe of genitalia widest at base (Figure 93v); known from North Island (Figure 97: stars).....	<i>S. sp. nov.</i> 84-3

Diagnosis. The members of group 28 may be separated from other *Sagola* by the following combination of characters: body length 2.2–3.2 mm; antennomere 1 approximately 1.5 times longer than wide; male head triangular, widest across temples (Figures 93y–z) and female head blunt triangular, widest across eyes; anterior and posterior frontal fovea present (Figures 93y–z); temples of male head depressed and projecting ventrally (Figure 92); male ventral neck with patch of long and dense setae at tip (Figure 92); female hind wings reduced to small pads; abdominal tergites IV–VI with discal carinae; genitalia broad and flattened (Figures 93a–x).

Sagola insignis Broun

Sagola insignis Broun, 1893b: 1049. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola sobrina Broun, 1893b: 1050. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 233. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: Northland (ND): ♂, glued on rectangular card, “Type” [red label, printed]; “1875.” [white label, handwritten]; “Mokohinau” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola insignis*” [white label, handwritten]. **Syntypes of *Sagola sobrina*: New Zealand: Northland (ND):** ♀, glued on rectangular card, “Type” [red label, printed]; “1877.” [white label, handwritten]; “Mokohinau” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola sobrina*” [white label, handwritten]. 1 ♀, glued on rectangular card, “1877.” [white label, handwritten]; “Mokohinau I” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 1 ♀, glued on rectangular card, “1877.♀” [white label, handwritten]; “Mokohinau I” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed].

Additional Material (n= 35; 12 males, 23 females). New Zealand: Auckland (AK): 2♂♂, Lynfield WB, 13 VI 1980, G. Kuschel; 1♀, Lynfield, 28 VIII 1976, G. Kuschel, litter; 1♂, Manurewa, Murphy's Bush, 2 V 1981, G. Kuschel, rotten wood; 1♂, 20–40m, Grafton Gully, 4 III 2001, S.E. Thorpe, bush litter; **Coromandel (CL):** 5♂♂9♀♀, The Alderman I, Ruamahua I, 40m, 6–11 XII 1994, J.W. Early, R.F. Gilbert, yellow pan trap; 1♂1♀, Little Barrier I, 3 I 1952; 1♀, Little Barrier I, 2 I 1952; **Northland (ND):** 4♂♂1♀, Mokohinau I, Trig I, 27 II 1978, G. Kuschel, litter; 2♀♀, Poor Knights I, Aorangi, ridge to Oneho Hill, 17 XI 1981, J.C. Watt, litter; 2♀♀, Poor Knights I, Tawhiti Rahi, 4 XII 1980, G. Kuschel, litter; 1♀, Poor Knights I, Aorangi, Puweto Valley, 14 XI 1981, J.C. Watt, litter; 1♀, Hen & Chickens I, Lady Alice I, I 1982, L. Roberts, litter; 1♀, Poor Knights I, Aorangi, Puweto Valley, 9–17 XI 1981, J.C. Watt, pit trap; 1♀, Poor Knights I, Aorangi, Crater Bay, 9–17 XI 1981, J.C. Watt, pit trap.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.6–2.9 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse process behind mouth parts with three patches of dense setae medially; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.6–2.9 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91a). *Head.* Male head triangular, widest across temples (Figure 91a). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92a). Ventral surface of male head with transverse process behind mouth parts with three patches of dense setae medially (Figure 92a). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91a), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus.* Median lobe of genitalia broad with three round depressions apically (Figure 93a). Phallobase of median lobe symmetrical and rounded (Figure 93a). Paramere symmetrical and slender with setae from tip to midpoint (Figure 93a).

Type locality. Mokohinau Island (ND), New Zealand.

Distribution. Auckland (AK), Coromandel (CL), Northland (ND) (Figure 94: black circles).

Habitat. Specimens of this species were collected using pitfall, yellow pan traps, or by sifting leaf litter.

Comments. Specimens of *S. insignis* can be separated from those of other species by the shapes of ventral surface of male head and antennomeres. The type specimens of *S. sobrina* share these diagnostic characters and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. sobrina* in synonymy with *S. insignis*.

Sagola hectorii Broun

Sagola hectorii Broun, 1917: 378. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola distorta Broun, 1921b: 602. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Type Material. Holotype. New Zealand: Nelson (NN): ♂, glued on rectangular card, “Type” [red label, printed]; “3829.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Belgrove. 7.11.1914.” [white label, written]; “Sagola. ♂ hectori” [white label, handwritten]. **Holotype of *Sagola distorta*. New Zealand: Wairarapa (WA):** ♂, glued on rectangular card, “4166.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Featherston. 6.10.1916.” [white label, written]; “Sagola distorta.♂” [white label, handwritten].

Additional Material (n= 8; 3 males, 5 females). New Zealand: Nelson (NN): 1♂2♀♀, Upper Maitai, 7 IV 1963, E.S. Gourlay; 1♂, Upper Maitai, 7 III 1949, E.S. Gourlay; 3♀♀, Upper Maitai, 3 V 1950, E.S. Gourlay; 1♂, Dovedale, 11 X 1963, J.I. Townsend, litter.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.8 mm; temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface; male temporal lobe with L-shaped depression anteriorly; ventral surface of male head with transverse process behind mouth parts with depression medially with setae along edge; elytra subquadrate; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.4–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91b). *Head.* Male head triangular, widest across temples (Figure 91b). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Male eye prominent, approximately one-fourth length of temple, female slightly smaller. Temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface (Figure 92b). Male temporal lobe with L-shaped depression anteriorly (Figure 92b). Ventral surface of male head with transverse process behind mouth parts with depression medially with setae along edge (Figure 92b). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91b). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe of genitalia broad with triangular head (Figure 93b). Phallobase of median lobe symmetrical and rounded (Figure 93b). Paramere symmetrical and triangular with setae from tip to midpoint (Figure 93b).

Type locality. Belgrove, near Nelson (NN), New Zealand.

Distribution. Nelson (NN) (Figure 94: triangles).

Habitat. One specimen was collected by sifting leaf litter.

Comments. Specimens of *Sagola hectorii* can be separated from those of other species by the shapes of ventral surface of male head and antennomeres. The type specimen of *S. hectorii* shares these diagnostic characters. For these reasons, I have placed *S. hectorii* in synonymy with *S. distorta*.

***Sagola bipunctata* Broun**

Sagola bipunctata Broun, 1886: 887. Raffray, 1893: 39; 1904: 498; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Sagola brevisternis Broun, 1915: 284. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola confusa Broun, 1915: 286. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola frontalis Raffray, 1893: 23; 1904: 498; 1911: 6. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola fulva Broun, 1893b: 1052. Raffray, 1904: 498; 1911: 6. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola halli Broun, 1914b: 155. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola immota Broun, 1893b: 1422. Raffray, 1911: 6; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola laetula Broun, 1915: 291. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola laminata Broun, 1893b: 1421. Raffray, 1904: 498; 1911: 6; 1924: 233. Hudson, 1923: 365; 1934: 183. Watt, 1983: 44. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola latula Broun, 1912b: 633. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola lawsoni Broun, 1912b: 632. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola osculans Broun, 1886: 885. Raffray, 1893: 36; 1904: 497; 1911: 5; 1924: 232. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: Northland (ND): ♀, glued on rectangular card, “Type” [red label, printed]; “1580.♀” [white label, handwritten]; “Whangarei” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola bipunctata” [white label, handwritten]. **Holotype of *Sagola brevisternis*: New Zealand: Mid Canterbury (MC):** ♀, glued on rectangular card, “Type” [red label, printed]; “3699.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Pudding Hill. 4.5.1912.” [white label, handwritten]; “Sagola -♀. brevisternis” [white label, handwritten]. **Holotype of *Sagola confusa*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “3701.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Hunua. Clevedon.” [white label, handwritten]; “Sagola ♂. confusa.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola frontalis*: New Zealand:** ♀, glued on rectangular card, “Bealey, New Zealand. Helms.” [white label, printed]; “Sharp. Coll. 1905-313.” [white label, printed]; “7.-” [white label, handwritten]; “Sagola. frontalis♀” [white label, handwritten]. **Holotype of *Sagola fulva*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “1881” [white label, handwritten]; “Hunua. Clevedon” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola fulva.” [white label, handwritten]. **Syntypes of *Sagola halli*: New Zealand: Mid Canterbury (MC):** 1♂, glued on rectangular card, “Type” [red label, printed]; “3518.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Pudding Hill. 4.5.1912.” [white label, handwritten]; “Sagola halli.♂.” [white label, handwritten]. 1♂, glued on rectangular card, “3518.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Pudding Hill. 4.5.1912.” [white label, handwritten]; “Sagola halli.♂.” [white label, handwritten]. 1♀, glued on rectangular card, “3518.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Pudding Hill. 4.5.1912.” [white label, handwritten]; “Sagola halli.♀.”

[white label, handwritten]. 1♀, glued on rectangular card, “3518.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Pudding Hill. 4.5.1912.” [white label, handwritten]; “Sagola halli.♀.” [white label, handwritten]. **Syntypes of *Sagola immota*: New Zealand: Auckland (AK):** 1♀, glued on rectangular card, “Type” [red label, printed]; “2470.♀” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola. immota” [white label, handwritten]. 1♀, glued on rectangular card, “2470.♀” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola. immota” [white label, handwritten]. 1♀, glued on rectangular card, “2470” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 1♀, glued on rectangular card, “Immota” [white label, handwritten]; “N. Zealand. 93–56.” [white label, printed]; “*Sagola immota* Broun” [white label, handwritten]. **Holotype of *Sagola laetula*: New Zealand: Auckland (AK):** ♂, glued on rectangular card, “Type” [red label, printed]; “3708.♂” [white label, handwritten]; “Hunua. Clevedon” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂ laetula.” [white label, handwritten]. **Syntypes of *Sagola laminata*: New Zealand: Auckland (AK):** 1♂, glued on rectangular card, “Type” [red label, printed]; “2469” [white label, handwritten]; “♂” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola. laminata” [white label, handwritten]. 1♂, glued on rectangular card, “2469.♂” [white label, handwritten]; “♂” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 1♂, glued on rectangular card, “2469.” [white label, handwritten]; “♂” [white label, handwritten]; “Hunua. Maketu.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 1♂, glued on rectangular card, “S. laminata” [white label, handwritten]; “N. Zealand. 93–56.” [white label, printed]; “Sagola laminata Broun” [white label, handwritten]. 1♂, glued on rectangular card, “2469.” [white label, handwritten]; “Sharp. Coll. 1905–313.” [white label, printed]; “Sagola laminata 2nd.auk. N.Z. Broun.” [white label, handwritten]. **Holotype of *Sagola latula*: New Zealand: Buller (BR):** ♀, glued on rectangular card, “Type” [red label, printed]; “12.” [white label, handwritten]; “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp. Coll. 1905–313.” [white label, printed]; “Sagola ♂ latula.” [white label, handwritten]. The original label indicates this specimen is a male, but it is female. **Holotype of *Sagola lawsoni*. New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Auckland, New Zealand.” [white label, printed]; “Sharp. Coll. 1905–313.” [white label, printed]; “Sagola lawsoni auckland.” [white label, handwritten]. **Holotype of *Sagola osculans*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “9576” [white label, handwritten]; “Woodhill” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola osculans” [white label, handwritten].

Additional Material (n= 170; 77 males, 93 females). New Zealand: Auckland (AK): 15♂♂13♀♀, Symonds St. Cemetery, Auckland, 40m, 23 II 2010, D.S. Chandler, sift leaf litter by stream; 17♂♂21♀♀, Murphy’s Bush, 39m, 5km ne Manukau, 19 III 2010, D.S. Chandler & K.P. Puliafico, sift litter in dry ravine; 2♂♂, Symonds St. Cemetery, Auckland, 40m, 2–6 IV 2010, L. Masner, yellow pan trap; 22♂♂26♀♀, Lynfield, 23 XI 1974–13 XI 1981, G. Kuschel, litter; 3♂♂2♀♀, Grafton Gully, 28 II 1978, litter, S. Peck; 1♂, Auckland City, Albert Park, tussock at night, 12 IV 2006, S.E. Thorpe; 1♂, Lynfield, Wattle Bay, 11 II 1977, B.A. Holloway, litter; 1♂, Grafton Gully, 5 XI 1985, R.C. Craw, litter; 1♂1♀, Hunua Ranges Reg. Park, 7km w

Kaiaua, Workman Tr, 116m, 27 III 2010, D.S. Chandler, sift stream drift piles; 1♂, 20–40m, Grafton Gully, 4 III 2001, S.E. Thorpe, litter; 1♂, Auckland City, bush under Grafton brige, sedges 15 I 2005, S.E. Thorpe; 3♀♀, Wattle Bay Res, Lynfield, 19 III 1994, J. Nunn; 1♀, Grafton Gully, 31 V 1994, J. Nunn, underside log; 3♀♀, Little Barrier I, Pohutukawa Flat, foreshore, 3 X 1975, B.M. May, litter; 2♀♀, little barrier I, upper Pohutukawa Flat, 3 X 1975, B.M. May, litter; 1♀, Grafton Gully, 26 VI 1996, J. Nunn, underside of log; 1♀, Wattle Bay, 11 X 1981, G. Kuschel, rotten wood and soil; 1♀, Wattle Bay, 24 I 1977, C.F. Butcher, pit trap; 1♀, Kepa Bush Reserve, 9 II 2010, 20m, D.S. Chandler, sift leaf litter along stream; 1♀, MacLeans Reserve, Howick, 10 II 2010, 17m, D.S. Chandler, sift rotten willow logs; **Buller (BR):** 2♂♂2♀♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap; 3♂♂ (1♂, slide-mounted), Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap; 1♂, Lake Rotoiti, 600m, 8 II 1978, S.B. Peck, J. Peck, under bark frass; 1♀, Nelson Lakes NP, Lake Rotoiti, 600m, 6 II 1978, S. Peck, J. Peck, *Nothofagus* forest, streamside litter; **Northland (ND):** 1♂, Hokianga Heads, 7 XII 1961, G. Kuschel, *Nothofagus* litter; 1♂, Kerikeri, 20 I 1972, G.W. Ramsay, litter; 2♂♂, Waipoua SF, 1km e Headquarters, 11–15 IV 1980, J.C. Watt, pitfall trap; 1♂, Above Hihi, 6 I 1969, K. Wise, juvenile Kahikatea; 10♀♀, Mangonui, 22 XI 1994, J. Nunn; 1♀, Radar Bush, Te Pahi, 4 XII 1995, J. Nunn, litter; 1♀, Waipoua Stm, 100m, 19 III 1978, S.B. Peck, litter; 1♀, Waitohue rd, route to Takahue, 8 XII 2008, R. Leschen, T. Buckley, D. Seldon, RL1387, dead wood, 35°16.049, 173°17.684; **Mid Canterbury (MC):** 1♂, Pudding Hill nr Methven, T. Hall, 12 VII 1912; 1♂, Pudding Hill nr Methven, T. Hall, 4 V 1912.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.5–2.8 mm; temporal lobe of male head weakly projecting, as long as eye with flattened ventral surface; ventral surface of male head with setose triangular process behind mouth parts; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.5–2.8 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91c). *Head.* Head bluntly triangular, widest across eyes (Figure 93y). Antennomere 1 approximately 1.5 times longer than wide, 2–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye (Figure 93y). Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round (Figure 93y). Eye large and prominent, approximately one-half length of temple (Figure 93y). Temporal lobe of male head weakly projecting, as long as eye with flattened ventral surface (Figure 92c). Ventral surface of male head with setose triangular process behind mouth parts (Figure 92c). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91c), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe of genitalia broad with a pair of small triangular processes at one-third length (Figure 93c). Phallobase of median lobe symmetrical and rounded (Figure 93c). Paramere symmetrical and slender with setae at tip and one seta at middle (Figure 93c).

Type locality. Near Whangarei Harbour (ND), New Zealand.

Distribution. Auckland (AK), Buller (BR), Northland (ND), Mid Canterbury (MC) (Figure 94: black squares).

Habitat. Specimens of this species were collected using pitfall, yellow pan, flight intercept, window traps, or by sifting leaf and wood litter.

Comments. Specimens of *S. bipunctata* can be separated from those of other species by the shapes of ventral surface of male head and antennomeres. The type specimens of *S. brevisternis*, *S. confusa*, *S. frontalis*, *S. fulva*, *S. halli*, *S. immota*, *S. laetula*, *S. laminata*, *S. latula*, *S. lawsoni* and *S. osculans* share these diagnostic characters and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. brevisternis*, *S. confusa*, *S. frontalis*, *S. fulva*, *S. halli*, *S. immota*, *S. laetula*, *S. laminata*, *S. latula*, *S. lawsoni* and *S. osculans* in synonymy with *S. bipunctata*.

Sagola angulifera Broun

Sagola angulifera Broun, 1911: 491. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. Holotype. New Zealand: Taupo (TO): ♂, glued on rectangular card, “Type” [red label, printed]; “3363.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Waimarino. Jany 1909.” [white label, handwritten]; “*Sagola* ♂ *angulifer*” [white label, handwritten].

Additional Material (n= 19; 10 males, 9 females). New Zealand: Wellington (WN): 2♂♂4♀♀, Nikau Res, Paraparaumu, 11 VI 1988, J. Nunn; 4♂♂2♀♀, Nikau Res, Paraparaumu, 2 VII 1988, J. Nunn; 2♂♂, Nikau Res, Paraparaumu, 23 VII 1988, J. Nunn; 1♂, Nikau Res, Paraparaumu, 1 V 1988, J. Nunn, leaf litter; 1♀, Nikau Res, Paraparaumu, 8 V 1988, J. Nunn; 2♀♀, Nikau Res, Paraparaumu, 25 IV 1988, J. Nunn; **Taranaki (TK):** 1♂, Potaema Walk, Mt. Egmont, 9 XII 1995, J. Nunn, forest litter.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.3–2.7 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse process behind mouth parts with three patches of long and dense setae medially; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.3–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91d). **Head.** Male head triangular, widest across temples (Figure 91d). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92d). Ventral surface of male head with transverse process behind mouth parts with three patches of long and dense setae medially (Figure 92d). **Thorax.** Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91d), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. **Abdomen.** Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. **Aedeagus.** Median lobe of genitalia broad with a pair of triangular processes apically (Figure 93d). Apical lobe with semicircular depression apically (Figure 593). Phallobase of median lobe symmetrical and rounded. Paramere symmetrical and slender with setae from tip to midpoint (Figure 93d).

Type locality. Waimarino (TO), New Zealand.

Distribution. Taranaki (TK), Taupo (TO), Wellington (WN) (Figure 94: stars).

Habitat. Specimens of this species were collected by sifting forest litter.

***Sagola eminens* Broun**

Sagola eminens Broun, 1895: 75. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Lectotype. New Zealand: Waikato (WO): 1♂, glued on rectangular card, “2724.♂.” [white label, handwritten]; “♂” [white label, handwritten]; “Tarukenga.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed].

Paratypes (2 females). New Zealand: Bay of Plenty (BP): 2♀♀, glued on rectangular card, “2724.♀.” [white label, handwritten]; “♂” [white label, handwritten]; “Tarukenga.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola eminens*” [white label, handwritten].

Additional Material (n= 76; 39 males, 37 females). New Zealand: Bay of Plenty (BP): 1♂5♀♀, Motuotua I, off Mt Maunganui, 10 XI 1972, L.R. Moran, litter; 2♂♂, Waiaroho, 26 IV 1993, G. Hall, litter; 1♂, Waiaroho, 10 III 1993, J.S. Dugdale, litter; 2♂♂, Te Koau, 243m, 24 XI 1992–31 I 1993, R.M. Emberson, pitfall trap, mixed broadleaf-podocarp forest; 2♂♂, Hicks Bay Bush, Loop tr, 6 XII, *Nothofagus* forest; 1♂, Mamaku/Kaimai Ra, Otanewainuku, 640m, 21 IX 1981, B.M. May, litter; 1♀, Te Koau, 140m, 14 III 1993, R.F. Gilbert, beneath bark of Puriri tree; 1♀, 8km from Opatiki, 20 VIII 1976, A.R. Ferguson, litter; 1♀, Rereauira Swamp, 9 III–26 IV 1993, J.S. Dugdale, pit tap; 1♀, Waiaroho, 26–29 IV 1993, G. Hall, pan traps edge of forest nr stream; 1♂, Mayor I, 14 XI 1955, J.C. Watt; **Gisborne (GB):** 4♂♂2♀♀, Urewa NP, Waikaremoana rd, s end Maranunui Ridge, 720m, 38°44.404’S 177°05.806’E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, FIT, M. Thayer, A. Solodovnikov, ANMT site 1149; 1♂1♀, Urewa NP, Ngomoko tr, pit trap fish and banana, 22 III 2000, C. Carlton, A. Weir #076; 3♂♂1♀, Te Koau, track to Hovells Watching dog, 160m, 31 I–4 II 1993, J.W. Early, Puriri/nikau forest, yellow pan trap; 1♂, Lake Waikaremoana, 17 I 1972, G.W. Ramsay, litter; 1♂, Te Urewera NP, Ngomoko tr, 11 V 2001, R. Leschen, litter; 1♀, Tapuaeroa V, Waiorongomai, 12 I 1994, J.S. Dugdale, Agaric on tewa; 1♀, Waimata V, Kaharoa Stn, 22 XI 1993–10 I 1994, G. Hall, pit traps; 2♀♀, Urewera NP, Lake Waikareiti tr, *Nothofagus* litter, 19 III 2000, C. Carlton, A. Weir, #059; 1♀, Urewera NP, Black Beech tr. at Lake Waikaremoana, rotten wood, 17 III 2000, C. Carlton, A. Weir, #048; 2♀♀, Urewera NP, Ngomoko tr, 38°47’S 176°10’E, slime flux, *Nothofagus*, 18 III 2000, C. Carlton, A. Weir #057; 1♂ (slide mounted), Urewera NP, Waikaremoana rd., s end Matanunui Ridge, 720m, 38°44.404’S 177°05.806’E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMNH#2005-118, berl., leaf & log litter, M. Thayer, A. Solodovnikov, ANMT site 1149; **Hawkes Bay (HB):** 2♂♂, Balls Clearing, 13 III 1980, C.F. Butcher, litter; **Taranaki (TK):** 5♂♂7♀♀, Mt. Egmont, 914m, 23 I 1972, G.W. Ramsay, litter; 1♂, Mt. Egmont, 946m, Dawson Falls, 14 I 1962, G. Kuschel, litter; 2♂♂, Dawson Falls, 914m, 23 I 1972, G.W. Ramsay, litter; 1♀, Mt. Messenger, 182m, 23 I 1972, G.W. Ramsay, litter; 2♂♂1♀, Mt. Egmont NP, Stratford Mtn House, 846m, 23 V 1986, C.L. Lyal, litter; **Taupo (TO):** 2♂♂5♀♀, Minginui SF, 28 VII 1977, J.S. Dugdale, litter; 1♂, Whirinaki Forest Park, Arohaki Lagoon tr, 500m, 38°40.82’S 176°40.032’E, 21 XI 2005, mixed broadleaf forest incl. *Belischmidia tawa*, FMHD#2005-024, litter, A. Newton, M. Thayer, ANMT site 1147; 1♀, Lake Rotopounamu, sw Turangi, 650m, 4–9 IV 1980, mixed broadleaf-podocarp forest, A. Newton, M. Thayer, pitfall tap; 1♀, Scenic Res Turangi, s side of Pihanga, 13 I 1972, litter, G.W. Ramsay; **Wellington (WN):** 1♂, Lake Wairarapa, 1 IX 1965, J.I. Townsend, moss; 1♂, Johnson Hill, Karori, 28 VII 1996, J. Nunn;

Waikato (WO): 1♂1♀, Maungatautari, Mainland Reserve, 15 XI 2007, S.A. Forgie, litter; 1♂, Waikato, 20 VII 1965, M. Luxton, *Leptospermum scaparium* litter.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.6–2.9 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse process behind mouth parts with three patches of dense setae medially; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.6–2.9 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91e). *Head.* Male head triangular, widest across temples (Figure 93z). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching end of eye (Figure 93z). Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round (Figure 93z). Eye prominent, approximately one-third length of temple (Figure 93z). Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92e). Ventral surface of male head with transverse process behind mouth parts with three patches of dense setae medially (Figure 92e). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91e), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe of genitalia broad with a pair of triangular processes apically (Figure 93e). Apical lobe with semicircular depression apically (Figure 93e). Phallobase of median lobe symmetrical and rounded. Paramere symmetrical and slender with setae from tip to midpoint (Figure 93e).

Type locality. Tarukenga, near Rotorua (BP) and Mount Pirongia (WO), New Zealand.

Distribution. Bay of Plenty (BP), Gisborne (GB), Hawkes Bay (HB), Taranaki (TK), Taupo (TO), Wellington (WN), Waikato (WO) (Figure 94: white circles).

Habitat. Specimens of this species were collected using pitfall, yellow pan, flight intercept, window traps, or by sifting leaf and wood litter in broadleaf, podocarp or *Nothofagus* forests.

***Sagola robustula* Broun**

Sagola robustula Broun, 1917: 377. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Sagola aemula Broun, 1921a: 496. Hudson, 1923: 366; Hudson, 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola affinis Broun, 1921a: 500. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola bipuncticeps Broun, 1921a: 499. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola cordiceps Broun, 1921a: 493. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola remixa Broun, 1921a: 502. Hudson, 1923: 366. Hudson, 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. **Lectotype of *Sagola robustula*: New Zealand: Otago Lakes (OL):** 1♂, glued on rectangular card, “Type” [red label, printed]; “3828.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed] “Hollyford. 19.2.1914.”

[white label, handwritten]; “Sagola ♂ robustula.” [white label, handwritten]. **Paratype (1 male).** **New Zealand: Otago Lakes (OL):** 1♂, glued on rectangular card, “3828.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed] “Hollyford. 19.2.1914.” [white label, handwritten]; “Sagola ♂ robustula.” [white label, handwritten]. **Syntypes of *Sagola aemula*. New Zealand: Mid Canterbury (MC):** 1♂, glued on rectangular card, “4006.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mistake. 9.10.1913.” [white label, handwritten]; “Sagola aemula.♂.” [white label, handwritten]. 1♂, glued on rectangular card, “4006.♂” [white label, handwritten]; “Mistake. 9.10.1913.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola aemula.♂.” [white label, handwritten]. 2♀♀, glued on rectangular card, “4006.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mistake. 9.10.1913.” [white label, handwritten]; “Sagola aemula.♀.” [white label, handwritten]. **Holotype of *Sagola affinis*. New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “4012.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Algidus. 25.9.1913.” [white label, handwritten]; “Sagola affinis.♂.” [white label, handwritten]. The original description indicates that the specimen collected in 25th October 1913, but I found a single specimen collected in 25th September 1913. One of them may be misspelled. **Holotype of *Sagola bipuncticeps*. New Zealand: Mid Canterbury (MC):** ♂, glued on rectangular card, “4011.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Algidus. 25.9.1913.” [white label, handwritten]; “Sagola ♂ bipuncticeps.” [white label, handwritten]. The original description indicates that the specimen collected in 25th October 1913, but I found a single specimen collected in 25th September 1913. One of them may be misspelled. **Holotype of *Sagola cordiceps*. New Zealand: Otago Lakes (OL):** ♀, glued on rectangular card, “4002” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Alfred. 9.2.1914.” [white label, handwritten]; “Sagola cordiceps” [white label, handwritten]. **Holotype of *Sagola remixta*. New Zealand: Nelson (NN):** ♂, glued on rectangular card, “4016.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Owen. 27.12.1914.” [white label, handwritten]; “Sagola ♂ remixta.” [white label, handwritten].

Additional Material (n= 32; 18 males, 14 females). New Zealand: Fiordland (FD): 2♂♂1♀, Fiordland NP, Milford Sound rd, Smithy Creek Campground area, 400m, 44°57.065’S 168°01.155’E, 9 XII 2005, *Nothofagus fusca* & *N. menziesii* open forest, FMHD#2005-089, litter, M. Thayer, A. Newton, ANMT site 1170; 1♂, Fiordland NP, Martins Bay Hut, 5 II 1980, R. Rscott; 1♂, Thicket Burn, Lake Hauroko, 3 I 1996, J. Nunn; 1♀, Lake Hauroko, Southland, 2 II 1966, J.I. Townsend, mixed moss; 4♂♂, Lake Hauroko, 13 IV 1952, R. Hornabrook; **Hawkes Bay (HB):** 1♂1♀, Waipatiki Res, 23 XII 1983, J.C. Watt, sifted woodmould; **Mid Canterbury (MC):** 1♂1♀, Mt. Algidus nr Methven, 3 XII 1913, T. Hall; **Nelson (NN):** 1♂1♀, Mouth of Karamea River, 22 VI 1967, A.K. Walker, litter; 1♂, Puponga Farm P, 7–10 II 1981, J.W. Early, Malause trap; 1♂, Karamea, 30 I 1996, J. Nunn; 2♀♀, Oparara River Mouth, 1 I 2011, J. Nunn, under drift wood after flood; 3♀♀, Lake Rotoiti, 27 VII 1965, A.K. Walker, moss; **Otago Lakes (OL):** 1♂, Makarora, 23–25 I 1978, 500m, S. Peck, J. Peck, litter with carrion; 2♀♀, Makarora, 21 I 1978, G. Kuschel, litter; **Taranaki (TK):** 1♂, Hawera, High St Swinburns, 27 XII 1976, H.P. McColl, litter; **Westland (WD):** 2♂♂, Aspiring NP, Douglas Creek at Hwy 6, 65m, 11–18 I 1985, *Nothofagus menziesii*-hdwd-podocarp forest, A. Newton, M. Thayer 738; 2♀♀, 1.5km n

Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720; 1♂, Lake Mahinapua, 6 I 1951, R. Jacob, leaf mould.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.7–3.0 mm; temporal lobe of male head weakly projecting, as long as eye with flattened ventral surface; ventral surface of male head with transverse setose process behind mouth parts; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.7–3.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91f). *Head.* Head bluntly triangular, widest across eyes (Figure 91f). Antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple. Temporal lobe of male head weakly projecting, as long as eye with flat ventral surface (Figure 92f). Ventral surface of male head with transverse setose process behind mouth parts (Figure 92f). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91f), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe of genitalia broad with a pair of triangular processes apically (Figure 93f). Apical lobe subquadrate. Phallobase of median lobe symmetrical and rounded (Figure 93f). Paramere symmetrical and slender with sparse setae from tip to middle (Figure 93f).

Type locality. Routeburn, north of Lake Wakatipu (Otago Lakes), New Zealand.

Distribution. Fiordland (FD), Hawkes Bay (HB), Mid Canterbury (MC), Nelson (NN), Otago Lakes (OL), Taranaki (TK), Westland (WD) (Figure 94: white squares).

Habitat. Specimens of this species were collected using pitfall, yellow pan, flight intercept, window traps, or by sifting leaf and wood litter in broadleaf, podocarp or *Nothofagus* forests.

Comments. Specimens of *Sagola robustula* can be separated from those of other species by the shapes of ventral surface of male head and antennomeres. The type specimens of *S. aemula*, *S. affinis*, *S. bipuncticeps*, *S. cordicep* and *S. remixta* share these diagnostic characters and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. aemula*, *S. affinis*, *S. bipuncticeps*, *S. cordicep* and *S. remixta* in synonymy with *S. robustula*.

Sagola pertinax Broun

Sagola pertinax Broun, 1893a: 176. Raffray, 1904: 497; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Type Material. Lectotype. New Zealand: Waikato (WO): 1♂, glued on rectangular card, “Type” [red label, printed]; “2720.♂.” [white label, handwritten]; “Waikato” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola pertinax*” [white label, handwritten]. **Paratypes. New Zealand: Waikato (WO):** 1♂, glued on rectangular card, “2720.♂” [white label, handwritten]; “Waikato” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola pertinax*” [white label, handwritten]. 1♀, glued on rectangular card, “2720.♀” [white label, handwritten]; “head. elytra” [white label, handwritten]; “Ohaupo. Waikato” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed].

Additional Material (3 males). New Zealand: Auckland (AK): 1♂, Hunua, Clevedon, T. Broun collection; 1♂, Rangitoto I, 8 XII 1951, moss; 1♂, Eaves Bush, Orewa, 15 II 1945, A.E. Brookes collection.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.2–2.5 mm; temporal lobe of male head weakly projecting, as long as eye with flattened ventral surface; ventral surface of male head with triangular setose process behind mouth parts; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.2–2.5 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91g). *Head.* Head bluntly triangular, widest across eyes (Figure 91g). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple. Temporal lobe of male head weakly projecting, as long as eye with flattened ventral surface (Figure 92g). Ventral surface of male head with triangular setose process behind mouth parts (Figure 92g). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91g), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe of genitalia broad with narrower rectangular apical lobe (Figure 93g). Phallobase of median lobe symmetrical and rounded (Figure 93g). Paramere symmetrical and slender with sparse setae from tip to middle (Figure 93g).

Type locality. Ohaupo, near Mr. Kusab's saw-mill (WO), New Zealand.

Distribution. Auckland (AK), Waikato (WO) (Figure 95: black circles).

Habitat. Unknown.

Sagola monticola Broun

Sagola monticola Broun, 1912a: 402. Hudson, 1923: 365; 1934: 184. Raffray, 1924: 233.

Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Type Material. One of syntypes. New Zealand: Taupo (TO): 1♂, glued on rectangular card, "Type" [red label, printed]; "3195.♂" [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Ngauruhoe. march. 1910." [white label, handwritten]; "Sagola ♂. monticola." [white label, handwritten].

Additional Material (n= 3; 2 males, 1 female). New Zealand: Bay of Plenty (BP): 1♂, Rototua, Arikikapakapa Reserve, 25 VII 1951, moss; **Taupo (TO):** 1♂1♀, Desert rd, Mangatawai, 13 I 1972, G.W. Ramsay, litter 72/1.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.7 mm; temporal lobe of male head projecting toward posterior-laterally with weakly concave ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91h). *Head.* Male head triangular, widest across temples (Figure 91h). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide,

2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-half length of temple. Temporal lobe of male head projecting toward posterior-laterally with weakly concave ventral surface (Figure 92h). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92h). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91h), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small transverse patches of microtrichia reaching middle, absent in female. *Aedeagus*. Median lobe of genitalia widest at midpoint and narrower apically (Figure 93h). Phallobase of median lobe symmetrical and rounded (Figure 93h). Paramere symmetrical and slender with sparse setae from tip to midpoint (Figure 93h).

Type locality. Mount Ngauruhoe (TO), New Zealand.

Distribution. Bay of Plenty (BP), Taupo (TO) (Figure 95: triangles).

Habitat. Specimens of this species were collected by sifting moss or leaf litter.

Sagola laticeps Broun

Sagola laticeps Broun, 1911: 490. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Type Material. Lectotype. New Zealand: Buller (BR): ♂, glued on rectangular card, “Type” [red label, printed]; “3362.♂.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Greymouth.-Lewis-” [white label, handwritten]; “*Sagola* ♂ *laticeps*.” [white label, handwritten]. The original label indicates the specimen is male, but it is female.

Additional Material (n= 29; 14 males, 15 females). New Zealand: Buller (BR): 9♂♂5♀♀, Lewis Pass NR, 11.9km ese Springs Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 715, litter; 1♂1♀, Greymouth, Grandjeans tk, 10 XI 2005, R. Leschen, S. Nomura; 1♂, 4km n of Rapahoe, 13 IX 1981, R.M. Emberson, coastal scrub and flax; 1♀, Barrytown Croesus tk, 10 XI 2005, R. Leschen, S. Nomura, rotten log; **Westland (WD):** 1♂1♀, Waiata Haast, 16 III 1968, R.A. Cumber, leaf litter; 2♀♀, Otira, Barretts Creek, 9 II 1982, C.F. Butcher, litter; 1♂2♀♀, Kelly Creek, Otira, 22 III 2009, J. Nunn, moss litter; 1♂, Otira R, 6.8km ne Otira, 280m, 18–21 III 1980, *Nothofagus fusca*-podocarp, A. Newton, M. Thayer, litter; 1♀, Doughboy Creek, 6km sw Mahitahi, 5 II 1984, J.C. Watt, wood mould; 1♀, Lake Mahinapua, 20m, 23 X 1978, J.W. Early, broadleaf-punga litter; 1♀, Arthur Pass NO, Otira, 580m, 1 III 1987, R.M. Emberson, rata-kamahi litter.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.8–3.2 mm; temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.8–3.2 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91i). *Head*. Male head triangular (Figure 91i), widest across temples. Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye

large and prominent, approximately one-half length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with flat ventral surface (Figure 92i). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92i). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91i), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus*. Median lobe of genitalia broad with a pair of triangular processes apically (Figure 93i). Phallobase of median lobe symmetrical and rounded (Figure 93i). Paramere symmetrical and slender with setae at tip and midpoint (Figure 93i).

Type locality. Greymouth (BR), New Zealand.

Distribution. Buller (BR), Westland (WD) (Figure 95: black squares).

Habitat. Specimens of this species were collected by sifting leaf, wood or moss litter in broadleaf or *Nothofagus* forests.

Sagola castanea Broun

Sagola castanea Broun, 1886: 884. Raffray, 1893: 20; 1904: 497; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Type Material. Holotype. New Zealand: Dunedin (DN): ♂, glued on rectangular card, “Type” [red label, printed]; “1573.♂.” [white label, handwritten]; “Taieri” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♂ *castanea*.” [white label, handwritten].

Additional Material (n= 39; 21 males, 18 females). New Zealand: Central Otago (CO): 1♂, Omarama, Ahuriri Valley, 762m, 23 I 1966, J.I. Townsend, moss; **Dunedin (DN):** 1♂, Allison Res, Akatore, 13 VIII 1997, J. Nunn, forest litter; **Fiordland (FD):** 1♂2♀♀, Lake Hauroko, 2 XI 1966, J.I. Townsend, litter; 1♂2♀♀, Hollyford Camp, 10 XII 1966, A.K. Walker, litter; 2♂♂, Cameron Mts, Lake Mike, 488m, 13 II 1963, J.I. Townsend, litter; 1♂1♀, Borland Lodge, 26 IX 2009, J. Nunn, moss; 2♂♂, Lake Hauroko rd, 5km e of lake, 26 IX 2009, J. Nunn, moss on trunk of fallen beech tree; 1♂, Kepler Tck start, Te Anau, 21 II 2003, J. Nunn, moss; 1♂, Lake Hauroko rd end, 19 II–22 III 2003, J. Nunn, R. Leschen, FIT; 1♂, First Bay, Lake Hauroko, 22 III–19 IV 2003, R. Leschen, J. Nunn, FIT; 1♂, Fiordland NP, Monowai Lake, 4km sw Monowai, 11 III 2010, L. Masner, yellow pan traps, *Nothofagus solandri* forest; 1♂, Fiordland NP, Milford Sound rd, Smithy Creek Campground area, 400m, 44°57.065'S 168°01.155'E, 9 XII 2005, *Nothofagus fusca* & *N. menziesii* open forest, FMHD#2005-089, litter, M. Thayer, A. Newton, ANMT site 1170; 1♀, Fiordland NP, Kepler tr, above Brod Bay, 680m, 45°24.37'S, 167°39.105'E, 11 XII 2005, *Nothofagus* forest, FMHD#2005-102, litter, A. Solodovnikov, D. Clarke, ANMT site 1177; 2♀♀, Thicket Burn, Lake Hauroko, 4 I 1996, J. Nunn, litter; 1♀, Gertrude Vly, Milford rd, 22 I 2008, J. Nunn, moss on beech tree; 1♀, Lake Te Anau, control gates, 22 I 2011, J. Nunn, red beech litter; **Otago Lakes (OL):** 1♂1♀, Paradise, 2 II 1984, J.C. Watt, wood mould; **Stewart Island (SI):** 1♂1♀, Stewart Island, 14 II 1953, R. Hornabrook; 1♀, Stewart Island, 12 IV 1953, R. Hornabrook; **Southland (SL):** 1♂2♀♀, Otatara, Otatara South Scen Res, 5m, 46°27.475'S 168°16.858'E, 12 XII 2005, coastal totara (*Podocarpus totara*) forest, FMHD#2005-103, litter, A. Newton, D. Clarke, A. Solodovnikov, ANMT site 1178; 1♀, Otatara, Otatara South Scen Res, 5m, 46°27.475'S 168°16.858'E, 12 XII 2005, coastal totara (*Podocarpus totara*) forest, FMHD#2005-104, totara logs litter, M. Thayer, ANMT site 1178; 2♂♂♀1, Papatowai Picnic Point tr, 20m, 46°33.915'S 169°28.446'E, 6 XII 2005, mixed broadleaf-

podocarp forest, FMHD#2005-077, litter, A. Newton, M. Thayer, et. al, ANMT site 1166; 1♂, Catlins, Papatown SR, 15 II–24 III 2003, R. Leschen, FIT, 46°34'S, 169°29'E; 1♂1♀, Catlins, Tahakopa Scenic Reserve, 30 I 1983, C.F. Butcher, moss and rotten wood litter.

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.8–3.1 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse setose process behind mouth parts; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.8–3.1 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91j). *Head.* Male head triangular, widest across temples (Figure 91j). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92j). Ventral surface of male head with transverse setose process behind mouth parts (Figure 92j). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91j), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus.* Median lobe of genitalia rectangular and broad (Figure 93j). Phallobase of median lobe symmetrical and rounded (Figure 93j). Paramere symmetrical and longer than median lobe with setae at tip and midpoint (Figure 93j).

Type locality. West Taieri bush (DN), New Zealand.

Distribution. Central Otago (CO), Dunedin (DN), Fiordland (FD), Otago Lakes (OL), Stewart Island (SI), Southland (SL) (Figure 95: stars).

Habitat. Specimens of this species were collected by sifting leaf, wood or moss litter in broadleaf, podocarp or *Nothofagus* forests.

Sagola sp. nov. 74

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card “NEW ZEALAND ND Ruakaka 22 Jan 1977 C.F. Butcher”, “Pit trap in pasture”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (1 female): New Zealand: Northland (ND):** 1♀, Waipoua SF, 24 XI 1980, G. Kuschel, mats on roadside (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.6 mm; temporal lobe of male head projecting and exceeding eye with flattened ventral surface; ventral surface of male head with triangular setose process behind mouth parts; elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Northland.

Description. Length 2.4–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91k). *Head.* Male head triangular, widest across temples (Figure 91k). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple. Temporal lobe of male head

projecting and exceeding eye with flattened ventral surface (Figure 92k). Ventral surface of male head with triangular setose process behind mouth parts (Figure 92k). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91k). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small round patches of microtrichia reaching middle, absent in female. *Aedeagus*. Median lobe of genitalia widest at one-third length with long rectangular apical lobe (Figure 93k). Phallobase of median lobe symmetrical and rounded (Figure 93k). Paramere symmetrical and slender with sparse setae from tip to midpoint (Figure 93k).

Distribution. Northland (ND) (Figure 95: white circles).

Habitat. Specimens of this species were collected using pitfall traps in pasture, or by sifting mats on roadsides.

Sagola sp. nov. 75

Type Material. Holotype. New Zealand: Coromandel (CL): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND CL Mercury Is Green I 11-23 Dec 1987 G. Hall”, “Pit traps under *Coprosma*”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 151; 70 males, 81 females): New Zealand: Coromandel (CL):** 12♂♂, same data as holotype (NZAC); 2♂♂3♀♀, Ohena I, 25 XI 1972, G.W. Ramsay, litter 72/236 (NZAC); 2♂♂1♀, Ohenga I, Koruenga I, 27 XI 1972, G.W. Ramsay, litter 72/247 (NZAC); 3♂♂1♀, Ohena I, G.W. Ramsay, 25 XI 1972, litter 72/233 (NZAC); 13♂♂20♀♀, Ohena I, 25 XI 1972, S.W. Ramsay, litter 72/235 (NZAC); 3♂♂1♀, Mercury I, Korapuke I, 28 XI 1972, G.W. Ramsay, litter 72/249 (NZAC); 4♂♂3♀♀, Mercury I, Stanley I, 24 XI 1972, G. Ramsay, litter 72/225 (NZAC); 4♂♂4♀♀, Mercury I, Middle I, 21 XI 1972, G.W. Ramsay, litter 72/214 (NZAC); 3♂♂14♀♀, Mercury I, Middle I, 21 XI 1972, G.W. Ramsay, litter 72/212 (NZAC); 1♂3♀♀, Mercury I, Stanley I, 23 XI 1972, G.W. Ramsay, 72/220 (NZAC); 2♂♂1♀, Mercury I, Korapuke I, 28 XI 1972, G.W. Ramsay, litter 72/254 (NZAC); 1♂1♀, Mercury I, Korapuka I, 28 XI 1972, G.W. Ramsay, litter 72/253 (NZAC); 1♂1♀, Mercury I, 24 XI 1972, G.W. Ramsay, litter 72/227 (NZAC); 1♂1♀, Mercury I, Korapuke I, 28 XI 1972, G.W. Ramsay, litter 72/252 (NZAC); 1♀, Mercury I, Korapuke I, 28 XI 1972, G.W. Ramsay, litter 72/249 (NZAC); 6♂♂6♀♀, Mercury I, Korapuki I, 16 XII 1987, G. Hall, rotten wood litter (NZAC); 6♂♂13♀♀, Mercury I, Middle I, 19 II 1984, G. Hall, litter (NZAC); 3♂♂3♀♀, Mercury I, Middle I, 20 X 1983, I. Southey, litter (NZAC); 1♂1♀, Mercury I, Middle I, 16–19 II 1984, G. Hall, pit trap (NZAC); 1♂, Mercury I, Middle I, 23 XII 1987, G. Hall, litter (NZAC); 1♂3♀♀, Ohinau I, 5 XII 2000, C. McGuinness, pit trap (AMNZ).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.3–2.6 mm; temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Coromandel of North Island.

Description. Length 2.3–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91l). *Head*. Male head triangular, widest across temples (Figure 91l). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-half length of temple.

Temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface (Figure 92l). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92l). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91l). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus*. Median lobe of genitalia rectangular (Figure 93l). Phallobase of median lobe symmetrical and rounded (Figure 93l). Paramere symmetrical and slender with setae at tip and one seta at midpoint (Figure 93l).

Distribution. Coromandel (CL) (Figure 95: white squares).

Habitat. Specimens of this species were collected using pitfall traps, or by sifting moss, wood or leaf litter.

Sagola sp. nov. 76

Type Material. Holotype. New Zealand: Coromandel (CL): ♂, “NEW ZEALAND CL Cuvier I Radar Point 27 Feb 1982 G.Hall”, “Litter 8two-third7”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 41; 24 males, 17 females): New Zealand: Coromandel (CL):** 1♀, same data as holotype (NZAC); 2♀♀, Cuvier I, Shooters Ridge, 2 III 1982, G. Hall, litter (NZAC); 1♂, Cuvier I, 25 II–2 III 1982, G. Hall, pan trap in ferns and bracken (NZAC); 14♂♂8♀♀, Cuvier I, Old Radar Station, 200m, 10–18 XI 1999, J.W. Early, S.E. Thorpe, yellow pan trap in Grassy clearing (AMNZ); 3♂♂1♀, Cuvier I, Landing Bay, 0m, 11–13 XI 1999, J.W. Early, S.E. Thorpe, yellow pan trap, base of *Phormium tenax* (AMNZ); 4♀♀, Cuvier I, Wilson Peak, 100m, 13–18 XI 1999, J.W. Early, S.E. Thorpe, coastal Pohutukawa forest, yellow pan trap (AMNZ); 3♂♂, Cuvier I, Old Radar Station, 180m, 29 III–5 IV 2000, J.W. Early, R.F. Gilbert, forest edge, malaise trap (AMNZ); 2♂♂, Cuvier I, Ridge Track, 120m, 29 III–6 IV 2000, J.W. Early, R.F. Gilbert, forest edge, malaise trap (AMNZ); 1♂, Cuvier I, West Ridge, 160m, 29 III–6 IV 2000, J.W. Early, R.F. Gilbert, Manuka scrub, yellow pan trap (AMNZ); 1♀, Cuvier I, Ridge Track, 100m, 10–18 XI 1999, J.W. Early, S.E. Thorpe, yellow pan trap (AMNZ).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.6 mm; temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface; ventral surface of male head with blunt process behind mouth parts and round setose depression; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species; known from Coromandel.

Description. Length 2.4–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91m). *Head*. Male head triangular, widest across temples (Figure 91m). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface (Figure 92m). Ventral surface of male head with bluntly process behind mouth parts and round setose depression (Figure 92m). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91m), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus*. Median lobe of

genitalia broad with a pair processes apically, reaching tip of apical lobe (Figure 93m). Phallobase of median lobe symmetrical and rounded (Figure 93m). Paramere symmetrical and slender with sparse setae at tip to midpoint (Figure 93m).

Distribution. Coromandel (CL) (Figure 96: black circle).

Habitat. Specimens of this species were collected using yellow pan, malaise traps, or by sifting leaf litter.

Sagola sp. nov. 76-1

Type Material. Holotype. New Zealand: Northland (ND): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND:ND, Poor Knights Islands Tawhiti Rahi, Main Track, XII-182009 TB270, T.R. Buckley, R. Leschen, D. Seldon sift flood debris”.

Paratypes (n=20; 15 males, 5 females): New Zealand: Northland (ND): 5♂♂4♀♀, same as holotype (DSC); 3♂♂, Poor Knights I, Aorangi, ridge to Oneho Hill, 17 XI 1981, J.C. Watt, litter (NZAC); 2♂♂, Poor Knights I, Aorangi, Puweto Valley, 14 XI 1981, J.C. Watt, litter; 2♂♂, Poor Knights I, Tawhiti Rahi, Shag Bay, 40m, 20 IX 1980, J.C. Watt, litter (NZAC); 2♂♂, Poor Knights I, Tawhiti Rahi, 4 XII 1980, G. Kuschel, litter (NZAC); 1♂1♀, Poor Knights I, Tawhiti Rahi, Shag Bay, 30m, 12 IX 1980, J.C. Watt, litter (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.7 mm; temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface; ventral surface of male head with transverse process behind and round setose depression; elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Poor Knights Islands of Northland.

Description. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91n). *Head.* Male head triangular, widest across temples (Figure 91n). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface (Figure 92n). Ventral surface of male head with transverse process behind mouth parts and round setose depression (Figure 92n). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91n). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patch of microtrichia. *Aedeagus.* Median lobe of genitalia broad with a pair of triangular processes apically, apical lobe triangular (Figure 93n). Phallobase of median lobe symmetrical and rounded (Figure 93n). Paramere symmetrical and slender with sparse setae at tip and midpoint (Figure 93n).

Distribution. Northland (ND) (Figure 96: triangle).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 80

Type Material. Holotype. New Zealand: Taupo (TO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: Tongariro N.P., Mangawhero R. Rd. near Ohakune, S. Slope of Mt. Ruapehu TO”, “Forest litter berlese at FIT 4, 10 Mar 2000 C

Carlton, A Weir, #034”. **Paratypes (5 females): New Zealand: Waikato (WO):** 2♀♀, Mahoenui, Gribbons rd, 26 VI 1977, G.W. Ramsay, litter (NZAC); 1♀, Mahoenui, Gribbons rd,

26 VI 1977, N.H. Mancer, litter (NZAC); 2♀♀, nr Waitomo, Mathers rd, Fred Catchment, 23 V 1983, litter (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.6 mm; temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species.

Description. Length 2.4–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91o). *Head.* Male head triangular, widest across temples (Figure 91o). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-fourth length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface (Figure 92o). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92o). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91o). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patch of microtrichia. *Aedeagus.* Median lobe of genitalia widest at middle with flat apical margin (Figure 93o). Phallobase of median lobe symmetrical and rounded (Figure 93o). Paramere symmetrical and slender with sparse setae at tip and midpoint (Figure 93o).

Distribution. Taupo (TO), Waikato (WO) (Figure 96: black squares).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 80-1

Type Material. Holotype. New Zealand: Waikato (WO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND WO Mt Karioi near base 11 Oct 1981 C.F. Butcher”, “Litter 81/96”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 6; 4 male, 2 females): New Zealand: Waikato (WO):** 1♂1♀, same data as holotype (NZAC); 1♂, Mt. Karioi, 11 Oct 1981, C.F. Butcher, litter 81/95 (NZAC); 2♂♂1♀, Piripiri, Caves Reserve, 25 V 1986, C.L. Lyal, leaf litter CL480 (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.5–2.7 mm; temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species; known from Waikato of North Island.

Description. Length 2.5–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91p). *Head.* Male head triangular, widest across temples (Figure 91p). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching end of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface (Figure 92p). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of

dense setae (Figure 92p). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91p). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV without patch of microtrichia. *Aedeagus*. Median lobe of genitalia widest at middle with triangular apically (Figure 93p). Phallobase of median lobe symmetrical and rounded (Figure 93p). Paramere symmetrical and slender with sparse setae at tip and midpoint (Figure 93p).

Distribution. Waikato (WO) (Figure 96: stars).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 82

Type Material. Holotype. New Zealand: Bay of Plenty (BP): ♂, “NEW ZEALAND BP Rurima Rocks 23 Nov 1983 I. McFadden Litter (3B)”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratype (n=26; 7 males, 19 females): New Zealand: Bay of Plenty (BP):** 3♂♂8♀♀, same data as holotype (NZAC); 1♂, Rurima Rocks, 21 V 1986, I. McFadden, 86/9 (NZAC); 3♂♂, Rurima Rocks, 23 XI 1983, I. McFadden, litter (NZAC); 5♀♀, Rurima Rocks, 7 X 1983, I. McFadden, litter (NZAC); 5♀♀, Rurima Ricks, 9 VII 1987, I. McFadden, litter 87/16 (NZAC); 1♀, Rurima Rocks, 19 IV 1985, I. McFadden, litter 85/38 (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.3–2.6 mm; temporal lobe of male head projecting, little exceeding eye with weakly concave ventral surface; ventral surface of male head with triangular setose process behind mouth parts; elytra subquadrate; shapes of antennomeres and genitalia unique to species; known from Bay of Plenty.

Description. Length 2.3–2.6 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91q). *Head*. Male head triangular, widest across temples (Figure 91q). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-third length of temple. Temporal lobe of male head projecting, slightly exceeding eye with weakly concave ventral surface (Figure 92q). Ventral surface of male head with triangular setose process behind mouth parts (Figure 92q). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91q). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus*. Median lobe of genitalia broad with a pair of small triangular processes apically, apical lobe with flat margin (Figure 93q). Phallobase of median lobe symmetrical and rounded (Figure 93q). Paramere symmetrical and slender with sparse setae from tip to midpoint (Figure 93q).

Distribution. Bay of Plenty (BP) (Figure 96: white circle).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 83

Type Material. Holotype. New Zealand: Bay of Plenty (BP): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, BP Orete Forest Te Puia Hut Bush 15 Sep 1992 G. Hall &”, “R.C. Henderson Sifted litter 92/50”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 3; 2 males, 1 female):**

New Zealand: Taupo (TO): 2♂♂1♀, Ahimanawa Ra, 609m, 14 I 1972, G.W. Ramsay, litter 72/10 (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.5–2.7 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse process behind mouth parts and round setose depression; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Description. Length 2.5–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91r). *Head.* Male head triangular, widest across temples (Figure 91r). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92r). Ventral surface of male head with transverse process behind mouth parts and round setose depression (Figure 92r). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91r), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus.* Median lobe of genitalia broad with semicircular depression apically (Figure 93r). Phallobase of median lobe symmetrical and rounded (Figure 93r). Paramere symmetrical and slender with sparse setae from tip to midpoint (Figure 93r).

Distribution. Bay of Plenty (BP), Taupo (TO) (Figure 96: white squares).

Habitat. Specimens of this species were collected mostly by sifting leaf litter.

Sagola sp. nov. 84

Type Material. Holotype. New Zealand: Wairarapa (WA): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand WA Castlehill / Haunui area. SE Pukeroi Ra March 2010” The Original label does not indicate who collected the holotype, but it was collected by J. Nunn. **Paratypes (n=6; 3 males, 3 females): New Zealand: Wairarapa (WA):** 1♂2♀♀, same data as holotype (JTN); **Wellington (WN):** 1♂, Wilton’s Bush, 110m, 41°15.963’S 175°45.159’E, 24 XI 2005, mixed broadleaf-podocarp forest, FMHD#2005-030, litter, M. Thayer, A. Newton, ANMT site 1150 (FMNH); **Rangitikei (RI):** 1♂1♀, Utiku, Main Trunk Line, J. Ford, 27 VII 1917 (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.2–2.4 mm; temporal lobe of male head distinctly projecting, exceeding eye with C-shaped ventral surface; male temporal lobe with L-shaped depression anteriorly; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species.

Description. Length 2.2–2.4 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91s). *Head.* Male head triangular, widest across temples (Figure 91s). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 subquadrate, 3–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male

head distinctly projecting, exceeding eye with C-shaped ventral surface (Figure 92s). Male temporal lobe with L-shaped depression anteriorly (Figure 92s). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92s). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91s), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus*. Median lobe of genitalia widest at middle with round apical lobe (Figure 93s). Phallobase of median lobe symmetrical and rounded (Figure 93s). Paramere symmetrical and triangular setae from tip to midpoint (Figure 93s).

Distribution. Rangitikei (RI), Wairarapa (WA), Wellington (WN) (Figure 97: black circles).

Habitat. One specimen was collected by sifting forest litter in broadleaf and podocarp forests.

Sagola sp. nov. 84-1

Type Material. Holotype. New Zealand: Marlborough (MB): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, "NEW ZEALAND: MB: Pelorus Bridge, 25 VII 1967 G. Kuschel, litter 67/220". **Paratypes (n=10; 8 males, 2 females):** New Zealand: Buller (BR): 2♂♂, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 670m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 706, FIT&window trap (DSC, FMNH); 2♂♂2♀♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap (FMNH); **Nelson (NN):** 1♂, 20km ne Takaka, Tasman NP, 21 V 1982, FMHD#2005-591, mixed forest litter, S. Peck (FMHD); **Marlborough Sounds (SD):** 3♂♂, Outer Cherwode I, (Te Kakaho), 11–16 II 1988, M.H. Bowie, yellow pan trap in shoreline vegetation (LUNZ).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.6–3.0 mm; temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species.

Description. Length 2.6–3.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91t). *Head*. Male head triangular, widest across temples (Figure 91t). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with flattened ventral surface (Figure 92t). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92t). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91t). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV with a pair of small round patches of microtrichia or absent, always absent in female. *Aedeagus*. Median lobe of genitalia broad with triangular apical lobe (Figure 93t). Phallobase of median lobe symmetrical and rounded (Figure 93t). Paramere symmetrical and triangular with setae from tip to midpoint (Figure 93t).

Distribution. Buller (BR), Marlborough (MB), Nelson (NN), Marlborough Sounds (SD) (Figure 97: triangles).

Habitat. Specimens of this species were collected using window, yellow pan traps, or by sifting leaf litter in *Nothofagus* forests or shoreline.

Sagola sp. nov. 84-2

Type Material. Holotype. New Zealand: Taranaki (TK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand TK Patea Walk Mt Egmont 8.12.95”, “In forest litter”. The Original label does not indicate who collected the holotype, but it was collected by J. Nunn. **Paratypes (n=4; 1 male, 3 females): New Zealand: Taranaki (TK):** 1♂, Mt. Egmont, 914m, 23 I 1972, G.W. Ramsay, litter 72/67 (NZAC); 3♀♀, White Cliffs Tck, Mt. Messenger, 20 III 1994, J. Nunn (JTN).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.6–3.0 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; male elytra rectangular, subquadrate in female; shapes of antennomeres and genitalia unique to species; only known from Mt. Egmont in Taranaki of North Island.

Description. Length 2.6–3.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91u). *Head.* Male head triangular, widest across temples (Figure 91u). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–7 longer than wide, 8–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye large and prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92u). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92u). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 91u), subquadrate in female. Male meso- and metathorax trapezoidal, longer than wide, female as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of transverse patches of microtrichia, absent in female. *Aedeagus.* Median lobe of genitalia gourd-shaped (Figure 93u). Phallobase of median lobe symmetrical and rounded (Figure 93u). Paramere symmetrical and slender with setae from tip to midpoint (Figure 93u).

Distribution. Taranaki (TK) (Figure 97: black squares).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 84-3

Type Material. Holotype. New Zealand: Waikato (WO): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND WO Mahoenui Gribbons Road 26 Jun 1977 G.W. Ramsay”, “Litter 77/81”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=4; 2 males, 2 females): New Zealand: Taranaki (TK):** 1♂, Mt. Messenger, III 1933, A.E. Brookes, (NZAC); **Taupo (TO):** 1♂, Waituki Saddle, 1 IX 1993, J. Nunn, leaf litter (JTN); **Waikato (WO):** 2♀♀, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.7–3.0 mm; temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface; ventral surface of male head with

transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species.

Description. Length 2.7–3.0 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91v). *Head.* Male head triangular, widest across temples (Figure 91v). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea oval. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with concave ventral surface (Figure 92v). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92v). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91v). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV with a pair of small round patches of microtrichia, absent in female. *Aedeagus.* Median lobe of genitalia broad and rectangular (Figure 93v). Phallobase of median lobe symmetrical and rounded (Figure 93v). Paramere symmetrical and slender with sparse setae from tip to two-third level (Figure 93v).

Distribution. Taranaki (TK), Taupo (TO), Waikato (WO) (Figure 97: stars).

Habitat. Specimens of this species were collected by sifting leaf litter.

Sagola sp. nov. 91

Type Material. Holotype. New Zealand: Stewart Island (SI): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: SI: Codfish IS nr summit, 244m, 14XII1966 J.I.Townsend, litter 66/443”. **Paratypes (n=24; 10 males, 14 females):** New Zealand: Stewart Island (SI): 1♂2♀♀, Codfish I, North Hut tr, 6 XII 1981, S.A. Holloway, litter 81/207 (NZAC); 2♂♂3♀♀, Pegasus Creek, 24 II 1968, G. Kuschel, litter 68/64 (NZAC); 5♂♂1♀, Pegasus Creek, 24 II 1968, G. Kuschel, litter 68/63 (NZAC); 1♂1♀, ne Big Cape O, 91m, 22 II 1969, J.S. Townsend, moss 69/83 (NZAC); 1♀, Codfish I, Upper Valley tr, 27 XI 1981, B.A. Holloway, litter 81/197 (NZAC); 1♀, Codfish I, Summit tk, 250m, 30 XI 1981, B.A. Holloway, litter 81/199 (NZAC); 1♀, Codfish I, Upper Miro tr, 1 XII 1981, B.A. Holloway, litter 81/200 (NZAC); 1♀, Garden Mound tr, 113m, 21 I 2007, R. Leschen, T. Buckley, K. Marske, log fogging (NZAC); 1♂2♀♀, Stewart Island, 14 II 1953, R. Hornabrook (NZAC).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.6–2.9 mm; temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface; ventral surface of male head with transverse setose process behind mouth parts; elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Stewart Island.

Description. Length 2.6–2.9 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91w). *Head.* Male head triangular, widest across temples (Figure 91w). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round. Eye prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with weakly concave ventral surface (Figure 92w). Ventral surface of male head with transverse setose process behind mouth parts (Figure 92w). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91w). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV

without patch of microtrichia. *Aedeagus*. Median lobe of genitalia broad with transverse apical lobe (Figure 93w). Phallobase of median lobe symmetrical and rounded (Figure 93w). Paramere symmetrical and slender with sparse setae from tip to midpoint (Figure 93w).

Distribution. Stewart Island (SI) (Figure 97: white circles).

Habitat. Specimens of this species were collected mostly by sifting leaf and moss litter, and one from log fogging.

Sagola sp. nov. 91-1

Type Material. Holotype. New Zealand: Marlborough Sounds (SD): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, SD Stephens Island Keepers Bush 18-20.ii.1994 J.W.M. Marris”, “pitfall trap in *Melicytus*, *Myoporum*, *Rhopalostylis* forest”. **Paratypes (n=10; 5 male, 5 females):** New Zealand: Marlborough Sounds (SD): 5♂♂4♀♀, same data as holotype (LUNZ); 1♀, Middle Trio Island, 15 II 1995, J.W.M. Marris, LUNZ 95/6 litter ex *Melicytus*/broadleaf forest (LUNZ).

Diagnosis. This species is separated from other species of group 28 by the following combination of characters: body length 2.4–2.7 mm; temporal lobe of male head distinctly projecting, exceeding eye with C-shaped ventral surface; ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae; elytra subquadrate; shapes of antennomeres and genitalia unique to species; only known from Marlborough Sounds.

Description. Length 2.4–2.7 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 91x). *Head*. Male head triangular, widest across temples (Figure 91x). Female head bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2–3 subquadrate. 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye. Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea oval. Eye large and prominent, approximately one-third length of temple. Temporal lobe of male head distinctly projecting, exceeding eye with C-shaped ventral surface (Figure 92x). Ventral surface of male head with transverse process behind mouth parts and round depression bearing three patches of dense setae (Figure 92x). *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 91x). Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Male abdominal tergite IV without patch of microtrichia. *Aedeagus*. Median lobe of genitalia broad with blunt triangular apical lobe (Figure 93x). Phallobase of median lobe symmetrical and rounded (Figure 93x). Paramere symmetrical and slender with setae at tip and midpoint (Figure 93x).

Distribution. Marlborough Sounds (SD) (Figure 97: white squares).

Habitat. Specimens of this species were collected using pitfall traps in *Melicytus*, *Myoporum*, *Rhopalostylis* forests, and one by sifting leaf litter in *Melicytus*/broadleaf forests.

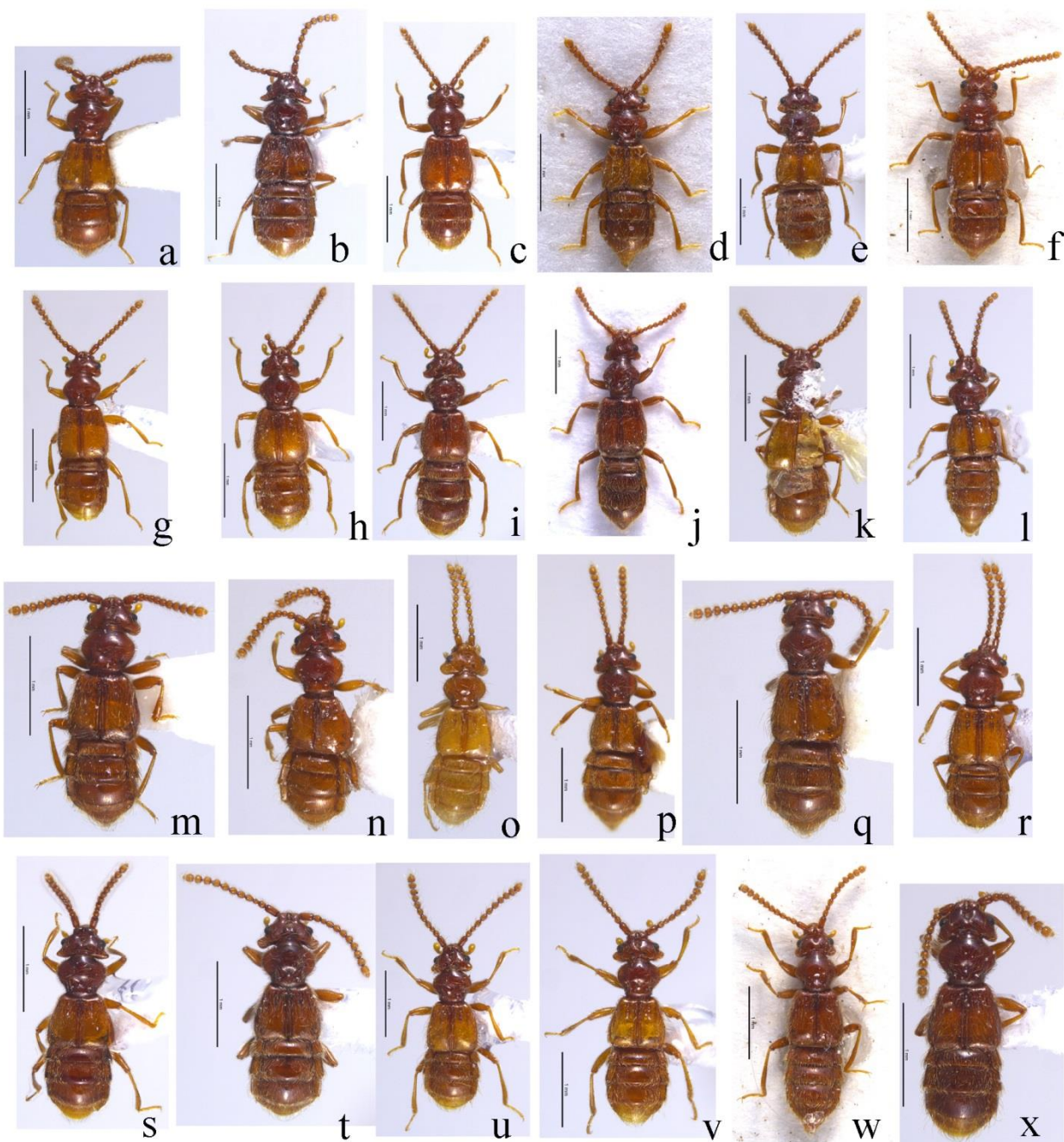


Figure 91. Habitus of group 28, dorsal views. a) *Sagola insignis* Broun; b) *S. hectorii* Broun; c) *S. bipunctata* Broun; d) *S. angulifera* Broun; e) *S. eminens* Broun; f) *S. robustula* Broun; g) *S. pertinax* Broun; h) *S. monticola* Broun; i) *S. laticeps* Broun; j) *S. castanea* Broun; k) *S. sp. nov. 74*; l) *S. sp. nov. 75*; m) *S. sp. nov. 76*; n) *S. sp. nov. 76-1*; o) *S. sp. nov. 80*; p) *S. sp. nov. 80-1*; q) *S. sp. nov. 82*; r) *S. sp. nov. 83*; s) *S. sp. nov. 84*; t) *S. sp. nov. 84-1*; u) *S. sp. nov. 84-2*; v) *S. sp. nov. 84-3*; w) *S. sp. nov. 91*; x) *S. sp. nov. 91-1*; Scale bars = 1 mm.

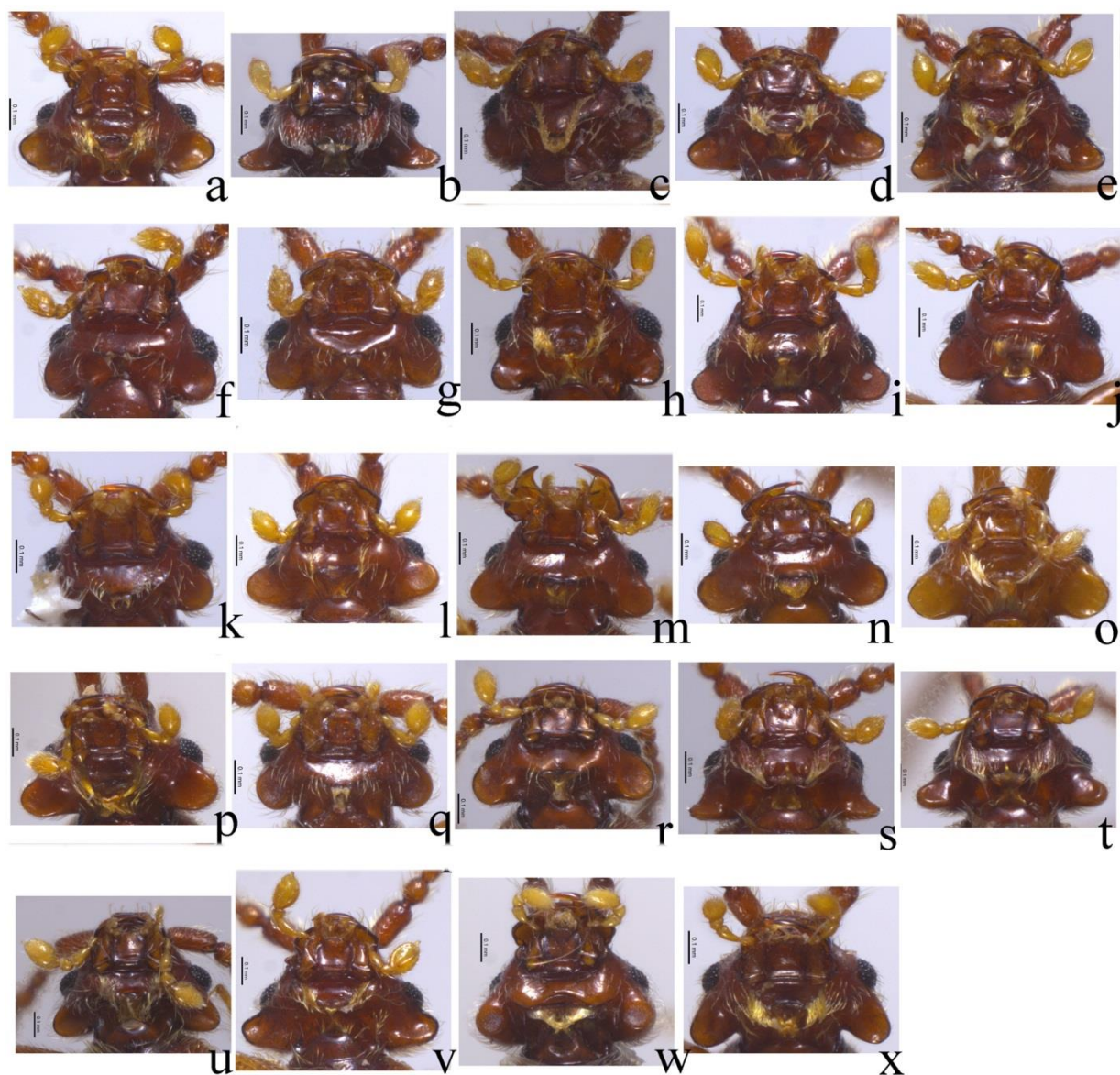


Figure 92. Ventral head of group 28, dorsal views. a) *Sagola insignis* Broun; b) *S. hectorii* Broun; c) *S. bipunctata* Broun; d) *S. angulifera* Broun; e) *S. eminens* Broun; f) *S. robustula* Broun; g) *S. pertinax* Broun; h) *S. monticola* Broun; i) *S. laticeps* Broun; j) *S. castanea* Broun; k) *S. sp. nov. 74*; l) *S. sp. nov. 75*; m) *S. sp. nov. 76*; n) *S. sp. nov. 76-1*; o) *S. sp. nov. 80*; p) *S. sp. nov. 80-1*; q) *S. sp. nov. 82*; r) *S. sp. nov. 83*; s) *S. sp. nov. 84*; t) *S. sp. nov. 84-1*; u) *S. sp. nov. 84-2*; v) *S. sp. nov. 84-3*; w) *S. sp. nov. 91*; x) *S. sp. nov. 91-1*; Scale bars = 0.1 mm.

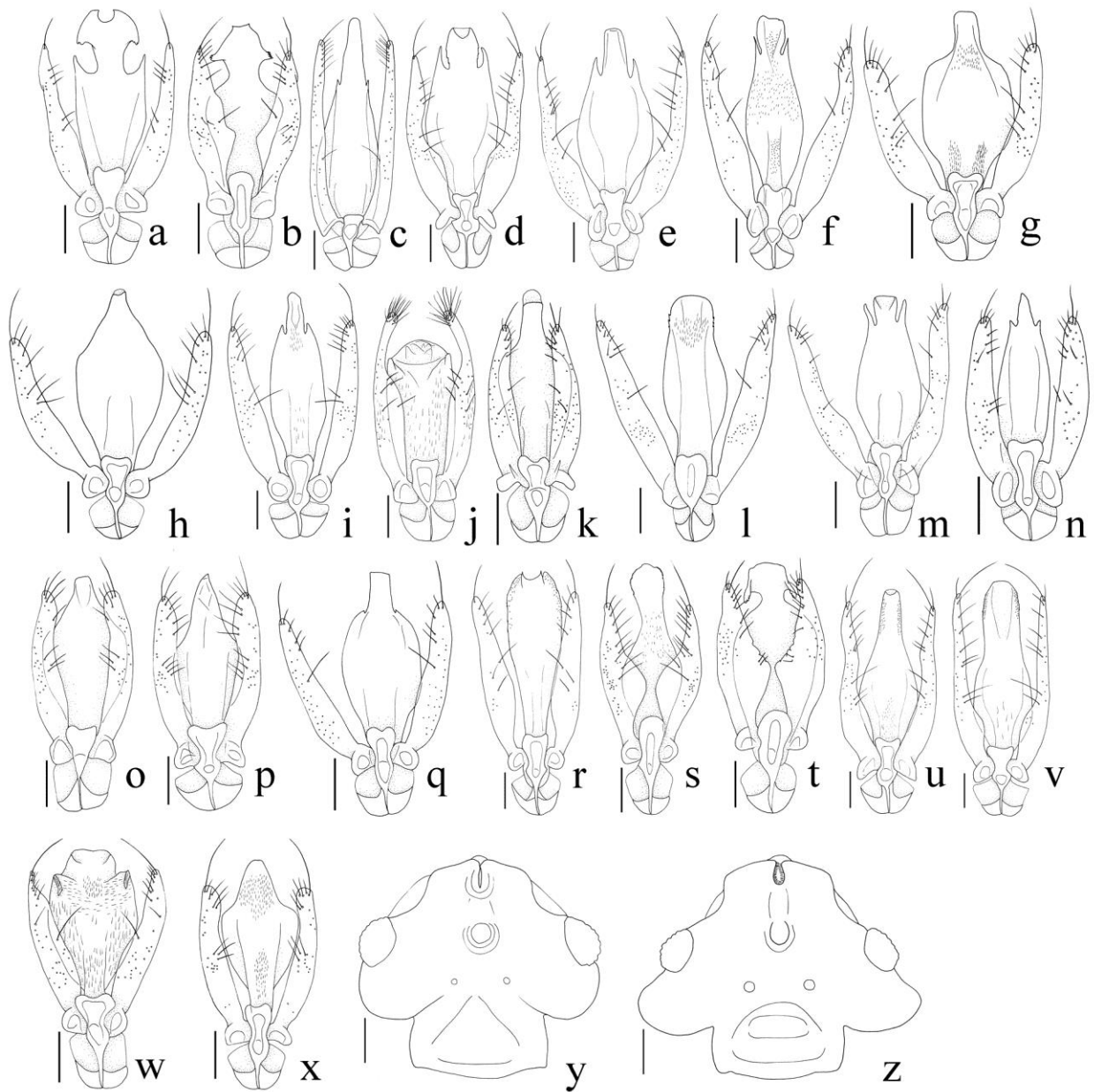


Figure 93. Aedeagus of group 28, dorsal views. a) *Sagola insignis* Broun; b) *S. hectorii* Broun; c) *S. bipunctata* Broun; d) *S. angulifera* Broun; e) *S. eminens* Broun; f) *S. robustula* Broun; g) *S. pertinax* Broun; h) *S. monticola* Broun; i) *S. laticeps* Broun; j) *S. castanea* Broun; k) *S. sp. nov.* 74; l) *S. sp. nov.* 75; m) *S. sp. nov.* 76; n) *S. sp. nov.* 76-1; o) *S. sp. nov.* 80; p) *S. sp. nov.* 80-1; q) *S. sp. nov.* 82; r) *S. sp. nov.* 83; s) *S. sp. nov.* 84; t) *S. sp. nov.* 84-1; u) *S. sp. nov.* 84-2; v) *S. sp. nov.* 84-3; w) *S. sp. nov.* 91; x) *S. sp. nov.* 91-1; y) dorsal head of male *S. bipunctata*; z) dorsal head of male *S. eminens*; Scale bars = 0.1 mm.

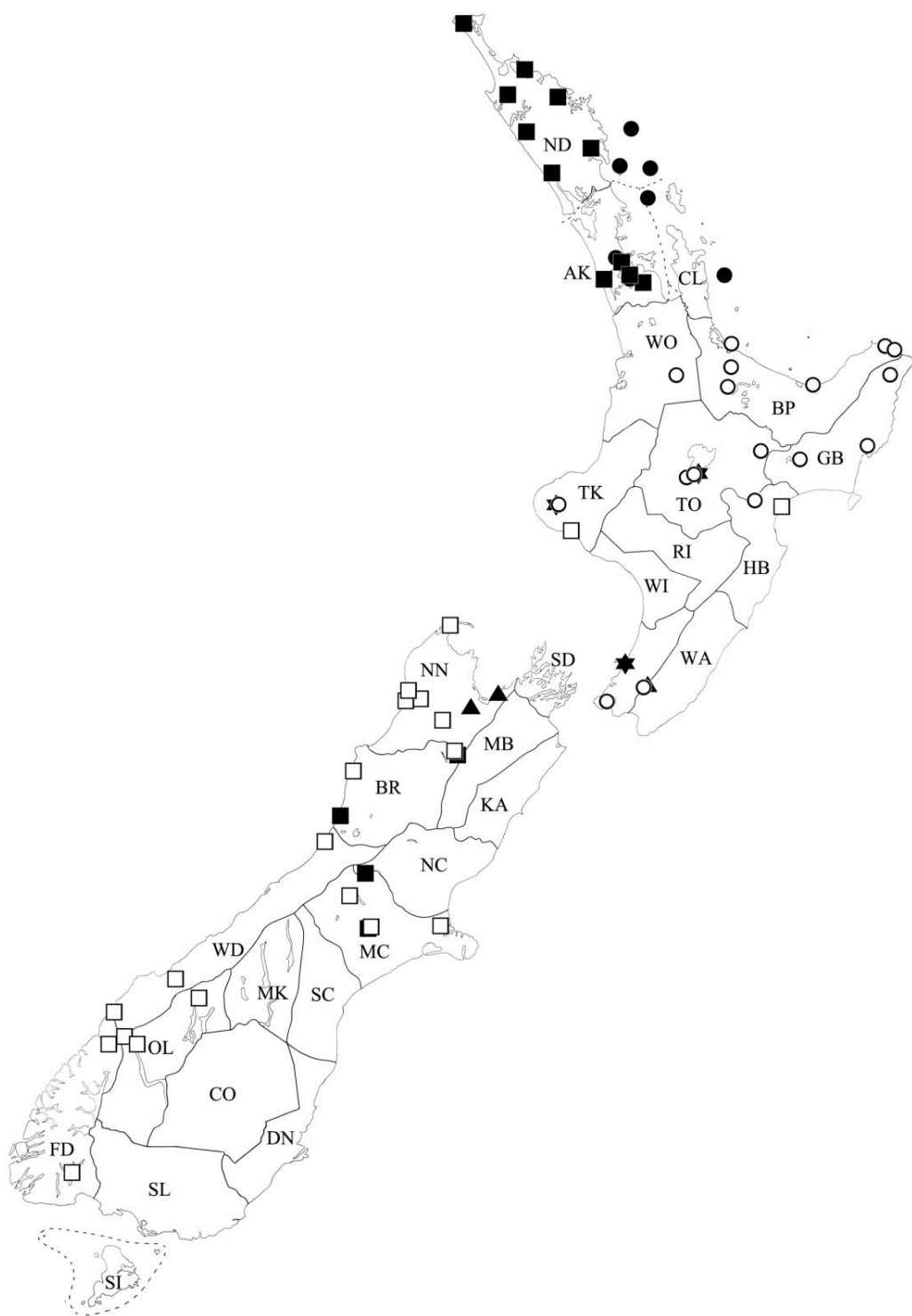


Figure 94. Locations where *Sagola insignis*, *S. hectorii*, *S. bipunctata*, *S. angulifera*, *S. eminens* and *S. robustula* specimens have been collected in New Zealand. *S. insignis*: black circles; *S. hectorii*: triangles; *S. bipunctata*: black squares; *S. angulifera*: stars; *S. eminens*: white circles; *S. robustula*: white squares.

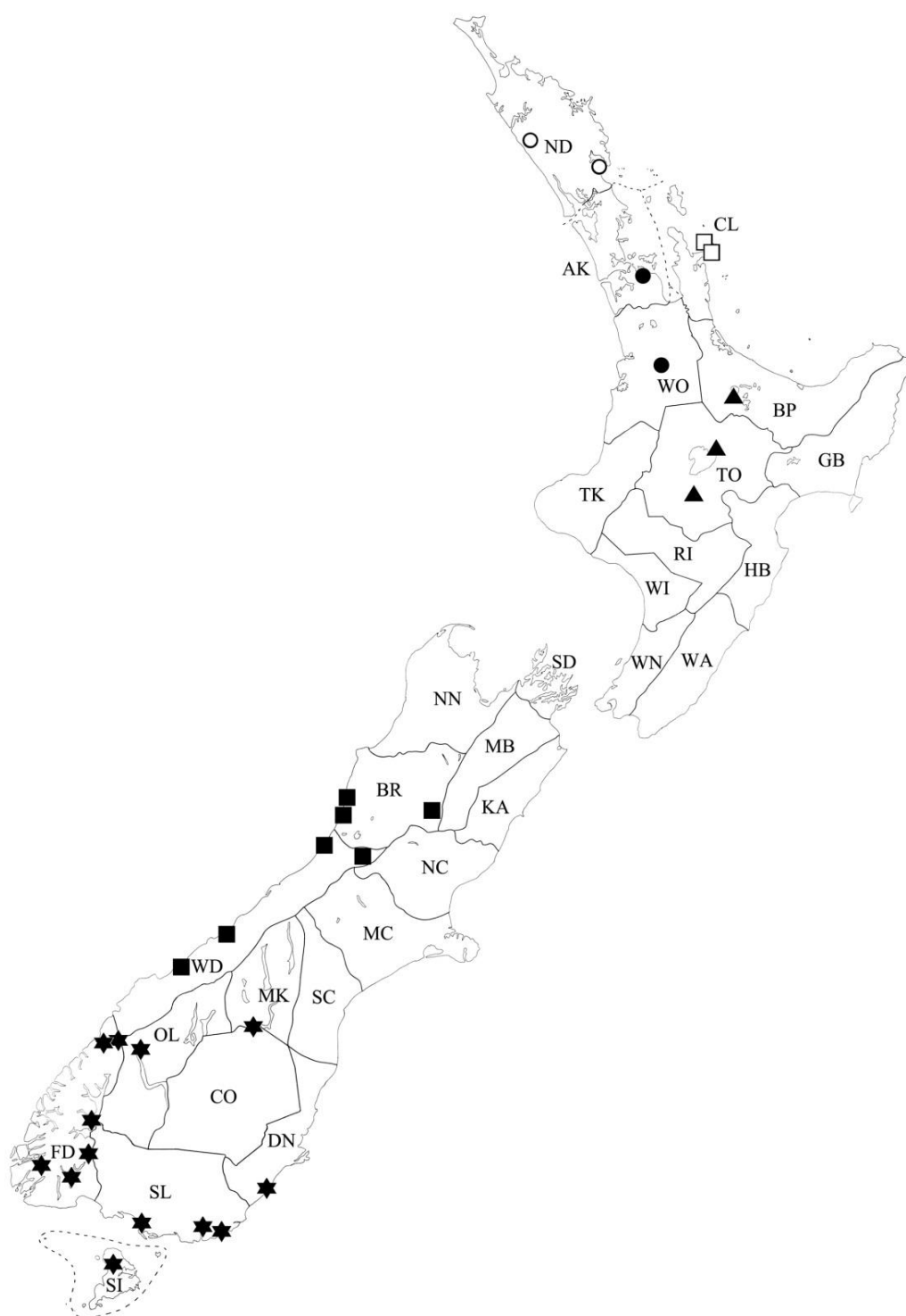


Figure 95. Locations where *Sagola pertinax*, *S. monticola*, *S. laticeps*, *S. castanea*, *S. sp. nov. 74* and *S. sp. nov. 75* specimens have been collected in New Zealand. *Sagola pertinax*: black circles; *S. monticola*: triangles; *S. laticeps*: black squares; *S. castanea*: stars; *S. sp. nov. 74*: white circles; *S. sp. nov. 75*: white squares.

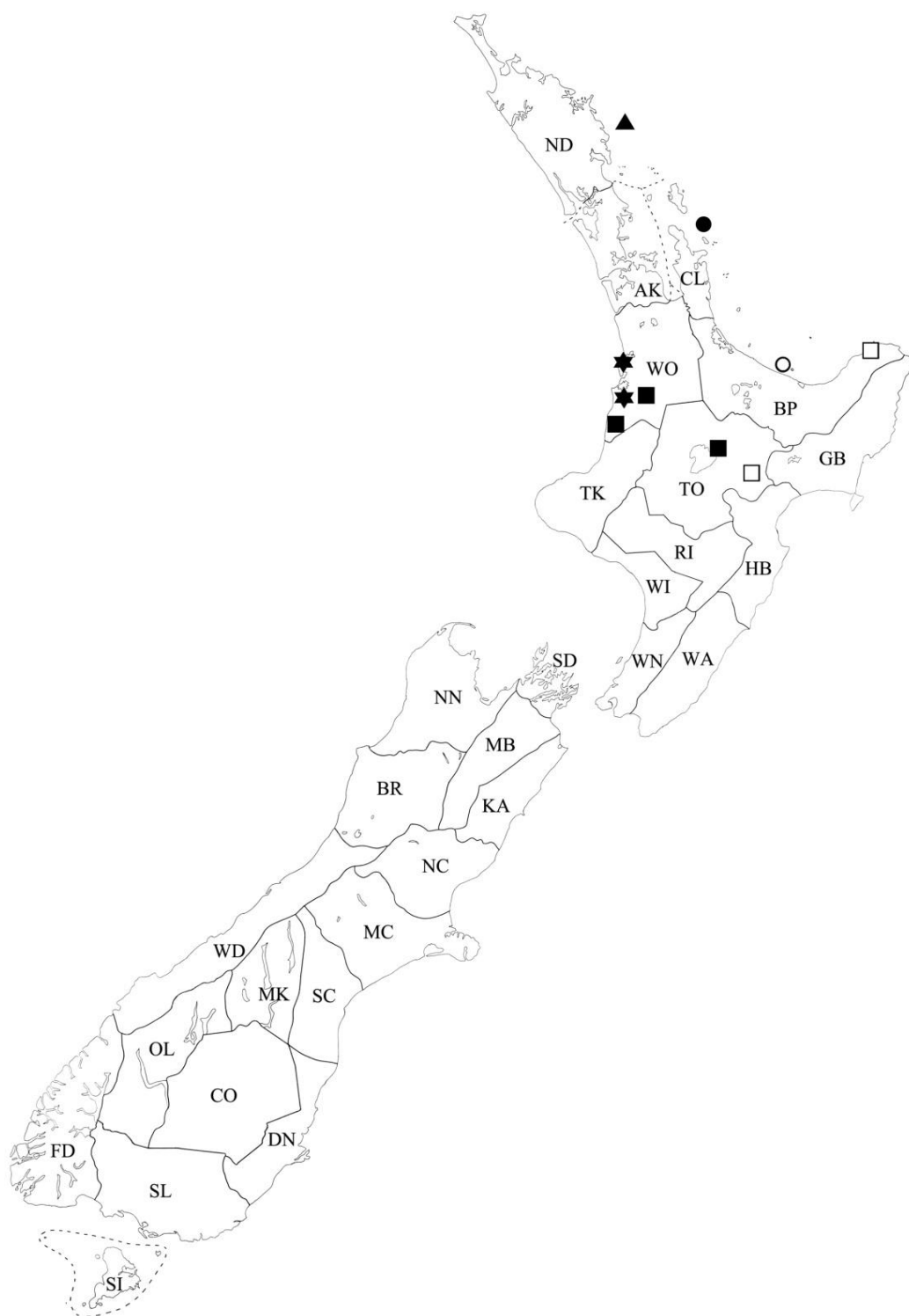


Figure 96. Locations where *S. sp. nov. 76*, *S. sp. nov. 76-1*, *S. sp. nov. 80*, *S. sp. nov. 80-1*, *S. sp. nov. 82* and *S. sp. nov. 83* specimens have been collected in New Zealand. *S. sp. nov. 76*: black circle; *S. sp. nov. 76-1*: triangle; *S. sp. nov. 80*: black squares; *S. sp. nov. 80-1*: stars; *S. sp. nov. 82*: white circle; *S. sp. nov. 83*: white squares.

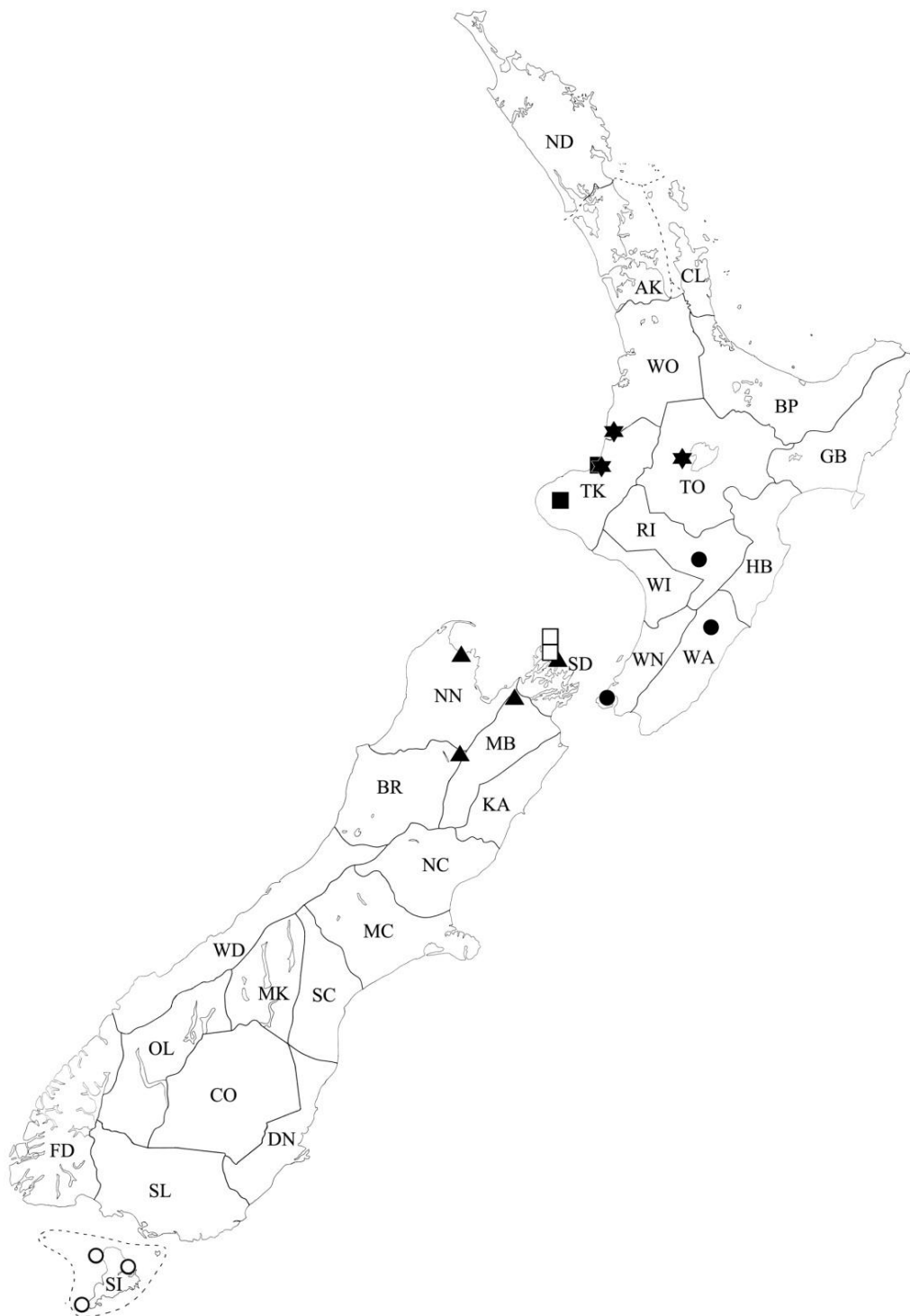


Figure 97. Locations where *S. sp. nov. 84*, *S. sp. nov. 84-1*, *S. sp. nov. 84-2*, *S. sp. nov. 84-3*, *S. sp. nov. 91* and *S. sp. nov. 91-1* specimens have been collected in New Zealand. *S. sp. nov. 84*: black circles; *S. sp. nov. 84-1*: triangles; *S. sp. nov. 84-2*: black squares; *S. sp. nov. 84-3*: stars; *S. sp. nov. 91*: white circles; *S. sp. nov. 91-1*: white squares.

Group 29 (1 species)

Diagnosis. The members of group 29 may be separated from other *Sagola* by the following combination of characters: body length 2.1–2.3 mm; antennomere 1 approximately 1.5 times longer than wide; male head triangular, widest across temples (Figure 98d) and female head blunt triangular, widest across eyes; posterior frontal fovea large round, as large as eye (Figure 98d); temple of male head depressed and projecting ventrally, exceeding eye (Figure 98d); male ventral neck with round depression with dense setae at tip (Figure 98e); abdominal tergites IV–VI with discal carinae; median lobe of genitalia elongate, as wide as paramere (Figure 98b–c).

Sagola genalis Broun

Sagola genale Broun, 1881: 663. Schaufuss, 1888: 84. Raffray, 1893: 19; 1904: 497; 1911: 5; 1924: 231. Hudson, 1923: 365; 1934: 183. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola bilobata Broun, 1921a: 486. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. New Synonym.

Sagola fagicola Broun, 1921a: 494. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. New Synonym.

Sagola minuscula Broun, 1921a: 497. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New Synonym.

Sagola pallidula Broun, 1912b: 626. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. New Synonym.

Type Material. Holotype. New Zealand: Wellington (WN): 1♂, glued on clear plastic card, “Type” [red label, printed]; “1157.” [green label, printed], “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Wellington–Sandager-” [white label, handwritten]; “*Sagola genalis*.” [white label, handwritten]. **Syntypes of *Sagola bilobata*: New Zealand: Otago Lakes (OL):** 1♂, glued on rectangular card, “3993.♂” [white label, handwritten]; “Type.” [white label, handwritten]; “Mt. Dick 10.3.1914.” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola* ♂ *bilobata*.” [white label, handwritten]. 1♂, glued on rectangular card, “3993.♂” [white label, handwritten]; “Mt. Dick. 10.3.1914.” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 1♂, glued on rectangular card, “3993.♂” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Dick. 13.3.1914.” [white label, handwritten]. 1♂, glued on rectangular card, “Coll. T.Hall. 10.3.1914.” [white label, handwritten]; “Mt. Dick. W. of L. Wakatipu, Southland.” [white label, handwritten]; “3993.” [white label, handwritten]; “*Sagola bilobata* Broun” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. 1♂, glued on rectangular card, “Coll. T.Hall. 10.3.1914.” [white label, handwritten]; “Mt. Dick, Wakatipu, Southland.” [white label, handwritten]; “3993.” [white label, handwritten]; “*Sagola bilobata* Broun” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. 1♂, glued on rectangular card, “Mt. Dick, 10.3.1914.” [white label, handwritten]; “*Sagola* ♂ *bilobata*” [white label, handwritten]; “3993.” [white label, handwritten]; “T. Broun Collection” [white label, printed];

“A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. 3♂♂, glued on rectangular card, “Mt. Dick, 13.3.1914.” [white label, handwritten]; “Sagola ♂ bilobata” [white label, handwritten]; “3993.” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. 1♂, glued on rectangular card, “Mt. Alfred, 4.2.1914.” [white label, handwritten]; “Sagola ♂ bilobata.” [white label, handwritten]; “3993.” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. 1♂, glued on rectangular card, “Earnslaw, 5.2.1914.” [white label, handwritten]; “3993.” [white label, handwritten]; “Sagola ♂ bilobata.” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. **Syntypes of *Sagola fagicola*: New Zealand: Otago Lakes (OL):** 3♀♀, glued on rectangular card, “4003.♂” [white label, handwritten]; “Mt. Dick, 10.3.1914.” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂ fagicola.” [white label, handwritten]. 1♀, glued on rectangular card, “4003.♂” [white label, handwritten]; “Mt. Dick, 10.3.1914.” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]. 2♀♀, glued on rectangular card, “Coll. T.Hall 10.3.1914.” [white label, handwritten]; “Mt. Dick, W. of L. Wakatipu, Southland.” [white label, handwritten]; “4003.” [white label, handwritten]; “Sagola fagicola Broun.” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. The original label indicates the types are male, but all syntypes are female. **Syntypes of *Sagola minuscula*: New Zealand: Otago Lakes (OL):** 1♀, glued on rectangular card, “4008.♂” [white label, handwritten]; “Heavens, 5.2.1914.” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola ♂ minuscula.” [white label, handwritten]. 1♀, glued on rectangular card, “4008.♂” [white label, handwritten]; “New Zealand. Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Heavens, 5.2.1914.” [white label, handwritten]. 1♀, glued on rectangular card, “Coll. T.Hall 5.2.1914.” [white label, handwritten]; “Heaven’s Gate, N. of L. Wakatipu, Southland.” [white label, handwritten]; “4008.” [white label, handwritten]; “Sagola minusculus Broun.” [white label, handwritten]; “T. Broun Collection” [white label, printed]; “A.E. Brookes Collection” [white label, printed]; “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand” [yellow label, printed]. The original label indicates the types are male, but all syntypes are female. **Holotype of *Sagola pallidula*: New Zealand: Buller (BR):** 1♀, glued on rectangular card, “Type” [red label, printed]; “13.” [white label, printed], “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “Sagola pallidula” [white label, handwritten].

Additional Material (n= 74; 40 males; 34 females). New Zealand: Auckland (AK): 1♂, Waitakere Range, 260m, Nohoanga Scenic Res, 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap; 1♂, Waitakere Ra, Kauri Knoll, 22 I 1979, J.S. Dugdale, litter; 1♂, Riverhead Forest Reserve, 25 IV 1982, P.A. Maddison, litter; 1♂, Wattle Bay, 11 X 1981, G. Kuschel, rotten wood and soil; 1♂, Waitakere Ra, Cascade-Kauri Park, Up. Kauri tr, 170m, 23 XI–8 XII 1984, kauri-podo-hdwd, A. Newton, M. Thayer 680, litter; **Buller (BR):** 1♀, Greymouth, Boddytown, 8 II 1984, J.C. Watt, litter; **Fiordland (FD):** 1♂1♀, Keplar

Tck start, Te Anau, 22 I 2008, J. Nunn, moss; **Mid Canterbury (MC)**: 1♀, Arthurs Pass, Dobson Nature Walk, 8 II 1982, C.F. Butcher, litter; **Mackenzie (MK)**: 1♀, Ohau skifield, 1475m, 10 III 2007, J. Nunn, moss and tussock near stream; **North Canterbury (NC)**: 2♀♀, Arthur's Pass, 900m, 26 I 1978, G. Kuschel, litter; **Nelson (NN)**: 1♂, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172°44.456'E, 28 XI–19 XII 2005, *Nothofagus* forest, FMHD#2005-044, FIT, A. Newton, M. Thayer, ANMT site 1156; 1♂1♀, Karamea River, estuarv, 30 XII 2010, J. Nunn, under driftwood after flood; 1♂, Slaters Rd, 0.7km s Whangamoa Saddle, 410m, 13 XII 1984–4 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 703, FIT&window trap; **Otago Lakes (OL)**: 1♂, Mt. Algidus nr Methven, T. Hall, 3 II 1914; 1♂, Lake Wakatipu, T. Hall, III 1914; 1♂, Staircase, T. Hall, 14 III 1914; 2♀♀, Mt. Alfred near Paradise, 3 II 1914, T. Hall; 1♀, Heaven's Gate, n of L. Wakatipu, 3 II 1914, T. Hall; 6♀♀, Staircase, Remarkables, 15 III 1914, T. Hall; 2♀♀, Mt. Dick, w of L. Wakatipu, 10 III 1914, T. Hall; **Marlborough Sounds (SD)**: 1♂, Queen Charlotte sd, Bay of Many Coves, 24 X–26 XII 1993, J.W.M. Marris, Malaise trap; 1♂, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus-podo-hdwd*, A. Newton, M. Thayer 710, FIT&window trap; 1♂, Okiwi Bay, IX 1984, T. Jones, Malaise trap; 1♀, 70km ne Nelson, Tennyson Inlet, 480m, 27 V 1982, FMHD#82-604, Beech forest, litter, S. Peck; **Westland (WD)**: 2♂♂, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap; 1♂, 1.8km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd forest with nikau, A. Newton, M. Thayer 718, FIT&window trap; 3♂♂, Okuku Scenic Reserve, 9.2km sse Kumara, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 731, FIT&window trap; 1♂, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, window trap; 2♂♂2♀♀ (1♂, slide-mounted), Westland NP, saddle, 10.2km ne Fox Glacier, 405m, 9–18 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 735, litter; 2♀♀, Lake Kaniere rd, 2.8km nw Lake Kaniere, 120m, 8–19 I 1985, podocarp-hdwd forest, A. Newton, M. Thayer 732, litter; 2♀♀, L. Mahinapua Scen Res, 30m, 16–22 III 1980, podocarp mixed broadleaf, A. Newton, M. Thayer, litter; 1♀, Hokitika Lake Mahinapua Res, 28 I 1978, S. Peck, J. Peck, bracket fungi berl; 1♀, Okuku Scenic Reserve, 46.7km W Otira, 75m, 42°43'S 171°14'E, #050, litter, 12 I 1998, C. Carlton, R. Leschen; 1♀, 11.2km ne Franz Josef Glacier nr Lake Mapourika, 150m, Otto's Corner picnic area, 43°18'S 170°14'E, #064, coastal forest leaf litter, 15 I 1998, C. Carlton, R. Leschen; 1♀, Gillespies Beach, 12 XI 1969, J.I. Townsend, moss; **Wellington (WN)**: 5♂♂2♀♀, Mane Island, 4–6 II 1994, J. Nunn, litter; 4♂♂, Karori Reservoir, 15 II 1997, beaten from *Phormium colensoi*, J. Nunn; 2♂♂, Karori Reservoir, 10 IV 1997, J. Nunn, *Phormium* litter; 1♂, Lookout Rock, Karori Reservoir, 29 IX 1994, J. Nunn, decayed gorse wood; 1♂, Wainui Trig, Wainuiomata, 14 VIII 1993, J. Nunn, decayed wood; 1♂, Nikau Res, Pampramu, 8 VI 1988, J. Nunn; 1♂, Porirua SR, Elsdon, 18 IX 1993, J. Nunn, decayed wood; 1♂, Tinakori Hill, 6 IX 1991, J. Nunn, litter; 1♀, Days Bay, 22 VIII 1993, J. Nunn, litter under sedge; 1♀, Mt. Holdsworth, Donellt Flat, 30 I 1985, H.P. McColl, under nr giant rata; 1♀, Mt. Holdsworth, 10 XI 1952, R. Hornabrook.

Diagnosis. This species is separated from other species by the following combination of characters: small body, length 2.1–2.3 mm; posterior frontal fovea large round, as large as eye; temporal lobe of male head distinctly projecting, exceeding eye with C-shaped ventral surface; ventral surface of male head with triangular setose process behind mouth parts; male neck with round ventral depression anteriorly; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.1–2.3 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 98a). *Head.* Male head triangular, widest across temples (Figure 98d). Female head

bluntly triangular, widest across eyes. Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–8 longer than wide, 9–10 subquadrate. Frontal sulcus deep, reaching midpoint of eye (Figure 98d). Anterior frontal fovea oval and partially covered by frontal rostrum (Figure 98d). Eye large and prominent, approximately one-half length of temple (Figure 98d). Temporal lobe of male head distinctly projecting, exceeding eye with C-shaped ventral surface (Figure 98e). Ventral surface of male head with triangular setose process behind mouth parts (Figure 98e). *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 98a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle, absent in female. *Aedeagus*. Median lobe of genitalia long and curved as C-shaped vertically, as long as paramere (Figure 98b–c). Phallobase of median lobe symmetrical and rounded (Figure 98b–c). Paramere symmetrical and elongate with setae at tip (Figure 98b–c).

Type locality. Wellington (WN), New Zealand.

Distribution. Auckland (AK), Buller (BR), Fiordland (FD), Mid Canterbury (MC), Mackenzie (MK), Marlborough Sounds (SD), North Canterbury (NC), Nelson (NN), Otago Lakes (OL), Westland (WD), Wellington (WN) (Figure 100: black circles).

Habitat. Specimens of this species were collected using malaise, flight intercept, window traps, or by sifting leaf litter in podocarp, broadleaf, nikau, hardwood or *Nothofagus* forests.

Comments. Specimens of *S. genalis* can be separated from those of other species by small size, large posterior frontal fovea of frontal fovea, the shapes of ventral surface of male head and antennomeres. The type specimens of *S. bilobata*, *S. fagicola*, *S. minuscula* and *S. pallidula* share these diagnostic characters and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. bilobata*, *S. fagicola*, *S. minuscula* and *S. pallidula* in synonymy with *S. genalis*.

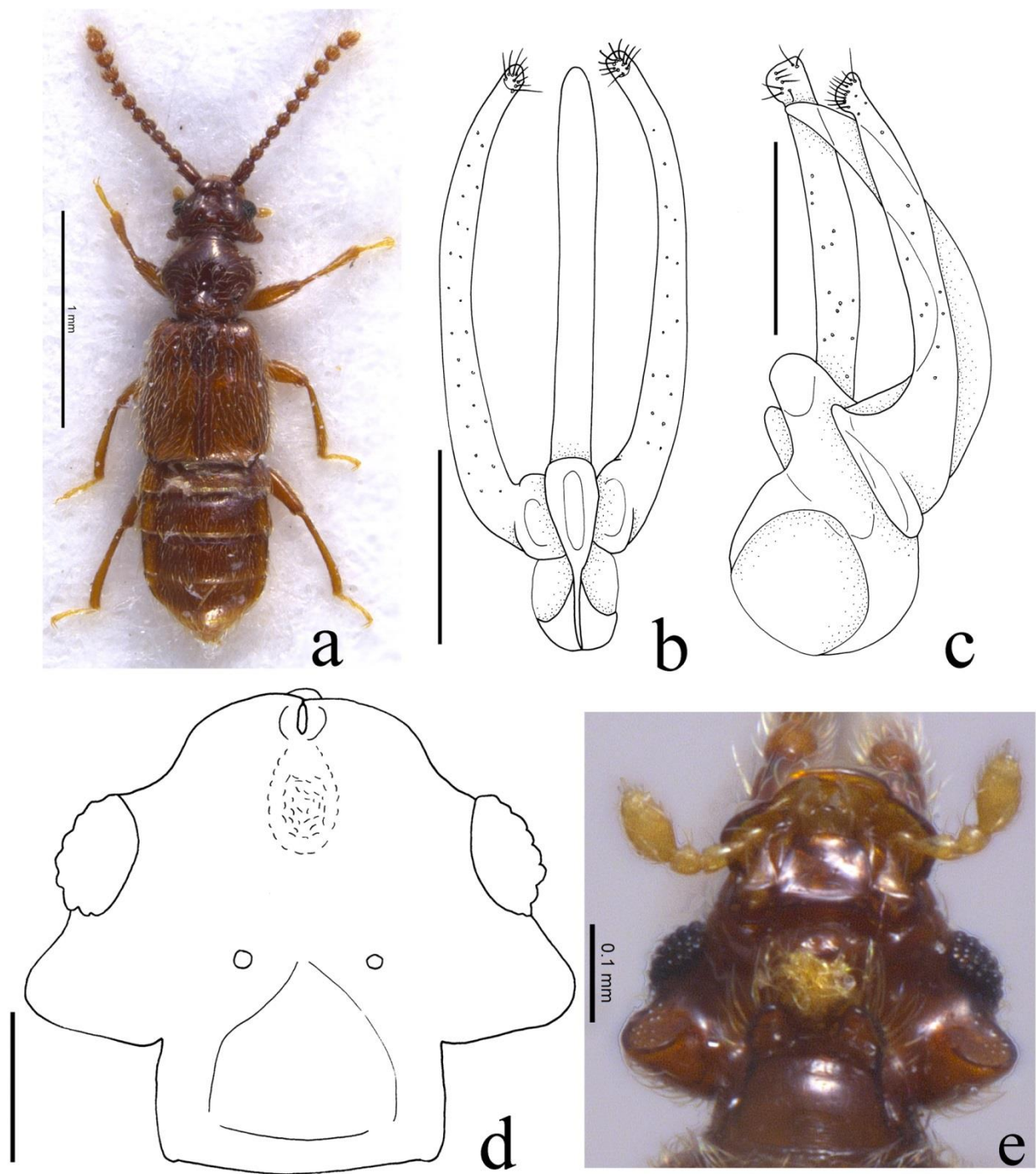


Figure 98. *Sagola genalis* Broun. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) aedeagus, lateral view. d) male dorsal head; e) ventral surface of male head; Scale bars = 0.1 mm.

Group 30 (2 species)

Key to species of *Sagola* group 30

The key is based on male specimens because female specimens are indistinguishable based on external morphology.

1. Antennomeres 9–10 weakly transverse and clubbed (Fig 99a); anterior frontal fovea key hole-shaped, posterior frontal fovea absent; (Fig 99e) eye small, one-fourth length of temple (Fig 99e); abdominal ventrite VII simple; only known from Auckland Islands (Figure 100:

triangle).....*S. sp. nov.*101

1'. Antennomeres 9–10 subquadrate (Figure 99b); anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round (Figure 99f); eye small, one-third length of temple (Figure 99f); abdominal ventrite VII round depression; only known from Snares Island (Figure 100: black square).....*S. sp. nov.*102

Diagnosis. The members of group 30 may be separated from other *Sagola* by the following combination of characters: body length 2.1–2.5 mm; antennomere 1 approximately 1.5 times longer than wide; eye small, one-third to one-fourth length of temple (Figures 99e–f); elytra as long as wide (Figures 99a–b), hind wings reduced to small pads; abdominal tergites IV–VI with discal carinae; known from Auckland Islands and Snares Islands (Figure 100).

Sagola sp. nov. 101

Type Material. Holotype. New Zealand: Auckland Island (AU): 1♂, “New Zealand: AU: Auckland I., Fleming Plateau, 563m, swards 20 Feb 1973, JS Dugdale 73/58”. **Paratypes (n=49; 30 males, 19 females). New Zealand: Auckland Island (AU):** 13♂♂11♀♀ (1♂, slide-mounted), same data as holotype (NZAC). 3♂♂2♀♀, Fleming Plateau, 426m, swards, 9 II 1973, JS Dugdale (NZAC); 2♂♂1♀ (1♂, slide-mounted), Fleming Plateau, 518m, Carnley Harbor, swards, 9 II 1973, JS Dugdale (NZAC); 3♂♂2♀♀, Fleming Plateau, 487m, swards, 12 II 1973, JS Dugdale (NZAC); 4♂♂1♀, e end of Tagua Baym Carnley Harbor, litter, 4 II 1973, JS Dugdale (NZAC); 1♂1♀, Mt. D’Urville, 639m, moss & mats, 4 I 1973, J. Rarrell (NZAC); 2♂♂, Fleming Plateau, 578m, Carnley Harbor, moss, 7 II 1973, JS Dugdale (NZAC); 1♂, Adams I, Magnetic Cove, East Ridge, moss, 22 I 1966, G. Kuschel (NZAC).

Diagnosis. This species is separated from other species by the following combination of characters: small body, length 2.1–2.4 mm; antennomeres 9–11 weakly clubbed; anterior frontal fovea key-hole shaped, eye small, one-fourth length of temple; shapes of antennomeres and genitalia unique to species; only known from Auckland Islands.

Description. Length 2.1–2.4 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 99a). **Head.** Male head round, widest at midpoint of head (Figure 99e). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–8 subquadrate, 9–10 transverse, 9–11 weakly clubbed. Frontal sulcus shallow, reaching posterior margin of eye. Anterior frontal fovea key hole-shaped and partially covered by frontal rostrum (Figure 99e). Eye small, one-fourth length of temple (Figure 99e). **Thorax.** Prosternum as long as wide, widest at midpoint of prosternum. Elytra as long as wide (Figure 99a). Meso- and metathorax trapezoidal, as long as wide. **Abdomen.** Male abdominal tergite IV without patch of microtrichia. **Aedeagus.** Median lobe of genitalia longer than paramere (Figure 99c). Phallobase of median lobe symmetrical and rounded (Figure 99c). Paramere symmetrical, but right slightly longer than left with setae at tip (Figure 99c).

Distribution. Auckland Islands (AU) (Figure 100: triangle).

Habitat. Specimens of this species were collected by sifting swards, moss or mats litter.

***Sagola* sp. nov. 102**

Type Material. Holotype. New Zealand: Snares Island (SN): 1♂, “New Zealand: SN: Penguin Ck. In wet *Olearia lyallii* 26 Oct 1972, D.S. Horning”. **Paratypes (n= 22; 10 males, 12 females). New Zealand: Snares Island (SN):** 1♀, same data as holotype (NZAC); 2♂♂4♀♀, Penguin Ck, rotten wood of *Olearia lyallii* stump, 11 III 1971, D.S. Horning (NZAC); 2♂♂1♀, Signpost Hill, *Stilbocarpa robusta* litter, 26 VIII 1972, D.S. Horning (NZAC); 2♂♂, Broughton I, *Stilbocarpa robusta*, 4 XI 1972, D.S. Horning (NZAC); 1♂, sw Promontory, *Olearia lyallii* litter, 31 VII 1972, D.S. Horning (NZAC); 2♂♂, Penguin Creek, 14 XII 1974, D.S. Horning, under branches of *Olearia lyallii* (NZAC); 2♀♀, nr Penguin Colony, 19 I 1972, C.J. Horning, rotten *Olearia lyallii* (NZAC); 1♀, Opp Mollymank Islet, 24 I 1967, P.M. Johns, beating *Poa astonii* (NZAC); 1♀, Penguin Creek, 26 X 1972, D.S. Horning, wet *Olearia lyallii* litter (NZAC); 1♀, nr Razorbark, 15 XII 1976, J.W. Early, under loose rock on peat (AMNZ); 1♀, Rocky Islet, 28 II 1971, D.S. Horning, Tillaea moscha sample from rotten granite (NZAC).

Diagnosis. This species is separated from other species by the following combination of characters: small body, length 2.2–2.5 mm; anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round; eye small, one-third length of temple; shapes of antennomeres and genitalia unique to species; only known from Snares Islands.

Description. Length 2.2–2.5 mm. Body brown, antennae, legs, maxillary palpi, elytra, paler (Figure 99b). *Head.* Male head round, widest across eyes (Figure 99b). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–6 longer than wide, 7–10 subquadrate. Frontal sulcus shallow reaching midpoint of eye (Figure 99f). Anterior frontal fovea round and partially covered by frontal rostrum, posterior frontal fovea round (Figure 99f). Eye small, one-third length of temple (Figure 99f). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra approximately as long as wide (Figure 99b). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Male abdominal tergite IV without patch of microtrichia. Male abdominal ventrite VII with round depression. *Aedeagus.* Median lobe of genitalia blunt triangular (Figure 99d). Phallobase of median lobe symmetrical and rectangular (Figure 99d). Paramere symmetrical with thick setae from tip to middle (Figure 99d).

Distribution. Snares Islands (SN) (Figure 100: black square).

Habitat. Specimens of this species were collected mostly by sifting leaf and wood litter of *Olearia lyallii* or *Stilbocarpa robusta*.

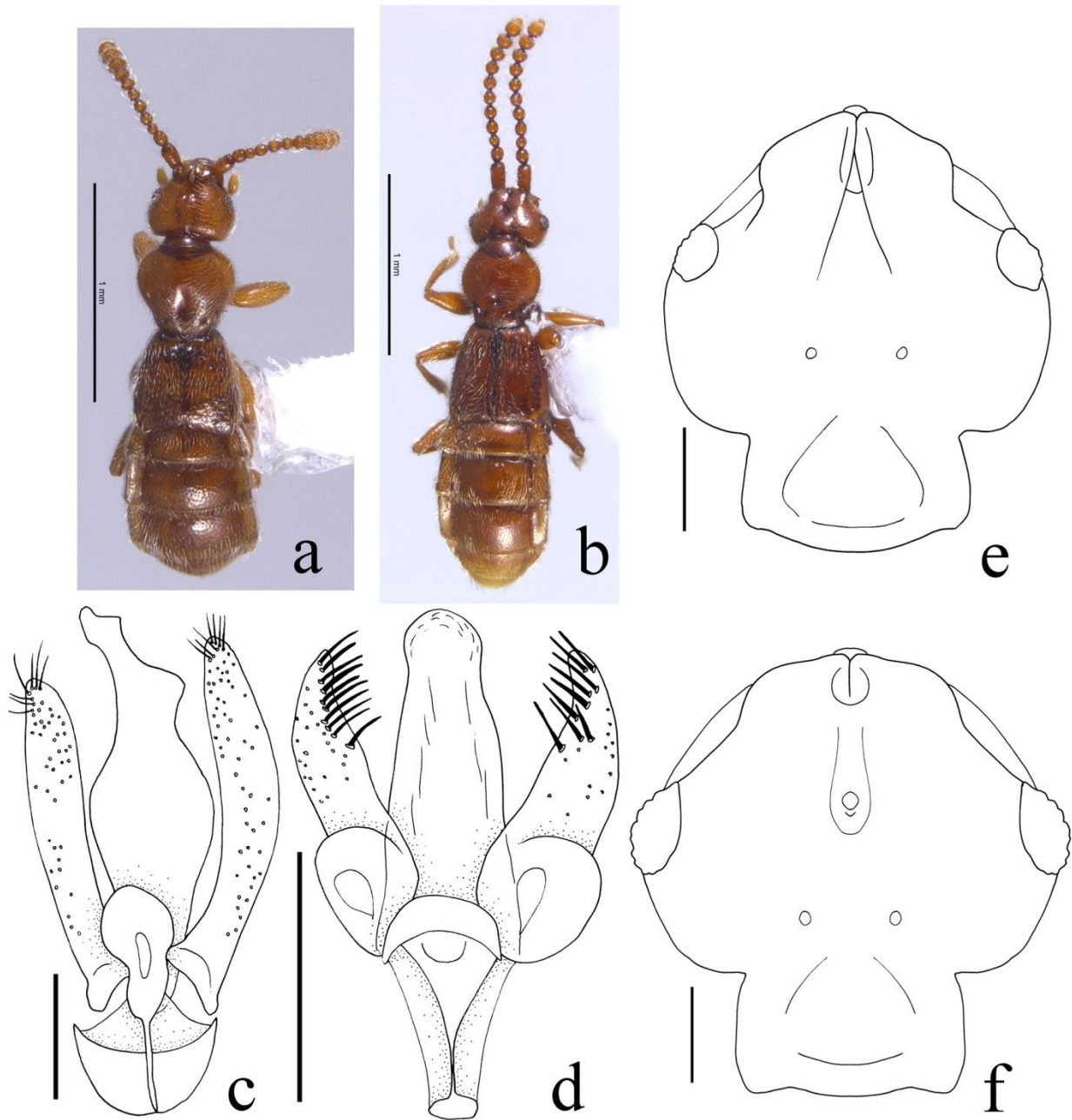


Figure 99. Habitus of group 30, dorsal views. a) *Sagola* sp. nov. 101; b) *S. sp. nov. 102*; Scale bars = 1 mm. Aedeagus, dorsal view. c) *S. sp. nov. 101*; d) *S. sp. nov. 102*; Scale bars = 0.1 mm. Male head, dorsal view. e) *S. sp. nov. 101*; f) *S. sp. nov. 102*; Scale bars = 0.1 mm.

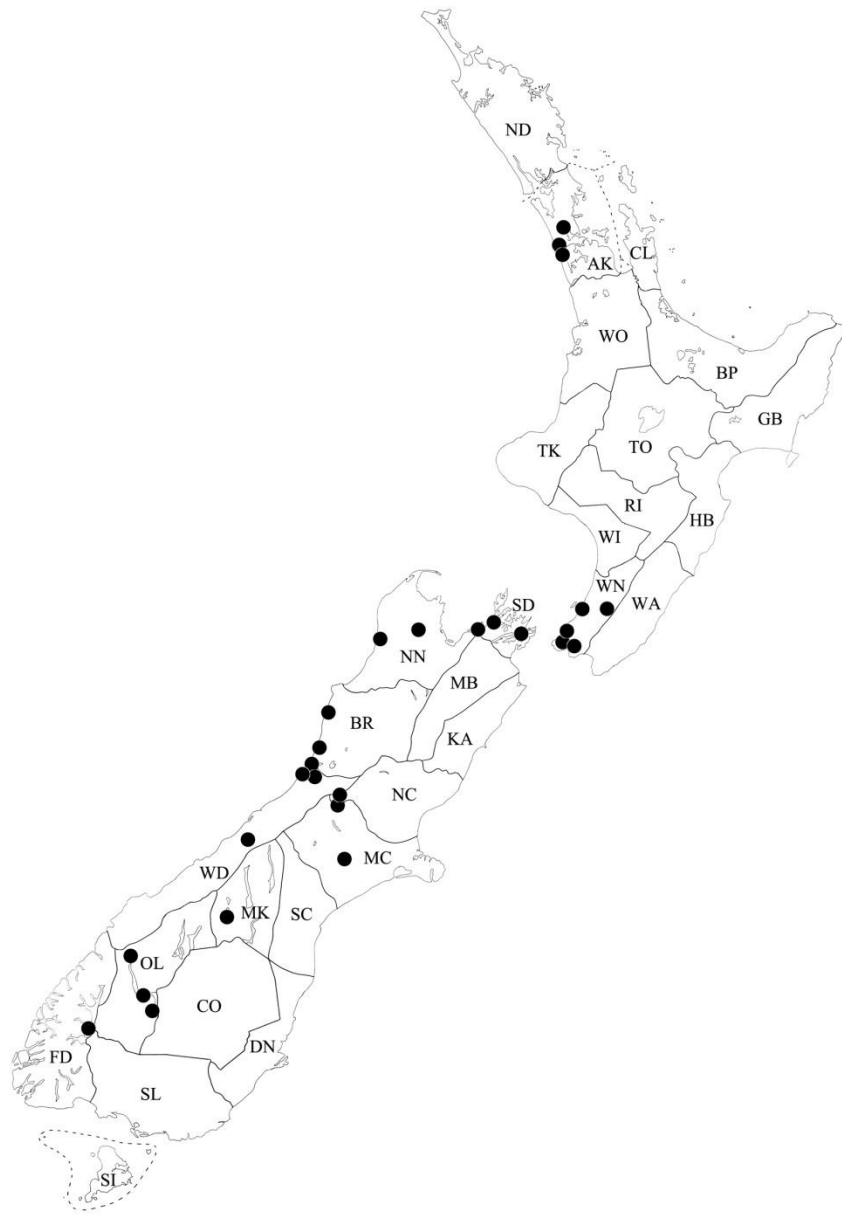


Figure 100. Locations where *S. genalis*, *S. sp. nov.* 101 and *S. sp. nov.* 102 specimens have been collected in New Zealand. *S. genalis*: black circles; *S. sp. nov.* 101: triangle; *S. sp. nov.* 102: black square.

3.4 NEW GENERA OF NEW ZEALAND FARONITAE REITTER

Genus “*Brounea*” Park & Carlton, new genus (11 species)

Diagnosis. The members of “*Brounea*” may be separated from other faronite genera by the following combination of characters: body length 1.2–2.4 mm; antennomere 1 approximately 1.5 times longer than wide with dull surface, 9–11 weakly clubbed; prosternum without lateral procoxal foveae (Figure 102n); mesoventrite without promesocoxal foveae (Figure 102o); abdominal tergites IV–VI with discal carinae; abdominal ventrites IV–VI with basolateral foveae; known from North Island and the Three Kings Islands.

Etymology. This genus is named for the most influential pioneer of the study of New Zealand Coleoptera, including Faronitae, Thomas Broun.

Key to species of “*Brounea*”

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Larger body, length 2.1–2.4 mm; frontal sulcus deep and reversed key hole-shaped (Figure 102l).....”*Brounea*” *setiventris* (Broun)
- 1’. Smaller body, length < 2.1mm; frontal sulcus shallow and elongate or oval (Figure 102m)....2
- 2 (1). Frontal rostrum fused, reversed heart-shaped.....*B. sp. nov.*18-2
- 2’. Frontal rostrum not fused, lobes separate.....3
- 3 (2). Body small, length < 1.4 mm.....4
- 3’. Body larger, > length 1.6 mm.....5
- 4 (3). Eye small, < one-third length of temple; head simple ventrally; hind wings well developed..... *B. sp. nov.*13-1
- 4’. Eye larger, > one-half length of temple; ventral surface of head bearing dense gular setae; hind wings well developed..... *B. sp. nov.*20-1
- 5 (3). Abdominal ventrite VII with setose depression.....6
- 5’. Abdominal ventrite VII simple.....7
- 6 (5). Abdominal ventrite VI with setose depression; ventral surface of head bearing dense gular setae..... *B. sp. nov.*15
- 6’. Abdominal ventrite VI simple; ventral surface of head simple..... *B. sp. nov.*13-2
- 7 (6). Ventral surface of head bearing dense gular setose.....8
- 7’. Head simple ventrally..... *B. sp. nov.*13
- 8 (7). Hind wings absent; median lobe and parameres of genitalia slender, approximately one-third length of phallobase (Figure 102j); known from Three Kings Islands (Figure 104: white circle)..... *B. sp. nov.*18-4
- 8’. Hind wings well developed; median lobe and parameres of genitalia approximately one-half length of phallobase; known from North Island.....9
- 9 (8). Parameres with emargination in basal one-third length (Figure 102h)..... *B. sp. nov.*18-1
- 9’. Parameres elongate triangular.....10
- 10 (9). Median lobe of genitalia bullet-shaped (Figure 102f)..... *B. sp. nov.*14
- 10’. Median lobe of genitalia elongate triangular (Figure 102b)..... *B. tenuis* (Broun)

“Brounea” setiventris (Broun)

Sagola setiventris Broun, 1915: 282. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Type Material. Holotype. New Zealand: Taupo (TO): ♂, glued on rectangular card, “Type” [red label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Erua. Jany.1911.” [white label, handwritten]; “3696.♂” [white label, handwritten]; “Sagola ♂. setiventris.” [white label, handwritten].

Additional Material (n= 60; 20 males, 40 females). New Zealand: Auckland (AK): 1♂5♀♀, Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap; 1♂1♀, Waitakere Range, 260m, Nohoanga Scenic Res., 23 XI–8 XII 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap; 1♀, Hunua Range, Vining Reserve, Mangatangi tr., 240m, 37°07.747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomonoides*, etc., FMHD#2005-005, FIT, A. Newton, M. Thayer, et al., ANMT site 1141; 1♀, Hunua Ranges Reg. Park, Kohukohunui Tr. nr Mine rd., 475m, 37°02.396’S 175°11.251’E, 17 XI–28 XII 2005, broadleaf-podocarp forest, numerous tree fern, FMHD#2005-001, FIT, A. Newton, M. Thayer, et al., ANMT site 1140; 1♀, Waitakeres, east side Nihotapu, 29 XI 1956, B.M. May, dead punga frond; **Bay of Plenty (BP):** 1♂, Lottin Pt rd., Waenga Bush, 18 IX 1992, R.C. Henderson; 2♀♀, Lottin Pt rd., Waenga Bush, 16 IX 1993, R.C. Henderson; 1♀, Te Koau, 120m, 29 IV 1993, J.S. Dugdale, litter 93/101; 1♀, Fitzgerald Glade, Tapapa, 19 IX 1995, M.C. Larivière, A. Larochelle; 4♀♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit rd., 450m, 37°31.429’S 175°44.055’E, 19 XI 2005, mixed broadleaf forest w/many tree ferns, nikau palms, FMHD#2005-016, FIT, A. Newton, M. Thayer, ANMT site 1144; **Coromandel (CL):** 1♂, Great Barrier I., Little Windy Hill, 220m, 21 II 2001–26 III 2002, P. Sutton, Forest edge, Malaise trap; 1♀, Great Barrier I., Little Windy Hill, 220m, 11 XII 2001–18 I 2002, P. Sutton, Forest edge, Malaise trap; **Gisborne (GB):** 10♂♂12♀♀ (1♂, slide-mounted), Urewera NP, Waikaremoana rd., s end Matanunui Ridge, 720m, 38°44.404’S 177°05.806’E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMNH#2005-028, FIT, M. Thayer, A. Solodovnikov, ANMT site 1149; 1♂, Taikawakawa, 2 II–18 III 1993, R.C. Henderson, pit trap; 2♀♀, Urewera NP, Waikaremoana rd., s end Matanunui Ridge, 720m, 38°44.404’S 177°05.806’E, 22 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMNH#2005-118, berl., leaf & log litter, M. Thayer, A. Solodovnikov, ANMT site 1149; 1♀, Urewera NP., Aniwanuiwa VisCtr Stream, dead *Nothofagus berlese*, 18 III 2000, C. Carlton, A. Weir; 1♀, Taikawakawa, 20 XI 1992–2 II 1993, R.C. Henderson, pit traps; **Northland (ND):** 1♂, Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 683, FIT&window trap; 1♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI 1984, hdwd-pococarp forest, A. Newton, M. Thayer 689, berl. leaf & log litter, forest floor; **Taupo (TO):** 3♀♀, Pihangai, 13 I 1972, G.W. Ramsay, litter 72/2; **Waikato (WO):** 2♂♂, Pirongia Forest Park, Tahunui tr., 840m, 37°58.953’S 175°05.523’E, 18 XI–27 XII 2005, mixed forest, near subalpine zone, FMHD#2005-012, FIT, A. Solodovnikov, D. Clarke, ANMT site 1143; 3♀♀, Pirongia Forest Park, Mahaukura Tr. (above end Grey Rd.), 270m, 37°58.218’S, 175°06.523’E, 18 XI–27 XII 2005, mixed broadleaf forest, FMHD#2005-009, FIT, A. Newton, M. Thayer, et al, ANMT site 1142.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: larger body, length 2.1–2.4 mm; eye large, one-half length of temple

(Figure 102l); frontal sulcus deep and reversed keyhole-shaped (Figure 102l); shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.1–2.4 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 101a). *Head.* Head round, widest across eyes (Figure 102l). Male antennomeres 2–5 longer than wide, 6–10 subquadrate, 9–11 weakly transverse. Female antennomere longer than male, 1 approximately 1.5 times longer than wide with dull surface, 2–6 longer than wide, 7–10 subquadrate. Frontal sulcus reversed keyhole shaped, reaching midpoint of eye from frontal fovea (Figure 102l). Anterior frontal fovea absent. Posterior frontal fovea present and oval (Figure 102l). Eye large and prominent, approximately one-half length of temple (Figure 102l). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 101a). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe long with tuberculate apical lobe (Figure 102a). Phallobase of median lobe symmetrical and rounded (Figure 102a). Paramere symmetrical with setae at tip, broader than median lobe, emarginate in distal one-third (Figure 102a).

Type locality. Erua (TO), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Gisborne (GB), Northland (ND), Taupo (TO), Waikato (WO) (Figure 103: black circles).

Habitat. Most specimens of this species were collected using window, flight intercept, malaise traps, or by sifting leaf and log litter in kauri, broadleaf, hardwood and podocarp forests.

“Brounea” tenuis (Broun)

Sagola tenuis Broun, 1886: 888. Raffray, 1893: 40; 1904: 499; 1911: 6l; 1924: 232. Hudson, 1923: 365; 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Type Material. Holotype. New Zealand: Coromandel (CL): ♀, glued on rectangular card, “Type” [red label, printed]; “1582.” [white label, handwritten]; “Tairua” [white label, Printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola tenuis*” [white label, handwritten].

Additional Material (n= 28; 13 males, 15 females). New Zealand: Auckland (AK): 6♂♂4♀♀ (1♂, slide-mounted), Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679; 3♂♂3♀♀, Waitakere Ra., Cascade-Kauri Park, Up. Kauri Tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680; 3♂♂4♀♀, Hunua Ranges, Vining Reserve, Mangatangi Tr., 240m, 37°07.747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc., FMHD#2005-005, FIT, A. Newton, M. Thayer, et al., ANMT site 1141; 1♀, Waitakere Ra., Cascade-Kauri Park, Up. Kauri tr., 170m, 23 XI–8 XII 1984, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap; 1 ♀, Ahuroa, 240m, nr Woodcocks, 5 I 1983, J.C. Watt, litter 83/6; 1♀, Mangatangi, Hunua Range, 5 IV–5 V 1977, I. Barton, ARA Kauri seed project, pit trap 12; 1♀, Waitakere Rd., Cascades, 24 VII 1979, J.C. Watt, litter 79/86; **Coromandel (CL):** 1♂, Mt. Moehau, 7 XI 1978, B.M. May, moss 78/276.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: eye large, one-half length of temple; temple of male head weakly depressed ventrally, gular depression densely setose; shapes of antennomeres and genitalia unique to species.

Redescription. Length 1.7–2.0 mm. Body brown, antenna and maxillary palpi paler, elytra, legs paler (Figure 101b). *Head.* Male head blunt triangular, widest across temples (Figure

101b), temple weakly depressed ventrally, gular depression densely setose. Female head round and normal. Antennomere 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 transverse, 9–11 weakly transverse. Frontal sulcus deep, reaching midpoint of eye from apex of rostrum. Anterior frontal fovea small and round. Posterior frontal fovea elongate. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum as long as wide, widest at one-third length of prosternum. Elytra rectangular (Figure 101b). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe as long as paramere, one-half of parameres (Figure 102b). Phallobase of median lobe symmetrical and rounded (Figure 102b). Paramere symmetrical, elongated triangular with setae at tip (Figure 102b).

Type locality. Tairua (CL), New Zealand.

Distribution. Auckland (AK), Coromandel (CL) (Figure 103: triangles).

Habitat. Most specimens of this species were collected using window, flight intercept traps and pitfall trap, or by sifting leaf and log litter in kauri, hardwood and podocarp forests. One specimen was collected from moss.

“*Brounea*” sp. nov. 13

Type Material. Holotype. New Zealand: Taupo (TO): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND TO Waituhi Saddle Rd, 670m 9 Oct 1979 J.S.Dugdale”, “Litter and bryophytes 79/92”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 48; 23 males, 25 females).** **New Zealand: Auckland (AK):** 7♂♂11♀♀, Lynfield, 23 XI 1974–7 III 1981, G. Kuschel (NZAC&AMNZ); 1♂3♀♀ (1♀, slide-mounted), Lynfield, Wattle Bay, 8 X 1986, G. Kuschel, sifted rotten wood (NZAC); 1♂, Symonds St. Cemetery, Auckland, 40m, 24–25 III 2010, yellow pan traps, L. Masner (DSC); 2♂♂, Hunua Ranges, Vining Reserve, Mangatangi tr., 240m, 37°07.747’S, 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc., FMHD#2005-005, FIT, A. Newton, M. Thayer, et al., ANMT site 1141 (FMNH); 1♂, Hunua Ranges Reg. Park, Kohukohunui tr. nr. Mine Rd., 475m, 37°02.396’S 175°11.251’E, 17 XI–28 XI 2005, broadleaf-podocarp forest, numerous tree ferns, FMHD#2005-001, FIT, A. Newton, M. Thayer, et al., ANMT site 1140 (FMNH); 1♀, Swanson, 8 II 1942, D. Spiller (NZAC); **Bay of Plenty (BP):** 1♀, Papatea, NZMS 260 Y14 386806m 22–30 X 1992, J.W.M. Marris, yellow pan trap, lowland broadleaf/podocarp forest (LUNZ); **Coromandel (CL):** 1♀, Little Barrier I, Ngapumataahu, 7 IV 1984, C.T. Duval, sifted rotten wood 84/60 (NZAC); 1♂, Great Barrier I, Little Windy Hill, 200m, 21 XI–13 XII 2002, P. Sutton, forest edge malaise trap L21054 (AMNZ); **Northland (ND):** 4♂♂, Waipoua SF, 0.9km e Forest Hqtrs., 120m, 26 XI–4 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 686, FIT&window trap (FMNH); 2♂♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 689, FIT&window trap (FMNH&DSC); 1♂, Waipoua SF, 0.8km nw Wairau Summit, 350m, 27 XI 1984, hdwd-podocarp forest, A. Newton, M. Thayer 689, berl., leaf & log litter, forest floor (FMNH); 2♀♀ (1♀, slide-mounted), Waipoua SF, Kauri Ricker Tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 684, FIT&window trap (FMNH); 1♀, Waipoua SF, Toronui tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 685, FIT&window trap (FMNH); 1♂, Waipoua Stms, 100m, 19 III 1978, S.B. Peck, litter (NZAC); 1♀, Waipoua Forest, Waipoua stm, 70m, 17 III 1978, S. Peck, J. Peck, berl., frass und. bark kauri log (FMNH); 1♀, Waipoua SF, 25 XI 1980, G. Kuschel, decayed wood 80/120 (ZAC); 1♀, Painia Opua SF, 22 I 1981, G. Kuschel, litter and

rotten wood (NZAC); 1♂2♀♀, Unuwahao, 270m, 25 XI 1982, G. Kuschel, sifted litter and decayed wood 82/125 (NZAC); **Wairarapa (WA)**: Pongaroa, 31 XII 1980, J.C. Watt, wood mould 80/158 (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: male eye larger and prominent, as long as temple and female eye smaller, one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description. Length 1.7–1.9 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101c). *Head.* Head round, widest across eyes (Figure 101c). Antennomere 2 longer than wide, 3–8 subquadrate, 9–10 transverse, 9–11 weakly transverse. Frontal sulcus shallow and reaching midpoint of eye. Anterior and posterior frontal fovea small and round. Male eye large and prominent, as long as temple. Female eye smaller, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 101c). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe longer than parameres, bullet shaped (Figure 102c). Phallobase of median lobe symmetrical and rounded (Figure 102c). Paramere symmetrical with setae at tip, weakly emarginate inside of one-third length (Figure 102c).

Distribution. Auckland (AK), Bay of Plenty (BP), Coromandel (CL), Northland (ND), Taupo (TO), Wairarapa (WA) (Figure 103: black squares).

Habitat. Most specimens of this species were collected using window, flight intercept, malaise, yellow pan traps, or by sifting leaf and log litter in kauri, broadleaf, hardwood and podocarp forests.

“Brounea” sp. nov. 13-1

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Waipoua SF Toronui Track 20 Oct 1980 G.Kuschel”, “Sifted decayed wood 80/96”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (2 males). New Zealand: Northland (ND):** 1♂, Dargaville, 18 VI 1951, Orlando Park Collection, p73 (FMNH); 1♂ (slide-mounted), Waipoua Forest, Waipoua stm, 70m, 17 III 1978, S. Peck, J. Peck, berl., frass under bark kauri log (FMNH).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: small body, length 1.2–1.4 mm; eye small, one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.2–1.4 mm. Body yellowish brown and antenna, elytra, legs, maxillary palpi paler (Figure 101d). *Head.* head bluntly triangular, widest across temples (Figure 101d). Antennomere 2 longer than wide, 3–10 subquadrate, 9–11 weakly clavate. Frontal sulcus shallow, reaching midpoint of eye from apex of rostrum. Anterior and posterior frontal fovea small and round. Eye small, one-half length of temple. *Thorax.* Prosternum longer than wide, widest at one-third length of prosternum. Elytra rectangular (Figure 101d). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia. *Aedeagus.* Median lobe longer than parameres with acute apical lobe (Figure 102d). Phallobase of median lobe symmetrical and rounded (Figure 102d). Paramere symmetrical with setae at tip, weakly narrower at distal one-third (Figure 102d).

Distribution. Northland (ND) (Figure 103: star).

Habitat. Specimens of this species were collected by sifting decaying log litter.

“*Brounea*” sp. nov. 13-2

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND ND Russell SF Punaruku 17 Jul 1983 J.C. Watt”, “Wood mould 83/80”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (5 females). New Zealand: Northland (ND):** 5♀♀ (1♀, slide-mounted), same data as holotype (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: eye large, one-half length of temple; male abdominal ventrite VII with round depression; shapes of antennomeres and genitalia unique to species.

Description. Length 1.7–1.9 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101e). *Head.* Head bluntly triangular, widest across temples (Figure 101e). Antennomere 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate, 9–11 weakly clavate. Frontal sulcus shallow, reaching midpoint of eye. Anterior and posterior frontal fovea small and round. Eye large, one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 101e). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia. Male abdominal ventrite VII with round depression. *Aedeagus.* Median lobe rectangular, shorter than parameres (Figure 102e). Phallobase of median lobe symmetrical and rounded (Figure 102e). Paramere symmetrical, 3 times broader than median lobe, weakly narrowed at distal one-third (Figure 102e).

Distribution. Northland (ND) (Figure 103: white circle).

Habitat. Specimens of this species were collected by sifting wood mould.

“*Brounea*” sp. nov. 14

Type Material. Holotype. New Zealand: Northland (ND): 1♂, “NEW ZEALAND: ND Waipoua State Forest, 0.9km e Forest Hqtrs. 120m, 26.xi-4.xii.1984 hdwd.-podocarp forest A.Newton/M.Thayer 686”, “flight intercept (window) trap”. **Paratypes (n=25; 15 males, 10 females). New Zealand: Auckland (AK):** 3♂♂, Goldie Bush Scenic Res., Mokoroa Falls tr., 6km w Waitakere, 28 III 2010, 106m, D.S. Chandler, rotten wood&branch debris (DSC); 2♂♂ (1♂, slide-mounted), Waitakere Range, 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap (FMNH&DSC); 1♂, Matuku Reserve, 45m, 6.5km w Waitakere end of Jonker’s Rd., 2–5 IV 2010, L. Masner, yellow pan trap (DSC); 1♂, Mt. Auckland, Atuanui Scenic Reserve, 250m, 2.5km ne Glorit, 2 II 2010, D.S. Chandler, sift rotten wood (DSC); 2♀♀, Waitakere ra., Cascade-Kauri Park, up. Kauri Tr., 170m, 23 XI–8 XII 1984, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap (FMNH); 1♀, Mangatangi, Hunua Range, 9 III–5 IV 1977, I. Barton, ARA Kauri Seed Project pit trap 6 (NZAC); 1♀, Mt. Auckland, Atuanui Scenic Reserve, 250m, 2.5km NE Glorit, 2 II 2010, D.S. Chandler, sift rotten wood (DSC); **Coromandel (CL):** 1♂, 350m, 23 III 1977, G. Kuschel, decayed wood (NZAC); 1♂2♀♀, Waipoua SF, 0.8km s Waikohatu Stream bridge, 270m, 28 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 692, FIT&window (FMNH); **Northland (ND):** 1♀, same data as holotype (FMNH); 2♂♂, Waipoua State Forest, Kauri Ricker tr., 120m, 26 XI–4 XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 684, FIT&window (FMNH&DSC); 1♂1♀, Mt. Manaia, 300–400m, 4 XI 1981, G. Kuschel, litter and decayed wood 81/121 (NZAC); 1♂, Waipoua SF, Wairau Summit, 400m, 27 XI–6 XII 1984,

hdwd-podocarp forest, A. Newton, M. Thayer 687, FIT&window trap (DSC); 1♂, Hokianga Heads, 7 XII 1961, G. Kuschel, *Nothofagus* litter 63/8 (NZAC); 1♂ (slide-mounted), Waipoua Forest, Waipoua stm, 70m, 17 III 1978, S. Peck, J. Peck, berl., frass under bark kauri log (FMNH); 1♀, Waipoua SF, Toronui Tr., 150m, 13 IV 1980, kauri-podocarp-broadlf-nikau palm forest, A. Newton, M. Thayer, berl., leaf & log litter, forest floor (FMNH); 1♀, Waipoua Forest, 25 XI 1980, G. Kuschel, sifted decayed wood 80/119 (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: eye large, one-half length of temple; male head ventrally convex, bearing dense setae from gular depression; shapes of antennomeres and genitalia unique to species.

Description. Length 1.9–2.1 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101f). *Head.* Head bluntly triangular, widest across temples (Figure 101f). Male head ventrally convex, bearing dense setae from gular depression. Antennomere 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Frontal sulcus shallow and reaching one-third length of eye from apex of rostrum. Anterior frontal fovea small round, partially covered by frontal rostrum. Posterior frontal fovea small round. Eye large and prominent, one-half length of temple. *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 101f). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe bullet shaped, as long as parameres (Figure 102f). Phallobase of median lobe symmetrical and rounded (Figure 102f). Paramere symmetrical, elongate triangular with thick setae at tip (Figure 102f).

Distribution. Auckland (AK), Coromandel (CL), Northland (ND) (Figure 104: black circles).

Habitat. Most specimens of this species collected using flight intercept, window traps, or by sifting litter in broadleaf, hardwood, or podocarp forests.

“*Brounea*” sp. nov. 15

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, ND, Mangamuka Walk, 28 July – 1 AUG 1998, R. Leschen, R. Hoare FIT 233 36’11S, 173’28E”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 27; 9 males, 18 female).** **New Zealand: Auckland (AK):** 1♂4♀♀ (1♀, slide-mounted), Waitakere Ra., Cascade-Kauri Park, Up. Kauri tr., 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, window trap (FMNH); 4♀♀ (1♀, slide-mounted), Waitakere Ra., 260m, Nohoanga Scenic Res., 8 XII 1984–25 I 1985, hdwd-podocarp forest, A. Newton, M. Thayer 679, FIT&window trap (FMNH); 1♂, Waipoua SF, Wairau Summit, 400m, 27 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 687, FIT&window trap (FMNH); 1♂, Hunua Ranges Reg. Park, Kohukohunui tr. nr Mine Rd., 475m, 37°02.396’S 175°11.251’E, 17 XI–28 XII 2005, broadleaf-podocarp forest, numerous tree ferns, FMHD#2005-001, FIT, A. Newton, M. Thayer et al., ANMT site 1140 (FMNH); 1♂, Warkworth, Dome St. Forest, 330m, 15 III 1978, S. Peck, J. Peck, berl., forest litter (FMNH); 1♀, Hunua Ranges, Vining Reserve, Mangatangi tr., 240m, 37°07.747’S 175°13.024’E, 17 XI–28 XII 2005, *Nothofagus-Agathis-Phyllocladus trichomanoides*, etc, FMHD#2005-005, FIT, A. Newton, M. Thayer et al., ANMT site 1141 (FMNH); 1♀, Otatau, Clevedon, 30 X 1951, rotten wood (NZAC); 1♀, Waikowhai Park, 3 X 1951, rotten wood (NZAC); 1♂, Le Roys Bush, Birkenhead, 19 IX 1951, under bark (NZAC);

Coromandel (CL): 1♀, Little Barrier Island, 3 I 1952, rotten wood (NZAC); 1♀, Little Barrier Island, 31 XII 1961, rotten wood (NZAC); **Northland (ND):** 1♂, Waipoua For., Waipoua stm, 70m, 17 III 1978, S. Peck, J. Peck, berl., frass under bark kauri log (FMNH); 1♂ (slide-mounted), Mangamuka Gorge SR, 6.6km nw Mangamuka, 70m, 25 XI–5 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 682, FIT&window trap (FMNH); 3♀♀ (1♀, slide-mounted), Ngaiotonga Saddle, 3 XI 1981, G. Kuschel, little and decayed wood 81/120 (NZAC); 2♀♀, Mangamuka Summit, 12km nw Mangamuka, 400m, 25 XI–5 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 683, FIT&window trap (FMNH); 1♀, Omahuta Forest, Omahuta Kauri Sanctuary, 340m, 29 XI–5XII 1984, kauri-podocarp-hdwd, A. Newton, M. Thayer 693, window trap (FMNH); 1♂, Waipoua SF, Wairau Summit, 400m, 27 XI–6 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 687, FIT&window trap (DSC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: large eye, one-half length of temple; gular of ventral surface of male head depressed triangular with setose depression; male abdominal ventrites VI–VII with setose round depression; shapes of antennomeres and genitalia unique to species.

Description. Length 1.6–1.8 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101g). *Head.* head triangular, widest across temples (Figure 101g). Gular of male depressed triangular with setose depression. Antennomere 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate, 9–11 weakly clavate. Frontal sulcus deep and reaching one-third length of eye from apex of rostrum (Figure 102m). Posterior frontal fovea oval (Figure 102m). Eye large and prominent, one-half length of temple (Figure 102m). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 101g). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. Male abdominal ventrites VI–VII with setose round depression. *Aedeagus.* Median lobe triangular, as wide as parameres (Figure 102g). Phallobase of median lobe symmetrical and rounded (Figure 102g). Paramere blunt and symmetrical with setae at tip (Figure 102g).

Distribution. Auckland (AK), Coromandel (CL), Northland (ND) (Figure 104: triangles).

Habitat. Most specimens of this species were collected using flight intercept, window traps, or by sifting litter in broadleaf, hardwood, kauri or podocarp forests.

“*Brounea*” sp. nov. 18-1

Type Material. Holotype. New Zealand: Auckland (AK): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND, AK, Clevedon Scenic Reser. 0.5 km N Clevedon, 20 m, III-19-2010 D.S. Chandler, sift forest litter by stream”. **Paratypes (n=11, 5 males, 6 females). New Zealand: Coromandel (CL):** 1♂1♀, Great Barrier I, Little Windy Hill, 220m, 18 I–21 II 2002, P. Sutton, Forest edge Malaise trap L21045 (AMNZ); 1♂, Great Barrier I, Little Windy Hill, 100m, 25 II–9 II 2003, K. Parsons, coastal forest Malaise trap L11998 (AMNZ); **Wellington (WN):** 3♂♂5♀♀, Karori Reservoir, 5 I 1995, J. Nunn, in decayed totara wood (JTN).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: large eye, one-half length of temple; gular of male bearing dense setae; shapes of antennomeres and genitalia unique to species.

Description. Length 1.9–2.0 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101h). *Head.* head triangular, widest across temples (Figure 101h). Gular of male bearing dense setae. Antennomere 2 longer than wide, 3 10 subquadrate, 9–11 weakly clavate.

Frontal sulcus shallow and reaching front point of eye. Posterior frontal fovea present and oval. Eye large and prominent, approximately 1.5 times shorter than temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 101h). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus*. Apical lobe of genitalia triangular (Figure 102h). Phallobase of median lobe symmetrical and rounded (Figure 102h). Paramere symmetrical, narrowed at distal one-third with setae at tip (Figure 102h).
Distribution. Auckland (AK), Coromandel (CL), Wellington (WN) (Figure 104: black squares).

Habitat. Specimens of this species were collected using malaise traps, or by sifting leaf and wood litter.

***“Brounea”* sp. nov. 18-2**

Type Material. Holotype. New Zealand: Northland (ND): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: ND Mangamuka Gorge S.R., 6.6km nw Mangamuka, 70m, 25.xi-5.xii.1984 hdwd.-podocarp forest A.Newton/M.Thayer 682”, “flight intercept (window) trap”.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: large eye, one-half length of temple; frontal rostrum fused in reversed heart shaped; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.8 mm. Body yellowish brown and antenna, elytra, legs, maxillary palpi paler (Figure 101i). *Head*. head triangular, widest across eyes (Figure 101i). Antennomere 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate, 9–11 weakly clavate. Frontal sulcus deep and reaching one-third length of eye from apex of rostrum. Frontal rostrum fused as reversed heart shaped. Posterior frontal fovea present and oval. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 101i). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of oval or transverse patches of microtrichia. *Aedeagus*. Median lobe triangular (Figure 102i). Phallobase of median lobe symmetrical and rounded (Figure 102i). Paramere symmetrical and enlarged, emarginate in distal one-third with setae at tip (Figure 102i).

Distribution. Northland (ND) (Figure 104: star).

Habitat. The holotype was collected using flight intercept and window traps in hardwood and podocarp forests.

***“Brounea”* sp. nov. 18-4**

Type Material. Holotype. New Zealand: Three Kings Islands (TH): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: TH: Tasman Valley 26 XI 1970, J.C. Watt Litter 70/223”.

Diagnosis. This species is only known from the Three Kings Islands and also may be separated from other species by the following combination of characters: large eye, one-half length of temple; gular of male bearing dense setae; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.7 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101j). *Head*. head triangular, widest across temples (Figure 101j). Gular of male bearing dense setae. Antennomere 2 longer than wide, 3 subquadrate, 4–6 longer than wide,

7–10 subquadrate, 9–11 weakly clavate. Frontal sulcus shallow and reaching front point of eye. Posterior frontal fovea present and oval. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum longer than wide, widest at one-third length of prosternum. Elytra approximately triangular (Figure 101j). Hind wings absent. Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Abdominal tergite IV without patch of microtrichia. *Aedeagus*. median lobe slender (Figure 102j). Phallobase of median lobe symmetrical and rounded (Figure 102j). Paramere symmetrical, slender with setae at tip (Figure 102j).

Distribution. Three Kings Islands (TH) (Figure 104: white circle).

Habitat. The holotype was collected by sifting leaf litter.

“*Brounea*” sp. nov. 20-1

Type Material. Holotype. New Zealand: Auckland (AK): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: AK: Mangamuka Rd, 21 I 1972 G.W. Ramsay, litter 72/61”.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: small body, length 1.4 mm; large eye, one-half length of temple; gular of male bearing dense setae; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.4 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 101k). *Head*. head triangular, widest across temples (Figure 101k). Gular of male bearing dense setae. Antennomere 2 longer than wide, 3–4 longer than wide, 5–10 subquadrate, 9–11 weakly clavate. Frontal sulcus shallow and reaching front point of eye. Posterior frontal fovea present and oval. Eye large and prominent, one-half length of temple. *Thorax*. Prosternum longer than wide, widest one-third length of prosternum. Elytra approximately triangular (Figure 101k). Hind wings absent. Meso- and metathorax trapezoidal, as long as wide. *Abdomen*. Abdominal tergite IV without patch of microtrichia. *Aedeagus*. median lobe slender with pointy apical lobe (Figure 102k). Phallobase of median lobe symmetrical and rounded (Figure 102k). Paramere symmetrical, long and apically blunt with setae at tip (Figure 102k).

Distribution. Auckland (AK) (Figure 104: white square).

Habitat. The holotype was collected by sifting leaf litter.

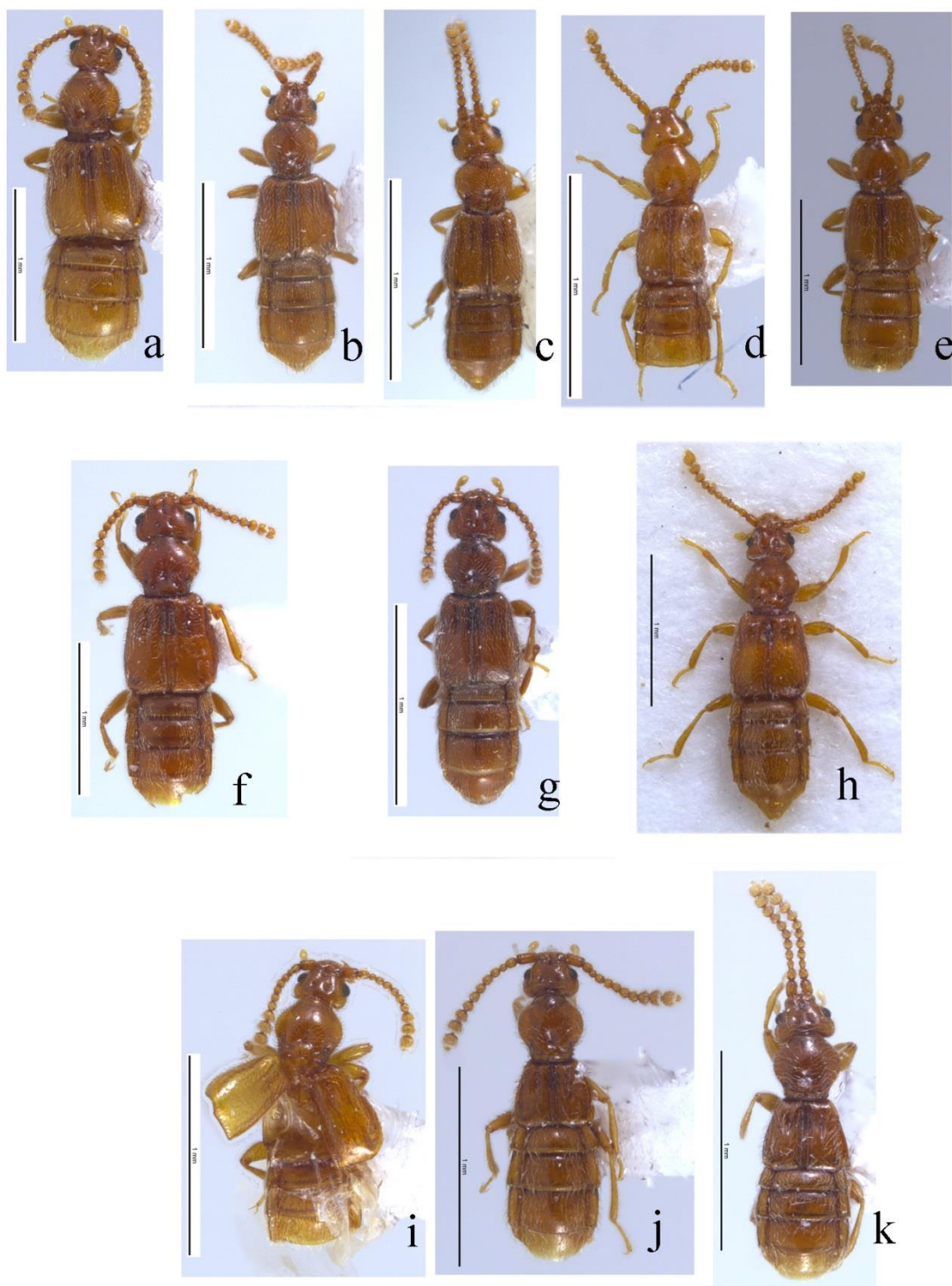


Figure 101. Habitus, dorsal view. a) “*Brounea*” *setiventris* (Broun); b) *B. tenuis* (Broun); c) *B. sp. nov.* 13; d) *B. sp. nov.* 13-1; e) *B. sp. nov.* 13-2; f) *B. sp. nov.* 14; g) *B. sp. nov.* 15; h) *B. sp. nov.* 18-1; i) *B. sp. nov.* 18-2; j) *B. sp. nov.* 18-4; k) *B. sp. nov.* 20-1; Scale bars = 1 mm.

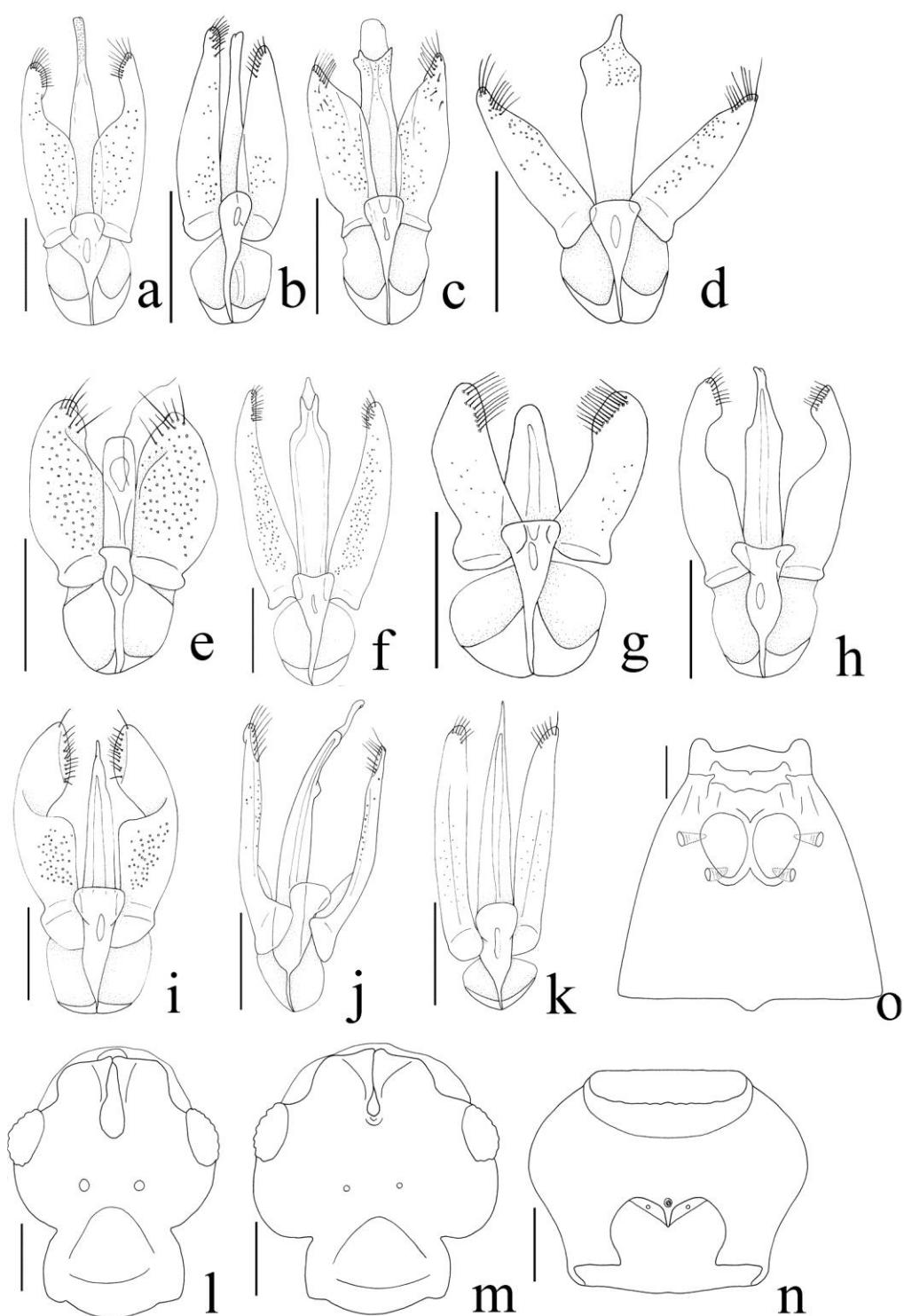


Figure 102. Aedeagus, dorsal view. a) “*Brounea*” *setiventris* (Broun); b) *B. tenuis* (Broun); c) *B. sp. nov. 13*; d) *B. sp. nov. 13-1*; e) *B. sp. nov. 13-2*; f) *B. sp. nov. 14*; g) *B. sp. nov. 15*; h) *B. sp. nov. 18-1*; i) *B. sp. nov. 18-2*; j) *B. sp. nov. 18-4*; k) *B. sp. nov. 20-1*; l) head of *B. setiventris*, dorsal view; Scale bars = 0.1 mm. *B. sp. nov. 15*. m) head, dorsal view; n) prosternum, ventral view; o) meso- and metaventrite, ventral view; Scale bar = 0.1 mm.

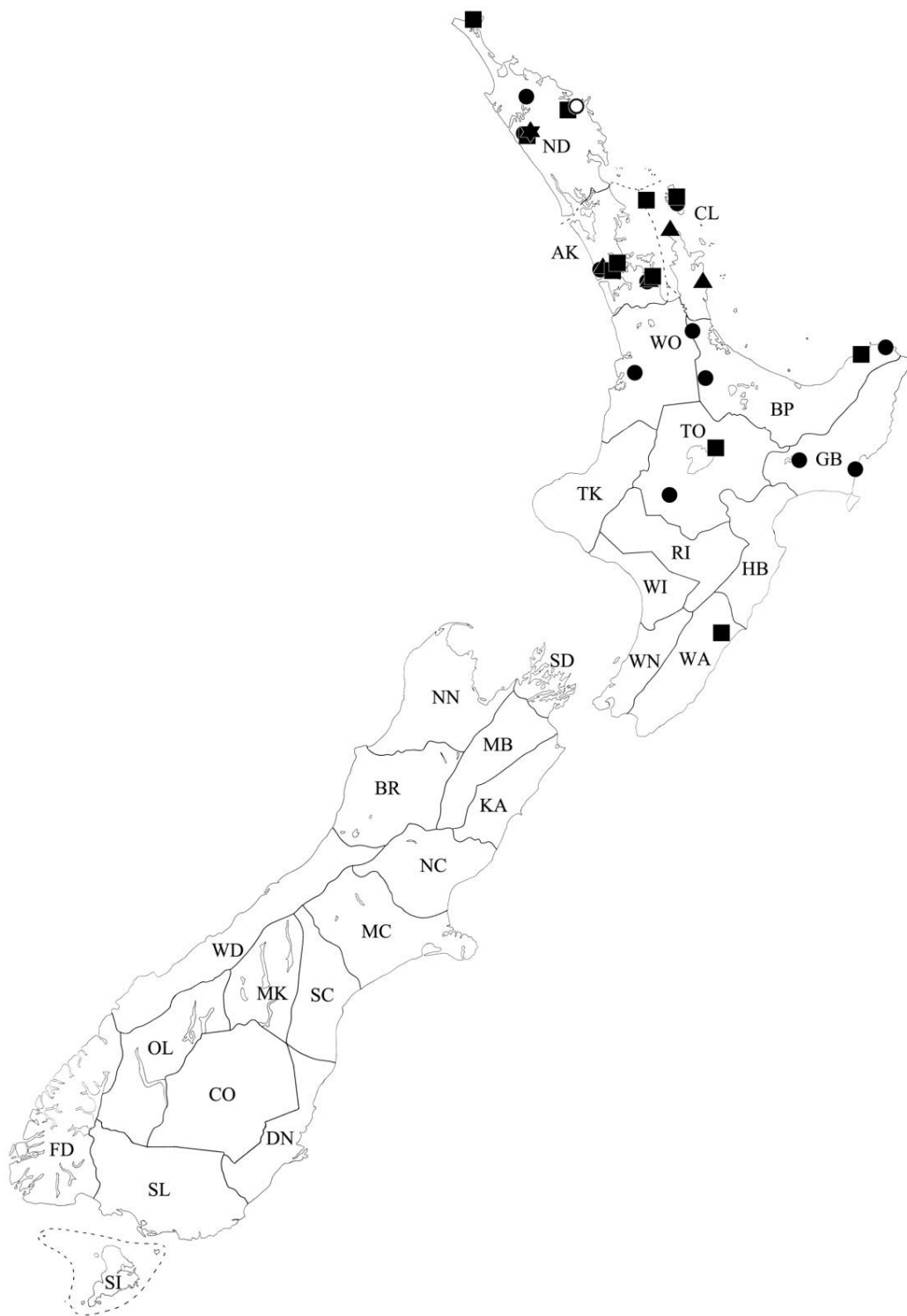


Figure 103. Locations where "*Brounea*" *setiventris*, *B. tenuis*, *B. sp. nov. 13*, *B. sp. nov. 13-1* and *B. sp. nov. 13-2* specimens have been collected in New Zealand. *B. setiventris*: black circles; *B. tenuis*: triangles; *B. sp. nov. 13*: black squares; *B. sp. nov. 13-1*: star; *B. sp. nov. 13-2*: white circle.

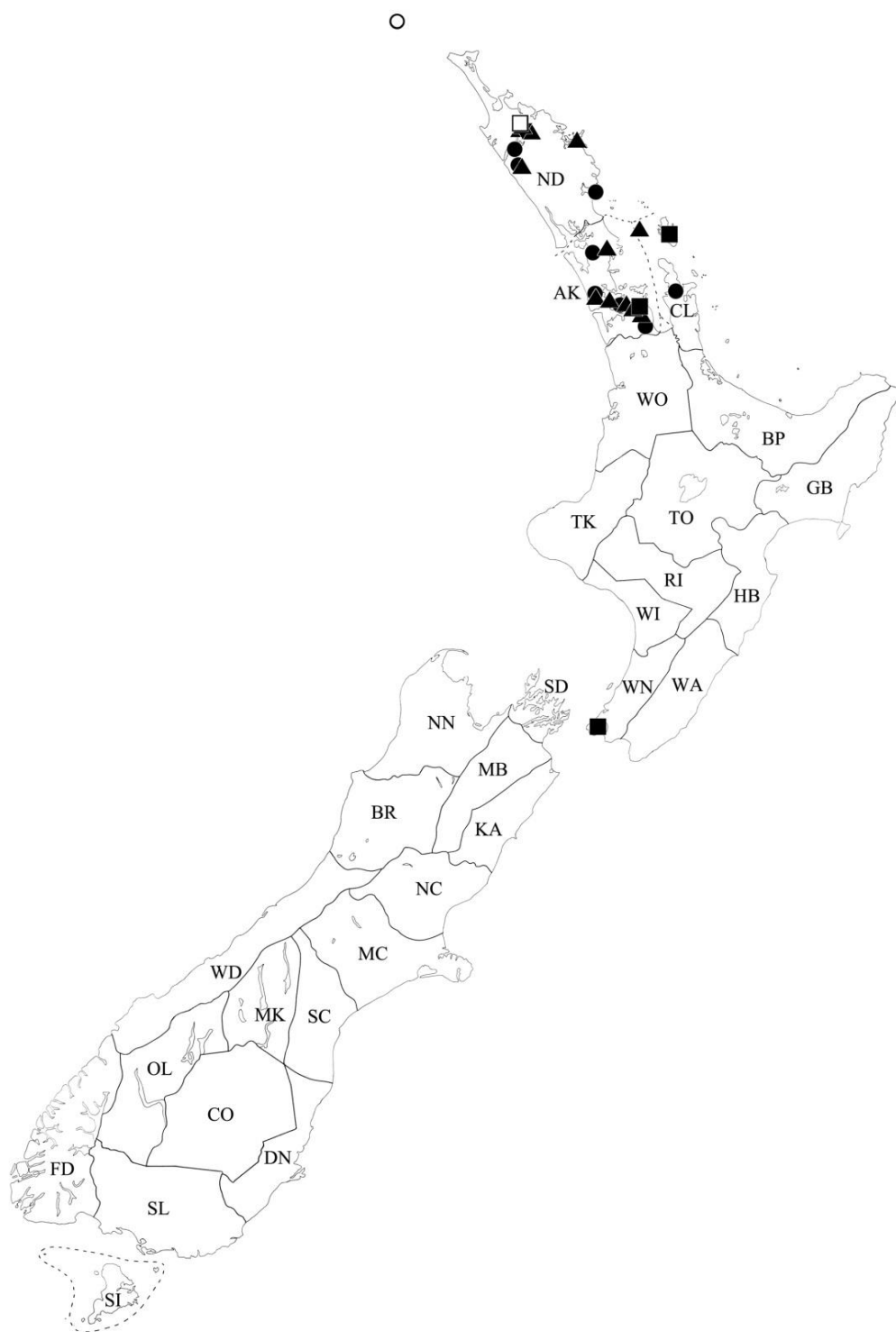


Figure 104. Locations where "*Brounea*" sp. nov. 14, *B. sp. nov. 15*, *B. sp. nov. 18-1*, *B. sp. nov. 18-2*, *B. sp. nov. 18-4* and *B. sp. nov. 20-1* specimens have been collected in New Zealand. *B. sp. nov. 14*: black circles; *B. sp. nov. 15*: triangles; *B. sp. nov. 18-1*: black squares; *B. sp. nov. 18-2*: star; *B. sp. nov. 18-4*: white circle; *B. sp. nov. 20-1*: white square.

Genus “*Aucklandea*” Park & Carlton, new genus (1 species)

Diagnosis. The members of “*Aucklandea*” may be separated from other faronite genera by the following combination of characters: body length 1.4–1.7 mm; antennomere 1 approximately 1.5 longer than wide; frontal sulcus open anteriorly (Figure 105e); anterior frontal fovea a pair and round, posterior frontal fovea oval and covered by cuticular membrane (Figure 105e); prosternum without lateral procoxal foveae (Figure 105f); hind wings well developed; mesoventrite without promesocoxal foveae (Figure 105d); metaventrite without lateral metasternal foveae (Figure 105d); abdominal tergites IV–VI with discal carinae; only known from Auckland (Figure 106).

Etymology. This species is named after the type locality, Auckland (AK).

“*Aucklandea*” sp. nov. 22

Type Material. Holotype. New Zealand: Auckland (AK): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: AK Bethells Matuku Res 10 May – 23 Jul 1989”, “G. Hall Malaise trap below tree platform”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=6; 2 males, 4 females): New Zealand: Auckland (AK):** 1♂, Auckland Domain, sedges, 27 III 2005, S.E. Thorpe (AMNZ); 1♂, Auckland Domain, bush sedges, 14 I 2005, S.E. Thorpe (AMNZ); 1♀, Auckland Domain, sedges in bush, 31 III 2005, S.E. Thorpe (AMNZ); 1♀, Lynfield, 3 VII 1976, G. Kuschel, decayed wood (AMNZ); 1♀ (slide-mounted), Bethells, Matuku Res, 29 VIII–29 X 1990, Malaise trap on tree platform (NZAC); 1♀, Waikowhai Park, 5 X 1951, dead wood (NZAC).

Description. Length 1.4–1.7 mm. Body brown, maxillary palpi paler, elytra, legs paler (Figure 105a). Antenna dark brown (Figure 105a). *Head.* Male head transverse, widest across eyes (Figure 105a). Antennomere 2 longer than wide, 3–8 subquadrate, 9–10 weakly transverse, 9–11 weakly clavate (Figure 105c). Eye large and prominent, as long as temple (Figure 105a). *Thorax.* Prosternum as long as wide, widest at midpoint of prosternum. Elytra rectangular (Figure 105a). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe divided vertically (Figure 105b). Phallobase of median lobe symmetrical and rounded (Figure 105b). Paramere asymmetrical, left broader than right with setae at tip (Figure 105b).

Distribution. Auckland (AK) (Figure 106: black circles).

Habitat. Specimens of this species were collected using malaise traps or by manual collecting in sedge bush or dead woods.

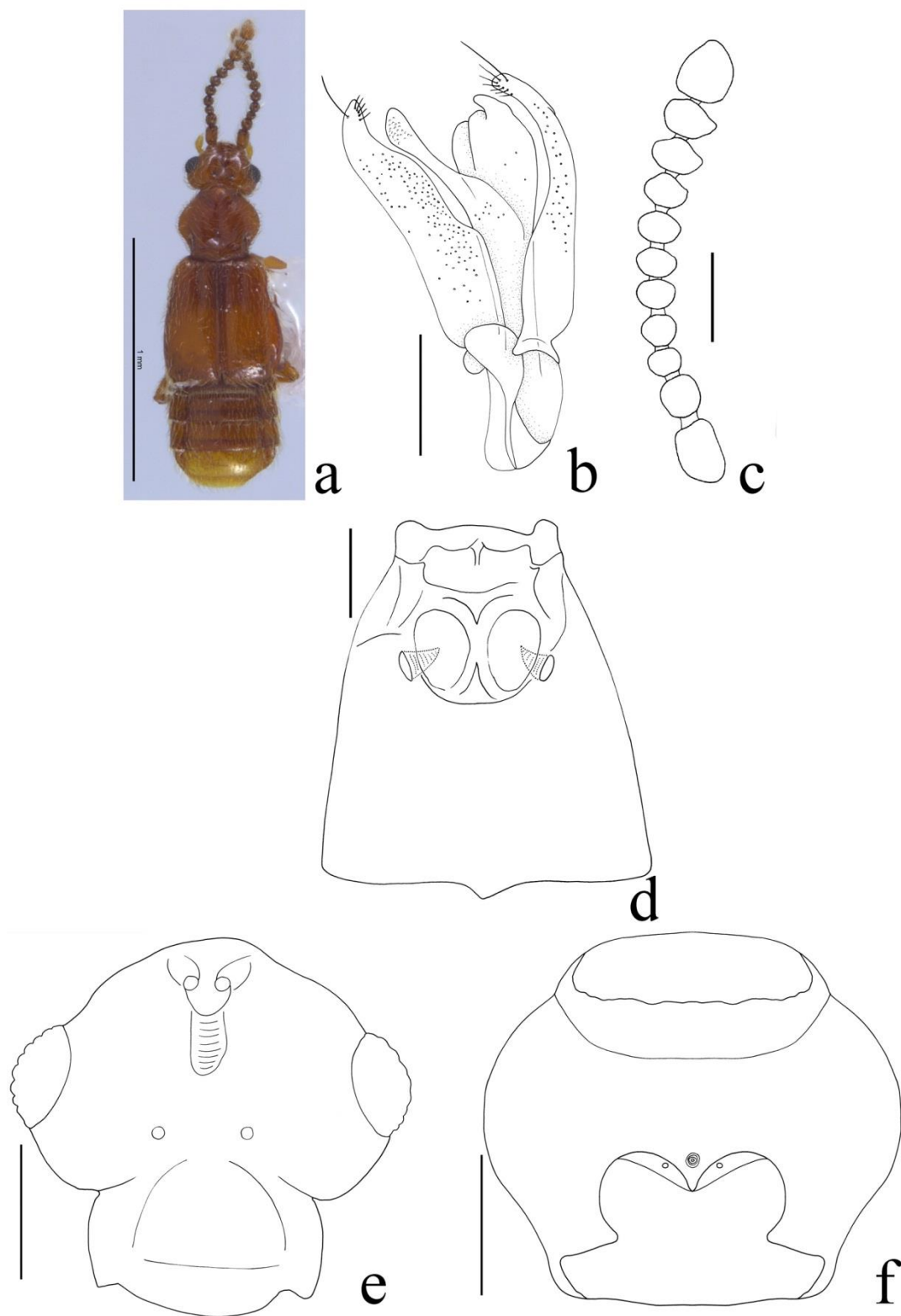


Figure 105. “*Aucklandea*” sp. nov. 22. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) antenna; d) meso- and metaventrite, ventral view; e) head, dorsal view; f) prosternum, ventral view; Scale bars = 0.1 mm.

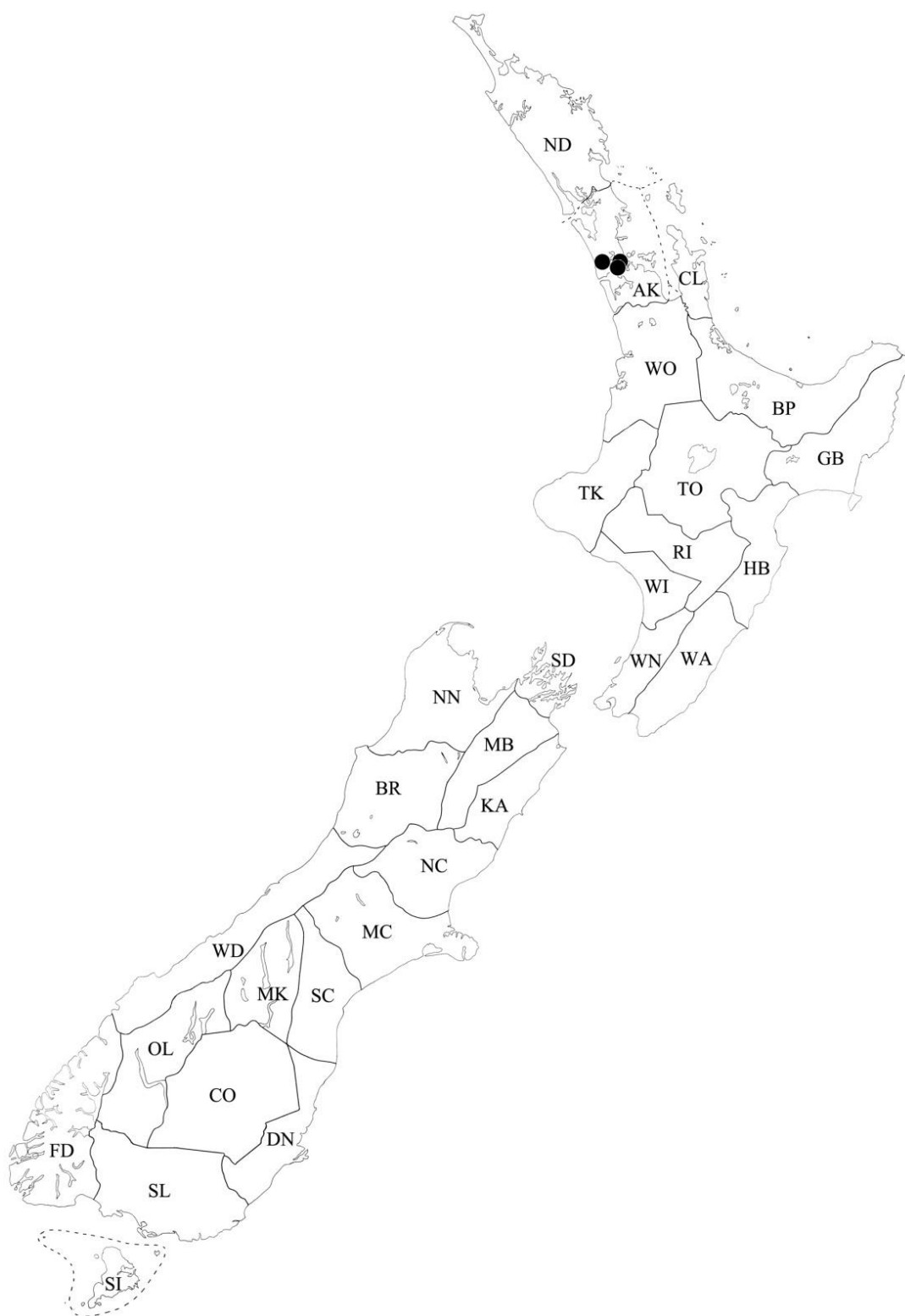


Figure 106. Locations where "*Aucklandia*" sp. nov. 22 specimens have been collected in New Zealand (black circles).

Genus “*Chandlerea*” Park & Carlton, new genus (1 species)

Diagnosis. The members of “*Chandlerea*” may be separated from other faronite genera by the following combination of characters: small body, length 1.8 mm (Figure 107a); antennomere 1 approximately 1.5– 2.0 times longer than wide, male 7 enlarged and subquadrate with round depression (Figure 107a); frontal rostrum prominent and covering anterior frontal fovea (Figure 107c); prosternum with lateral procoxal foveae (Figure 107d); hind wings well developed; mesoventrite with promesocoxal foveae (Figure 107e); abdominal tergites IV–VI with discal carinae; abdominal tergite VI enlarged, at least twice larger than VII (Figure 107f).

Etymology. This genus is named for one of the most influential specialists of Pselaphinae study, Dr. Donald S. Chandler.

“*Chandlerea*” sp. nov. 45

Type Material. Holotype. New Zealand: Marlborough (MB): ♂, “NEW ZEALAND: MB: Pelorus Bridge Scenic Reserve, 35m, 41°18.3’S 173°34’E, 27 xi 2005, mixed broadleaf (incl. *Nothofagus* spp.)-podocarp forest; FMHD#2005-042, berl., leaf & log litter, A. Newton, A. Solodovnikov & D. Clarke; ANMT site 1155”. **Paratype (1 male): New Zealand: Nelson (NN):** 1♂ (slide-mounted), Dun Mt., 2000’ 10 I 1942, E.S. Gourlay (NZAC).

Description of male. Length 1.8 mm. Body reddish brown, maxillary palpi paler, elytra, legs paler (Figure 107a). **Head.** Male head bluntly transverse, widest across eyes (Figure 107a). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–5 subquadrate, 6 transverse, 7 enlarged and subquadrate with round depression (Figure 107a), 8–10 transverse. Frontal rostrum prominent and covering anterior frontal fovea (Figure 107c). Frontal sulcus short, reaching anterior point of eye from apex of rostrum (Figure 107c). Posterior frontal sulcus deep and round. Eye large and prominent, one-half length of temple (Figure 107c). **Thorax.** Prosternum as long as wide, widest at midpoint of prosternum (Figure 107d). Elytra rectangular (Figure 107a). Meso- and metathorax trapezoidal, longer than wide (Figure 107e). **Abdomen.** Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. Abdominal tergite IV enlarged, at least twice larger than VII (Figure 107f). Abdominal ventrite IV with distinct basolateral foveae, V–VI absent (Figure 107f). **Aedeagus.** Median lobe broad (Figure 107b). Phallobase of median lobe symmetrical and rounded (Figure 107b). Paramere asymmetrical and slender with setae at tip (Figure 107b).

Distribution. Marlborough (MB), Nelson (NN) (Figure 108: black circles).

Habitat. The holotype was collected by sifting leaf and log litter in broadleaf and podocarp forests.

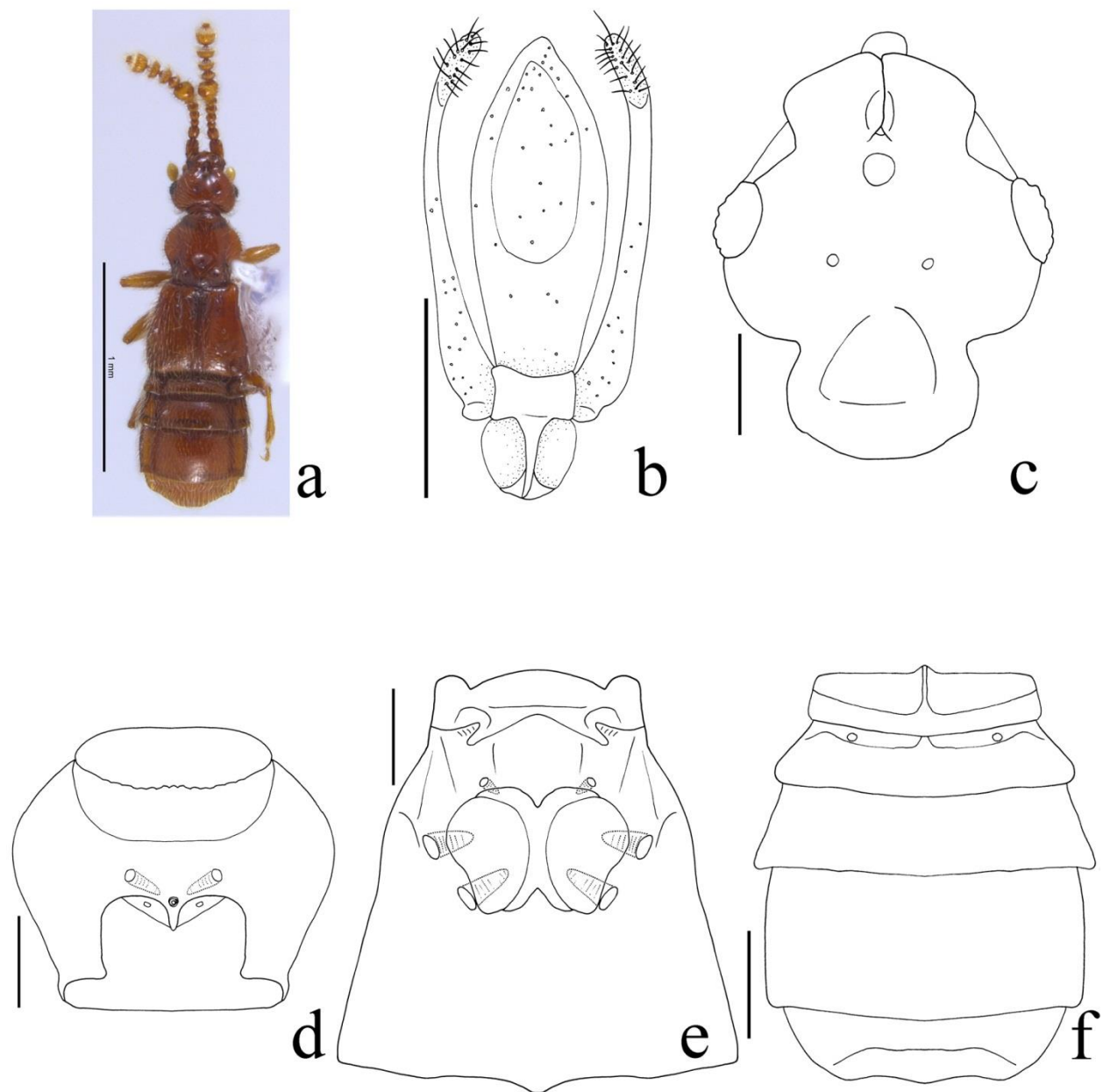


Figure 107. “*Chandlereia*” sp. nov. 45. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) head, dorsal head; d) prosternum, ventral view; e) meso- and metaventrite, ventral view; f) abdomen, ventral view; Scale bars = 0.1 mm.



Figure 108. Locations where "*Chandlereia*" sp. nov. 45 specimens have been collected in New Zealand (black circles).

Genus “*Nunnea*” Park & Carlton, new genus (2 species)

Diagnosis. The members of “*Nunnea*” may be separated from other faronite genera by the following combination of characters: body length 1.8–2.5 mm; antennomere 1 approximately 1.5 times longer than wide with dull face; frontal rostrum prominent, lobes continuous (Figure 109f); frontal sulcus reaching midpoint of eye (Figure 109f); posterior frontal fovea oval (Figure 109f); prosternum with lateral procoxal foveae (Figure 109g); hind wings well developed; mesoventrite with promesocoxal foveae (Figure 109h); abdominal tergite VI at least three times larger than VII (Figure 109e); abdominal tergites IV–VI with discal carinae; abdominal ventrites IV–VI distinctly large basolateral fovea (Figure 109e).

Etymology. This genus is named for one of the most influential New Zealand beetles collectors and an avid supporter of this study, John T. Nunn.

Key to species of “*Nunnea*”

1. Antennomere 4 longer than wide; median lobe of genitalia slender and S-shaped (Figure 109c).....“*Nunnea*” sp. nov. 39
- 2'. Antennomere 4 subquadrate; median lobe of genitalia broad and semicircular (Figure 109d).....*N.* sp. nov. 39-1

“*Nunnea*” sp. nov. 39

Type Material. Holotype. New Zealand: Nelson (NN): ♂, “NEW ZEALAND: NN: Kahurangi N.P., Arthur Range, above Flora Saddle, 1000m, 41°11.351'S 172°44.456'E, 28 XI–19 XII 2005, *Nothofagus*-dominant forest; FMHD#2005-044, flight intercept trap, A. Newton & M. Thayer; ANMT site 1156”. **Paratypes (n= 19; 8 males, 11 females).** New Zealand: **Buller (BR):** 3♂♂2♀♀ (1♂, slide-mounted), Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469'S, 172°48.311'E, 30 XI–17 XII 2005, *Nothofagus* forest, FMHD#2005-061, pitfall trap, A. Newton, M. Thayer, ANMT site 1161 (FMNH); 1♀, Nelson Lakes NP, n slope Mt. Robert, Pinchgut tr, 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, window trap (FMNH); **Nelson (NN):** 1♀, same data as holotype (FMNH); 1♂, Kahurangi NP, Cobb Dam rd, Asbestos tr, 450m, 41°06.333'S, 172°43.174'E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, FMHD#2005-111, litter, A. Solodovnikov, D. Clarke et. al, ANMT site 1160 (FMNH); 3♂♂2♀♀, Dun Mt., 31 VI 1996, A.K. Walker, litter 66/274 (NZAC); 1♂, Upper Maitai, 13 II 1957, E.S. Gourlay (NZAC); 1♀, Cobb Reservoir, 1037m, 18 IX 1964, T.G. Wood, moss 64/100 (NZAC); **Marlborough Sounds (SD):** 3♀♀, Tennyson Inlet, west side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd, A. Newton, M. Thayer 710, FIT&window trap (FMNH); 1♀, 70km ne Nelson, Tennyson Inlet, 480m, 27 V 1982, FMHD#2005-604, Beech forest litter, S. Peck (FMNH).

Diagnosis. This species is separated from other species of this genus by the longer than wide antennomere 4 and slender median lobe of genitalia.

Description. Length 1.8–2.5 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 109a). **Head.** Male head round, widest across eyes (Figure 109a). Ventral head convex. Antennomere 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Eye prominent, approximately one-half length of temple (Figure 109f). **Thorax.** Prosternum longer wide, widest at midpoint of prosternum (Figure 109g). Elytra triangular (Figure 109a). Meso- and metathorax trapezoidal, longer than wide (Figure 109h). **Abdomen.** Abdominal tergite IV without patches of microtrichia. **Aedeagus.** Median lobe slender and S-

shaped (Figure 109b). Phallobase of median lobe symmetrical and rounded (Figure 109b). Paramere symmetrical with setae at tip (Figure 109b).

Distribution. Buller (BR), Nelson (NN), Marlborough Sounds (SD) (Figure 110: black circles).

Habitat. Specimens of this species were collected using pitfall, flight intercept, window traps, or by sifting beech and leaf litter in broadleaf, hardwood, podocarp or *Nothofagus* forests.

“*Nunnea*” sp. nov. 39-1

Type Material. Holotype. New Zealand: Nelson (NN): 1♂, aedeagus dissected and mounted in balsam on a clear plastic card, “**New Zealand: NN:** Devil River Rd, Tawhai SF 3km S of Reefton 17 IV 1972, 197m J. McBurney, litter, PB15”. **Paratypes (n= 8; 4 males, 4 females). New Zealand: Buller (BR):** 2♀♀, Fletchers ck, Stoney ck, 28 I 1972, J.S. Dugdale, PN15, litter 72/101 (NZAC); 1♂1♀, Fletchers ck, 7 III 1972, J.S. Dugdale, litter 72/106 (NZAC); 2♂♂, Reefton, 12 IV 1977, J.A. Wightman, pit trap cutover pine (NZAC); 1♂, W Inangahua SF, 126m, Fletchers ck, 18 IV 1972, J.S. Dugdale, moss & litter on Beech forest floor, XB2 (NZAC); 1♀, 1.8km n Punakaiki, 80m, 19 XII 1984–20 I 1985, hdwd forest with nikau, A. Newton, M. Thayer 718, FIT&window trap (FMNH).

Diagnosis. This species is separated from other species of this genus by subquadrate antennomere 4 and broad median lobe of genitalia.

Description. Length 1.8–2.5 mm. Body reddish brown and antenna, elytra, legs, maxillary palpi paler (Figure 109c). *Head.* Male head round, widest across eyes (Figure 109c). Ventral head convex. Antennomere 2 longer than wide, 3–10 subquadrate. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum longer wide, widest at midpoint of prosternum. Elytra triangular (Figure 109c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Median lobe broad and semicircular (Figure 109d). Phallobase of median lobe symmetrical and rounded (Figure 109d). Paramere symmetrical with setae at tip (Figure 109d).

Distribution. Buller (BR), Nelson (NN) (Figure 110: triangles).

Habitat. Specimens of this species were collected using pitfall, flight intercept, window traps, or by sifting moss and leaf litter.

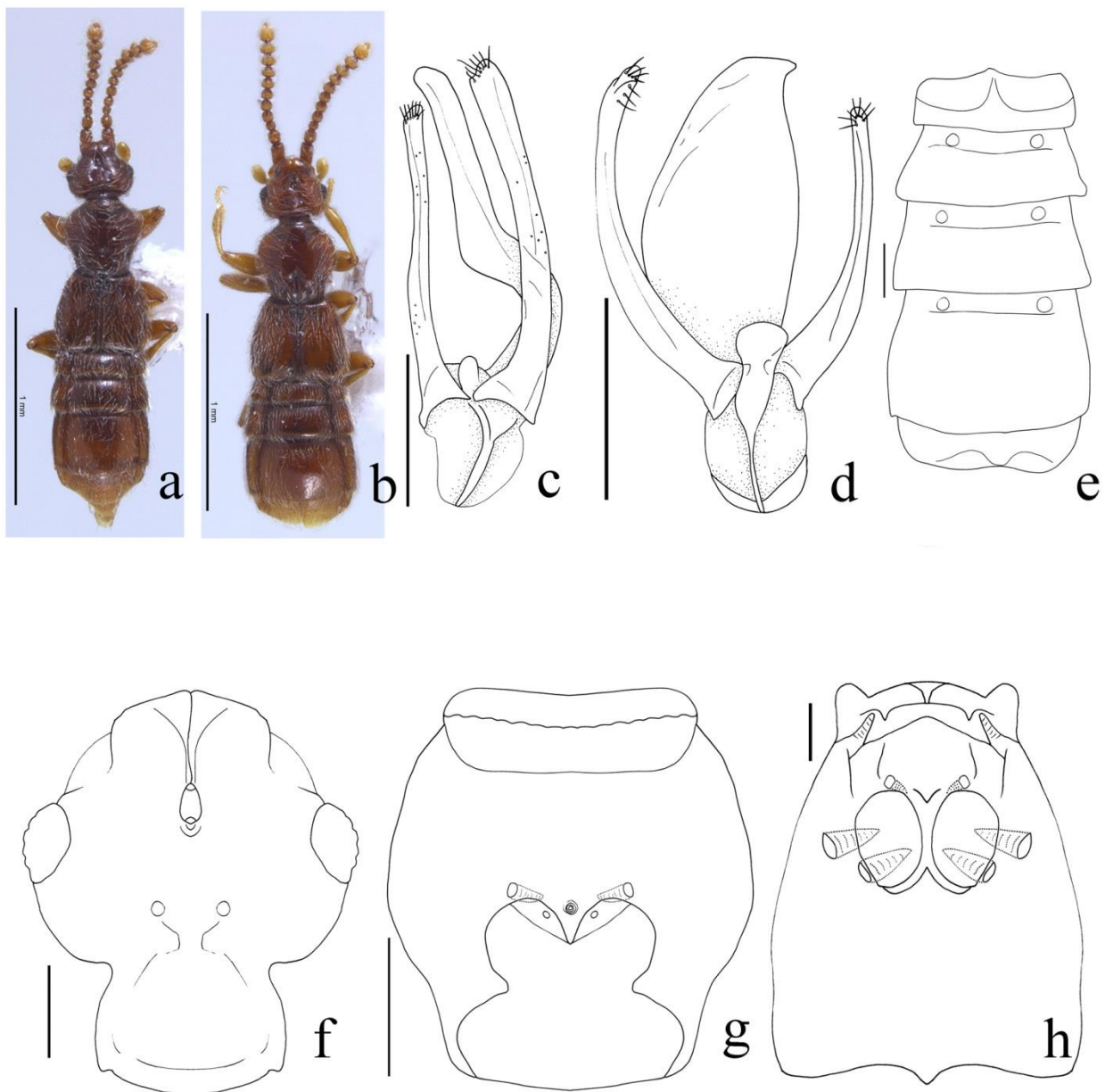


Figure 109. “*Nunnea*” sp. nov. 39, dorsal view. a) habitus, Scale bars = 1 mm. b) aedeagus, Scale bars = 0.1 mm. *P.* sp. nov. 39-1, dorsal view. c) habitus, Scale bars = 1 mm. d) aedeagus, Scale bars = 0.1 mm. *N.* sp. nov. 39. e) abdomen, ventral view; f) head, dorsal view; g) prosternum, ventral view; h) meso- and metaventricle, ventral view; Scale bars = 0.1 mm.

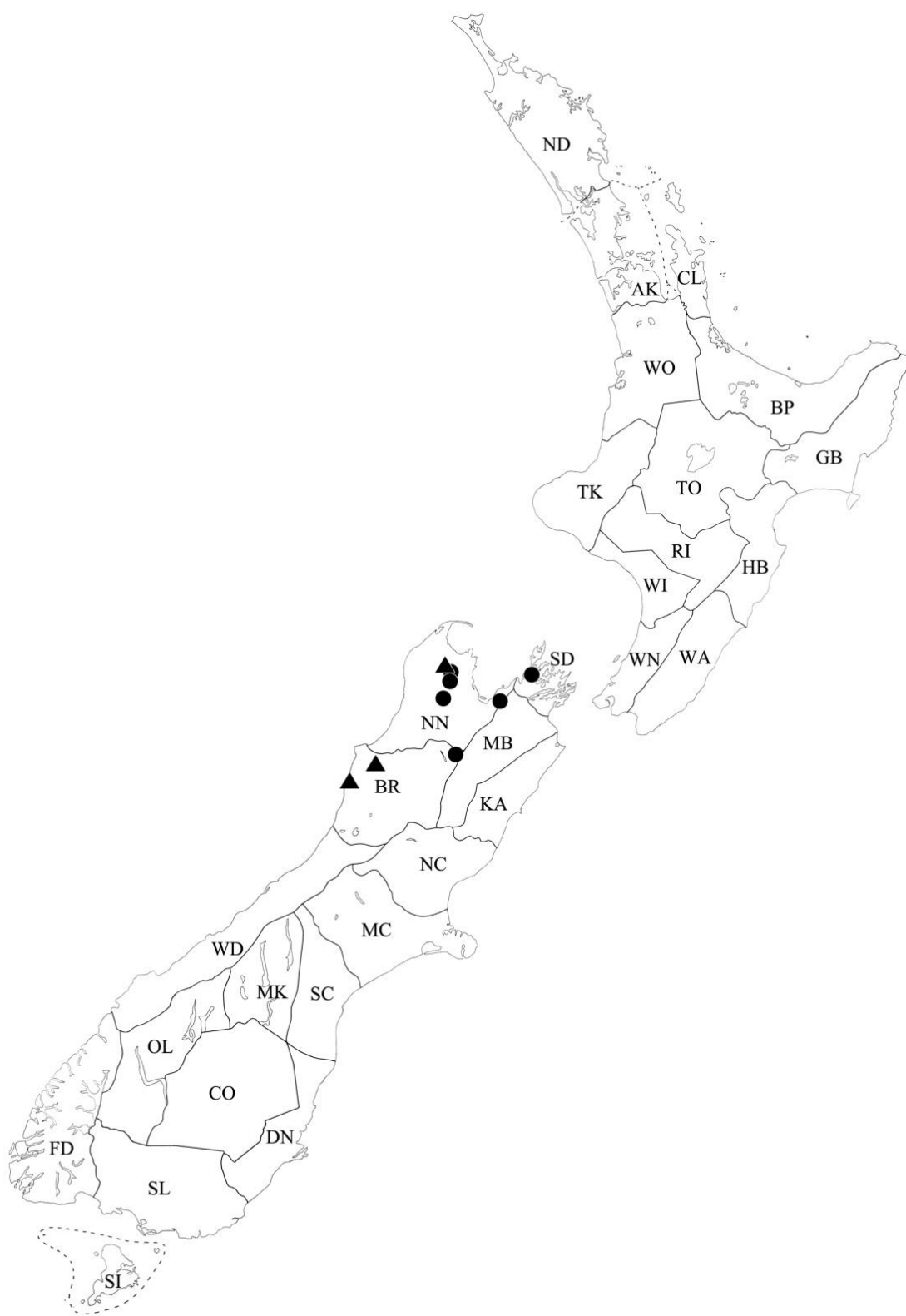


Figure 110. Locations where "*Nunnea*" sp. nov. 39 and *N. sp. nov. 39-1* specimens have been collected in New Zealand. *N. sp. nov. 39*: black circles; *N. sp. nov. 39-1*: triangles.

Genus “*Leschenea*” Park & Carlton, new genus (1 species)

Diagnosis. The members of “*Leschenea*” may be separated from other faronite genera by the following combination of characters: body length 1.3–2.0 mm; antennomere 1 approximately 1.5 times longer than wide, 8–11 weakly clubbed; frontal rostrum prominent, lobe continuous (Figure 111c); frontal sulcus not reaching eye (Figure 111c); anterior frontal fovea absent and posterior frontal fovea drop-shaped (Figure 111c); prosternum with lateral procoxal foveae but median procoxal fovea absent (Figure 111d); mesoventrite without promesocoxal foveae (Figure 111e); metaventrite without lateral metasternal foveae (Figure 111e); abdominal tergites IV–VI with discal carinae; abdominal ventrites IV–VI large basolateral fovea (Figure 111f).

Etymology. This species is named for the collector of the holotype and world renowned beetle specialist, Dr. Richard Leschen.

“*Leschenea*” sp. nov. 48

Type Material. Holotype. New Zealand: Otago Lakes (OL): ♂, “New Zealand: OL, 10.5 km NW Glenorchy, Nothofagus forest, 44°47'S 168°27'E FIT, #143, 19–24 Jan 1998 C. Carlton, R. Leschen”. **Paratypes (n= 24; 15 males, 9 females). New Zealand: Central Otago (CO):** 1♂, Pisa Ra, Gully behind, L. Mackay, 1740m, 23 XI 1974, J.C. Watt, litter 74/98 (NZAC); **Dunedin (DN):** 1♂, Rock And Pillar, 20 II 1998, pit trap, J. Nunn (JTN); **Fiordland (FD):** 2♂♂, Secretary I, 850m, 30 XI 1981, C.F. Butcher, sweeping tussock (NZAC); 1♂1♀, Secretary I, ridge towards, Mt. Grono, 27–30 XI 1981, C.F. Butcher, pan trap (NZAC); 1♂1♀, Barrier Ra, Little Red Hill, 2 II 1975, G.W. Ramsay, litter&moss 75/88 (NZAC); 1♂, Tutoko Bench, 1585m, Darran Mts, 10 I 1977, J.S. Dugdale, litter 77/26 (NZAC); 1♂, Middle Gully, Tutoko Bench, Darran Mts, 13 I 1977, J.S. Dugdale, litter 77/17 (NZAC); 1♂, Mt. Barber, Wilmot Pass, 1350m, 15 I 1970, A.C. Eyles, grass & litter 70/58 (NZAC); 1♂, Fiordland NP, Murchison Mts, e McKenzie Burn, 1110m, 4 XII 1983, C.A. Muir, litter under *Hebe* scrub (LUNZ); 1♀, Secretary I, 600m, 30 XI 1981, C.F. Butcher, sweeping at night (NZAC); 1♀, Simonin Pass, w Olivine Ra, 1067m, 23 I 1975, G.W. Ramsay, litter 75/34 (NZAC); **Mackenzie (MK):** 1♂, Hooker Valley, Mt. Cook, Southern Alps, I 1943, A.E. Brookes, leaf mould (NZAC); 1♂ (slide-mounted), Govenors Bush, 762m, Mt. Cook, 11 I 1966, J.I. Townsend, litter (NZAC); **Otago Lakes (OL):** 1♂3♀♀, 14km nw Glenorchy, beyond Paradise, Mt. Aspiring NP, 44°41'S 168°20'E, #103, *Nothofagus* leaf litter, 21 I 1998, C. Carlton, R. Leschen (LSAM); 1♂, Rees Saddle, 1600m, 14 II 1980, J.S. Dugdale, mixed swards 80/18 (NZAC); 1♂, Dart Hut, 13–14 II 1980, J.S. Dugdale, pan trap in bush (NZAC); 1♀, McKerrow Range, Makarora, 1150m, 23 I 1978, G. Kuschel, litter 78/51 (NZAC); **South Canterbury (SC):** 1♂, Mt. Dalgety, 19 I 1966, J.I. Townsend, moss in tussock 66/65 (NZAC); **Marlborough Sounds (SD):** 1♀, Ship Cove, 30 XI 1972, J.S. Dugdale, litter 72/273 (NZAC).

Description. Length 1.3–2.0 mm. Body brown and antenna, elytra, legs, maxillary palpi paler (Figure 111a). **Head.** Male head longer than wide, widest across eyes (Figure 111a). Antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–7 subquadrate, 8–10 weakly transverse and clavate. Eye large and prominent, as long as temple (Figure 111c). **Thorax.** Prosternum as long as wide, widest at midpoint of prosternum (Figure 111d). Elytra rectangular (Figure 111a). Hind wings fully developed. Meso- and metathorax trapezoidal, longer than wide (Figure 111e). **Abdomen.** Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. **Aedeagus.** Male genitalia small, <0.2 mm (Figure 111b).

Median lobe C-shaped (Figure 111b). Phallobase of median lobe symmetrical and rounded (Figure 111b). Paramere symmetrical with setae from tip to middle (Figure 111b).

Distribution. Central Otago (CO), Dunedin (DN), Fiordland (FD), Mackenzie (MK), Otago Lakes (OL), South Canterbury (SC), Marlborough Sounds (SD) (Figure 112: black circles).

Habitat. Specimens of this species were collected using pitfall, pan traps, or by sweeping or sifting leaf and tussock litter.

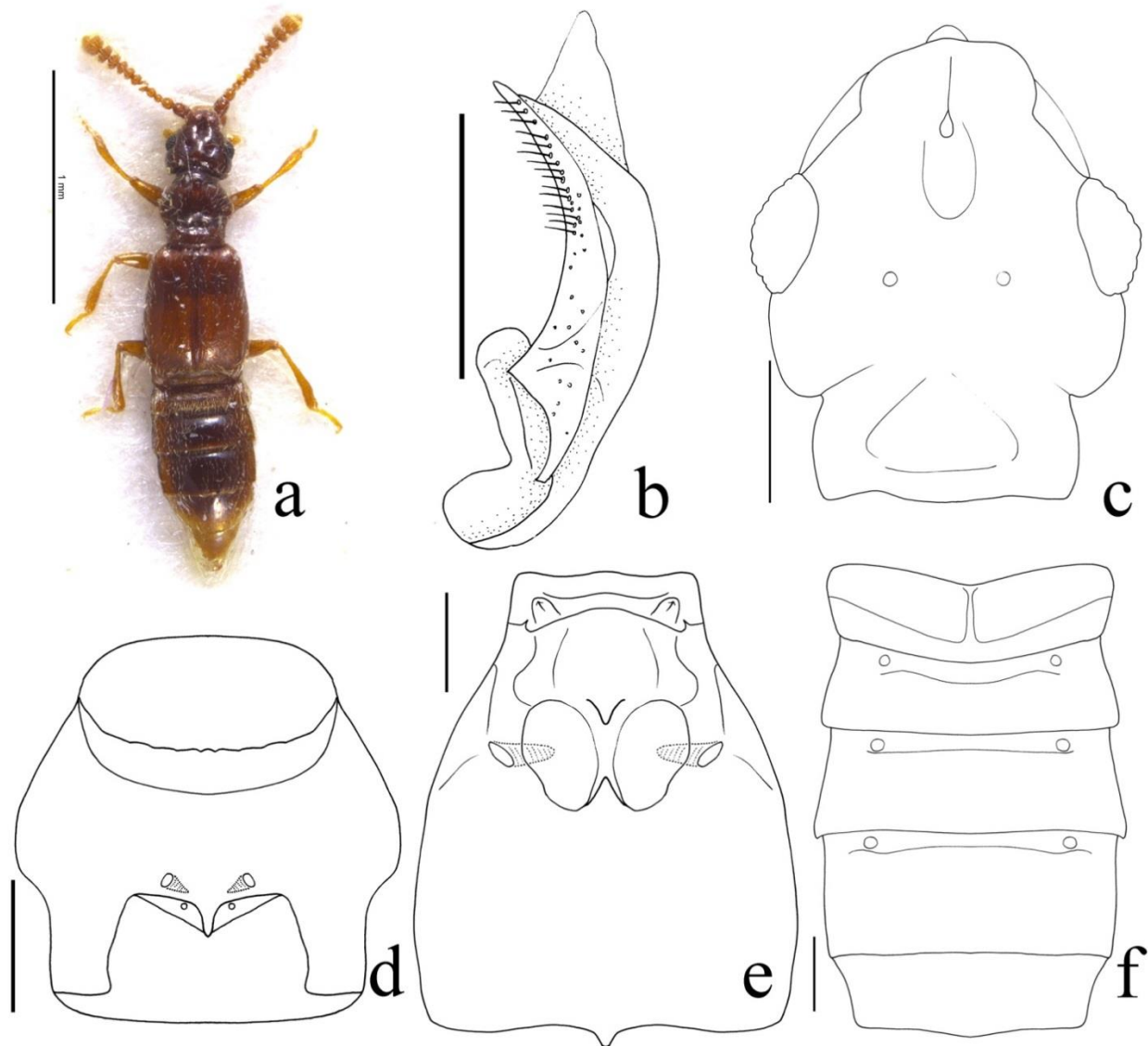


Figure 111. “*Leschenea*” sp. nov. 48. a) habitus, dorsal view; Scale bars = 1 mm. b) aedeagus, dorsal view; c) head, dorsal view; d) prosternum, ventral view; e) meso- and metaventrite, ventral view; f) abdomen, ventral view; Scale bars = 0.1 mm.

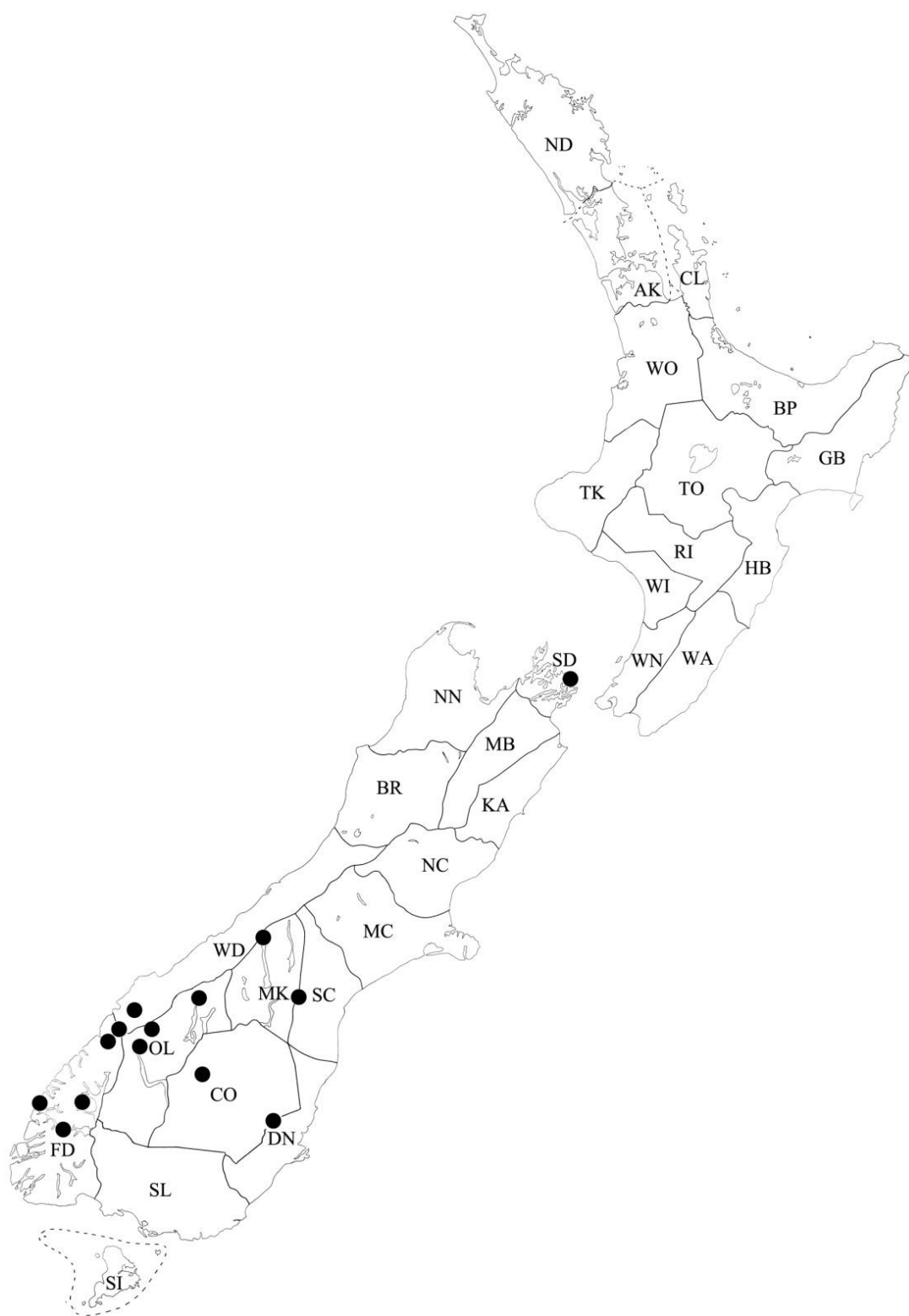


Figure 112. Locations where "*Leschenea*" sp. nov. 48 specimens have been collected in New Zealand (black circles).

Genus “*Ahnea*” Park & Carlton, new genus (3 species)

Diagnosis. The members of genus “*Ahnea*” may be separated from other faronite genera by the following combination of characters: body small, length 2.6–3.5 mm; frontal rostrum prominent and rectangular, lobes continuous (Figure 113g); frontal sulcus linear (Figure 113g); anterior frontal fovea round, covered by frontal rostrum and posterior frontal fovea oval, covered by frontal rostrum (Figure 113g); prosternum without lateral procoxal foveae (Figure 113h); mesoventrite without promesocoxal foveae (Figure 113i); abdominal tergites IV–VI with discal carinae; median lobe of genitalia elongate with membranous tube (Figures 113d–f); parameres symmetrical with thick setae at tip (Figures 113d–f).

Etymology. This species is named for my mentor and world staphylinid specialist, Dr. Kee-Jeong Ahn.

Key to species of “*Ahnea*”

1. Eye larger, one-half length of temple; elytra rectangular (Figure 113b); abdominal tergite IV with a pair of transverse microtrichial patches.....“*Ahnea*” *lineata* (Broun)
- 1'. Eye small, one-third length of temple; elytra subquadrate (Figures 113a–c); abdominal tergite IV without microtrichial patches.....2
- 2 (1). Body smaller, length 2.7–3.1 mm; apical lobe of genitalia flattened with two setae (Figure 113d).....*A. ventralis* (Broun)
- 2'. Body larger, length 3.1–3.5 mm; apical lobe of genitalia ink pen tip-shaped (Figure 113f).....*A. sp. nov.* 60

“*Ahnea*” *ventralis* (Broun)

Sagola ventralis Broun, 1912b: 623. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Sagola dissonans Broun, 1921b: 601. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola planicula Broun, 1921a: 503. Hudson, 1923: 366; 1934: 184. Kuschel, 1990: 48. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: Buller (BR): ♂, glued on rectangular card, “Type” [red label, printed]; “Greymouth, New Zealand. Helms.” [white label, printed]; “10.” [white label, handwritten]; “*Sagola ventralis*” [white label, handwritten]. **Holotype of *Sagola dissonans*: New Zealand: Wellington (WN):** ♂, glued on rectangular card, “4165.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Featherston. 6.10.1916.” [white label, handwritten]; “*Sagola*.♂ *dissonans*” [white label, handwritten]. **Holotype of *Sagola planicula*: New Zealand: Bay of Plenty (BP):** ♂, glued on rectangular card, “4017.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Te Aroha. Nove 1910.” [white label, handwritten]; “*Sagola* ♂ *planicula*” [white label, handwritten].

Additional Material (n= 62; 31 males, 31 female). New Zealand: Bay of Plenty (BP): 1♀, Orete Forest, Te Puia Hut, 25 I 1993, J.S. Dugdale, litter 93/3; **Hawkes Bay (HB):** 1♂, Kaweka Range, Makahu Saddle, 12 III 1980, C.F. Butcher, plants 80/40; 1♂, Boundary Stream Scenic Reserve, 20 X 1984, C.F. Butcher, litter and rotten wood 84/71; **Marlborough (MB):** 4♂♂2♀♀, Pelorus Bridge Scenic Reserve, 35m, 41°18.3'S, 173°34'E, 27 XI 2005, mixed broadleaf (incl. *Nothofagus*)-podocarp forest, FMHD#2005-042, litter, A. Newton, A.

Solodovnikov, D. Clarke, ANMT site 1155; 4♂♂1♀ (1♂, slide-mounted), 15km w Havelock, Pelorus Bridge Res, 25 V 1982, FMHD#2005-600, mixed forest litter, S. Peck; 2♀♀, Mt. Robinson, s Ridge, 518m, Kenepuru Hd, 13 III 1970, J.I. Townsend, litter 70/142; 1♀, French Pass, Orr Hill, 23 IV 1963, G. Kuschel, litter 63/13; 1♀, Pelorus Bridge, 16 I 1949, A.E. Brookes Collection; **Northland (ND)**: 1♀, Waipoua State Forest, 0.9km e Forest Hqtr, 120m, 26 XI–4 XII 1984, hdwd-podocarp forest, A. Newton, M. Thayer 686, FIT&window trap; **Nelson (NN)**: 1♀, Dun Mt, 31 VI 1966, A.K. Walker, litter 66/274; 1♂, Upper Maitai, 7 III 1949, E.S. Gourlay; **Rangitikei (RI)**: 1♀, Ruahine Ra, Triplex, 10 II 1980, C.F. Butcher, litter 80/16; **Marlborough Sounds (SD)**: 2♂♂2♀♀, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 708, litter; 2♂♂2♀♀, Tennyson Inlet, w side Te Mako Bay, 125m, 15 XII 1984–5 I 1985, *Nothofagus*-podo-hdwd, A. Newton, M. Thayer 710, litter; 1♂3♀♀, 70km ne Nelson, Tennyson Inlet, 480m, 27 V 1982, FMHD#2005-604, Beech forest litter, S. Peck; 2♀♀, Port Ligar, 305m, 26 X 1969, F. Alack, litter 69/175; 1♂, Mt. Stokes, 762m, 12 III 1970, J.I. Townsend, litter 70/141; 1♀, Tennyson Inlet rd, 115–135m, 30 XII 1984–5 I 1985, forest streams hdwd-podo-nikau forest, A. Newton, M. Thayer 723, litter; **Taupo (TO)**: 1♀, Ohakune Mt, 27 XI 1985, C.H.C. Lyal, litter 85/73; **Wairarapa (WA)**: 1♀, Upper Manawatu Gorge, 24 X 1993, J. Nunn; **Wanganui (WI)**: 2♀♀, nr Glow-worm Cavem Table Hill rd nr Apiti, 8 II 1997, J. Nunn; **Wellington (WN)**: 3♂♂2♀♀, Akatarawa saddle, Tararua SF, (s of Waikanoe), 500m, 7 III 1978, S. Peck, litter; 1♂1♀, Tararua Forest Park, Waitewaewae tr, 220m, 40°51.98'S 175°15.319'E, 26 XI 2005, broadleaf (much *Knightia exelsa*)-podocarp forest, FMHD#2005-0336, litter, M. Thayer, A. Newton, ANMT site 1152; 2♀♀, Tararua Forest Park, above Akatarawa Saddle, 455m, 40°56.936'S 175°06.529'E, 26 XI 2005, broadleaf-podocarp forest on slope, FMHD#2005-033, litter, A. Newton, M. Thayer, ANMT site 1151; 2♂♂, Tararua FP, Holdsworth, 16 IV 2005, R. Leschen, litter RL976, 40.53S 175.28E; 2♂♂, Manukau North rd end, 8 IX 1995, J. Nunn, leaf litter; 1♂, Tararua Ra, Mt. Holesworth tr, 3 IX 1965, J.I. Townsend. moss 65/469; 1♂, Akatarawa Saddle, 600m, 7 III 1978, S.B. Peck, litter; 1♂, Waiotauru rd, Tararua FP, 22 X 1991, J. Nunn, litter under silver beech; 1♂, Akatarawa rd, stm, 18 IV 1992, J. Nunn; 1♀, Tararua FP tk, Akatarawa Saddle, 17 I 1984, H.P. McColl, litter; 1♂, Rimutakes Range, 14 II 1952, R. Hornabrook; 1♂, Featherson, Wairarapa, T. Hall, 28 VIII 1916.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.7–3.1 mm; eye small, approximately one-third length of temple; elytra subquadrate and hind wings reduced to small pads; abdominal tergite IV without microtrichial patches; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.7–3.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 113a). *Head.* Head round, as long as wide, widest across eyes (Figure 113g). Antennomere 1 approximately 1.5 times longer than wide, 2–6 longer than wide, 7–10 subquadrate. Eye small, approximately one-third length of temple (Figure 113g). *Thorax.* Prosternum as long as wide, widest one-third length of prosternum (Figure 113h). Elytra subquadrate (Figure 113a). Hind wings reduced to small pads. Meso- and metathorax trapezoidal, as long as wide (Figure 113i). *Abdomen.* Abdominal tergite IV without microtrichial patches. *Aedeagus.* Median lobe of genitalia long, bearing tube from base (Figure 113d). Apical lobe flat with two setae (Figure 113d). Phallobase of median lobe symmetrical and rounded (Figure 113d). Paramere symmetrical with 3 pairs of short thick setae, and 6 pairs of longer setae at tip (Figure 113d).

Type locality. Greymouth (BR), New Zealand.

Distribution. Bay of Plenty (BP), Buller (BR), Hawkes Bay (HB), Marlborough (MB), Northland (ND), Nelson (NN), Rangitikei (RI), Marlborough Sounds (SD), Taupo (TO), Wairarapa (WA), Wanganui (WI), Wellington (WN) (Figure 114: black circles).

Habitat. Specimens of this species were collected mostly by sifting leaf, moss and wood litter in broadleaf, podocarp or *Nothofagus* forests.

Comments. Specimens of “*Ahnea*” *ventralis* (Broun) can be separated from those of other species by the shapes of the antennomeres, short elytra and small eye. The type specimens of *S. dissonans* and *S. planicula* share these diagnostic characters. Collections of specimens of these species were made at the type locality of *A. ventralis* or from localities of additional specimens of *A. ventralis*. For these reasons, I have placed *S. dissonans* and *S. planicula* in synonymy with *A. ventralis*.

“*Ahnea*” *lineata* (Broun)

Sagola lineata Broun, 1893a: 175. Raffray, 1904: 498; 1911: 5; 1924: 233. Hudson, 1923: 365; 1934: 183. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242.

Sagola carinata Broun, 1912b: 622. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241. **New Synonym.**

Sagola lineiceps Broun, 1921a: 504. Hudson, 1923: 366; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Holotype. New Zealand: Waikato (WO): ♀, glued on rectangular card, “Type” [red label, printed]; “3719.” [white label, handwritten]; “Pirongia” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “*Sagola lineata*.” [white label, handwritten]. **Holotype of *Sagola carinata*: New Zealand: Buller (BR):** ♂, glued on rectangular card, “Type” [red label, printed]; “9.-” [white label, handwritten]; “Greymouth, New Zealand. Helms.” [white label, printed]; “Sharp Coll. 1905-313.” [white label, printed]; “*Sagola* ♂ *carinata*.” [white label, handwritten]. **Holotype of *Sagola lineiceps*: New Zealand: Nelson (NN):** ♀, glued on rectangular card, “4018.♀” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Glenhope. 14.3.1915” [white label, handwritten]; “*Sagola lineiceps*.” [white label, handwritten].

Additional Material (n= 34; 21 males, 13 female). New Zealand: Auckland (AK): 1♂, Aunua Ra, Kohukohunui, 550m, 30 III 1974, G. Kuschel, litter 74/19; **Bay of Plenty (BP):** 1♂, Okauia, Kaimai R, Matamata, 1 I 1924, A.E. Brookes; 1♂, Okauia, Kaimai Ra, Matamata, 6 II 1921, A.E. Brookes; **Buller (BR):** 1♂, Tawhai SF, Big R rd, 9 XI 1971, J.C. Watt, litter 71/132; 1♂, Greymouth, Grandjeans tk, 10 X 2005, R. Leschen, S. Nomura, litter, 42°28’S 171°12’E, RL 1019; 1♂, Fletchers ck, stone ck, 28 I 1972, J.S. Dugdale, PB15, litter 72/101; 1♂, Hochstetter SF, 6km s of Ahaura, 11 XI 1971, J.C. Watt, litter 71/148; 1♂, Paparoa NP, 2km ne Punakaiki, Bullocl ck rd, 50m, 12 XI 2005, R. Leschen, S. Nomura, P. Lambert, litter RL1024, 42°06’S 171°22’E; 1♂, Woods Creek tr, 184m, 24 II 2007, K. Marske, KM010, dead wood with fungi, 42°33.194S 171°20.926E; 1♀, Reefton, 12 IV 1977, J.A. Wightman, pit trap in beech forest; 1♀, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469’S 172°48.311’E, 30 XI–17 XII 2005, *Nothofagus* forest, FMHD#2005-061, pitfall trap, A. Solodovnikov, D. Clarke, ANMT site 1161; **Northland (ND):** 1♀, Waipoua SF, Toronui tr, 150m, 14 IV 1980, kauri-podocarp-broadf-nikau palm forest, A. Newton, M. Thayer, litter; **Nelson (NN):** 1♂, Kahurangi NP, Cobb Dam rd, Asbestos tr, 450m, 41°06.333’S 172°43.174’E, 29 XI–18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp forest, FMHD#2005-111, litter, A. Solodovnikov, D. Clarke et al, ANMT site 1160; 1♂, Upper Maitai, 3 V 1950, E.S. Gourlay; 3♀♀, 30km sw

Collingwood 15 mi ck, 100m, 23 V 1982, FMHD#2005-597, litter, S. Peck; 1♀, 20km nw Motueka, Riwaka River Res, 28 V 1982, FMHD#2005-605, mixed forest litter, S. Peck; **Marlborough Sounds (SD)**: 2♂♂1♀, Opouri Saddle, above Tennyson Inlet, 540m, 15 XII 1984–5 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 708, window trap; **Taupo (TO)**: 2♂♂, Ahimanawa Ra, 609m, 14 I 1972, G.W. Ramsay, litter 72/10; **Westland (WD)**: 2♂♂, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, window trap; 1♂, 1.8km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-podo-nikau forest, A. Newton, M. Thayer 719, litter; 1♂, Okuku ck, 11.3km sse Kumara, 60m, 18–22 III 1980, podocarp-broadlf, A. Newton, M. Thayer, litter; 1♀, Hokitika R. Gorge, S Kowhitirangi, 100m, 17 III 1980, podocarp-broadlf, A. Newton, M. Thayer, litter; 1♂1♀, Hokitika Gorge, 29 I 1978, S.B. Peck, litter; 1♂, Lake Mahinapua, 9 XI 2005, R. Leschen, S. Nomura, litter RL1010, 42°47'S 170°55'E; 1♀, 1.5km n Punakaiki, 50m, 19 XII 1984–20 I 1985, hdwd-nikau forest, A. Newton, M. Thayer 720, litter; 1♀, Hokitika, Lake Mahinapua Res, 28 I 1978, S. Peck, J. Peck, bracket fungi; 1♀, Okuku Scenic Reserve, 46.7km w Otira, 75m, 42°43'S 171°14'E, #050, *Laurelia novaezelandiae* litter, 12 I 1998, C. Carlton, R. Leschen.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.6–3.0 mm; eye prominent, approximately one-half length of temple; elytra rectangular and hind wings fully developed; abdominal tergite IV with a pair of transverse microtrichial patches; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.6–3.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 113b). *Head.* Head round, as long as wide, widest across eyes (Figure 113b). Antennomere 1 approximately 1.5 times longer than wide, 2–8 longer than wide, 9–10 subquadrate. Eye prominent, approximately one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 113b). Hind wings fully developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse microtrichial patches. *Aedeagus.* Median lobe of genitalia elongate, bearing tube from base (Figure 113e). Apical lobe triangular with four lobes (Figure 113e). Phallobase of median lobe symmetrical and rounded (Figure 113e). Paramere symmetrical with a pair of short thick setae, and 6 pairs of longer setae at tip (Figure 113e).

Type locality. Mount Pirongia (WO), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Buller (BR), Northland (ND), Nelson (NN), Marlborough Sounds (SD), Taupo (TO), Westland (WD) (Figure 114: triangles).

Habitat. Specimens of this species were collected using window traps, or by sifting leaf and log litter in broadleaf, kauri, podocarp or *Nothofagus* forests.

Comments. Specimens of “*Ahnea*” *lineata* (Broun) can be separated from those of other species by shapes of antennomeres, longer elytra and larger eye. The type specimens of *S. carinata* and *S. lineiceps* share these diagnostic characters. Collections of specimens of these species were collected at the type locality of *A. lineata* or at localities where additional specimens of *A. lineata* were collected. For these reasons, I have placed *S. carinata* and *S. lineiceps* in synonymy with *A. lineata*.

“*Ahnea*” sp. nov. 60

Type Material. Holotype. New Zealand: **Wellington (WN)**: ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand WN Manukau Rd North road end 20-Oct-96”, “In moderately forest litter”. **Paratypes (n=3; 1 male, 2 females):** New Zealand: **Wellington (WN)**: 1♂, Akatarawa Saddle, 600m, 7 III 1978, S.B. Peck, litter (NZAC); 1♀,

10km s of Levin, Waikawa, 150m, 8 III 1978, S.B. Peck, J. Peck, litter; 1♀, Tararua Forest Park, above Akatarawa Saddle, 455m, 40°56.936'S 175°06.529'E, 26 XI 2005, broadleaf-podocarp forest on slope, FMHD#2005-033, litter, A. Newton, M. Thayer, ANMT site 1151 (FMNH).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: larger size, 3.1–3.5 mm; eye small, approximately one-fourth length of temple; elytra subquadrate and hind wings well developed; abdominal tergite IV without microtrichial patch; shapes of antennomeres and genitalia unique to species.

Description. Length 3.1–3.5 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 113c). *Head.* Head round, as long as wide, widest across eyes (Figure 113c). Male antennomere 1 approximately 1.5 times longer than wide, 2–6 longer than wide, 7–10 subquadrate. Female antennomeres 2–8 longer than wide, 9–10 subquadrate. Eye small, approximately one-fourth length of temple. *Thorax.* Prosternum as long as wide, widest at one-third length of prosternum. Elytra subquadrate (Figure 113c). Hind wings well developed. Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV without microtrichial patches. *Aedeagus.* Median lobe of genitalia long, bearing tube from base (Figure 113f). Apical lobe ink tip shaped (Figure 113f). Phallobase of median lobe symmetrical and rounded (Figure 113f). Paramere symmetrical with 3 pairs of short thick setae, and 7 pairs of longer setae at tip (Figure 113f).

Distribution. Wellington (WN) (Figure 114: black square).

Habitat. Specimens of this species were collected by sifting leaf litter.

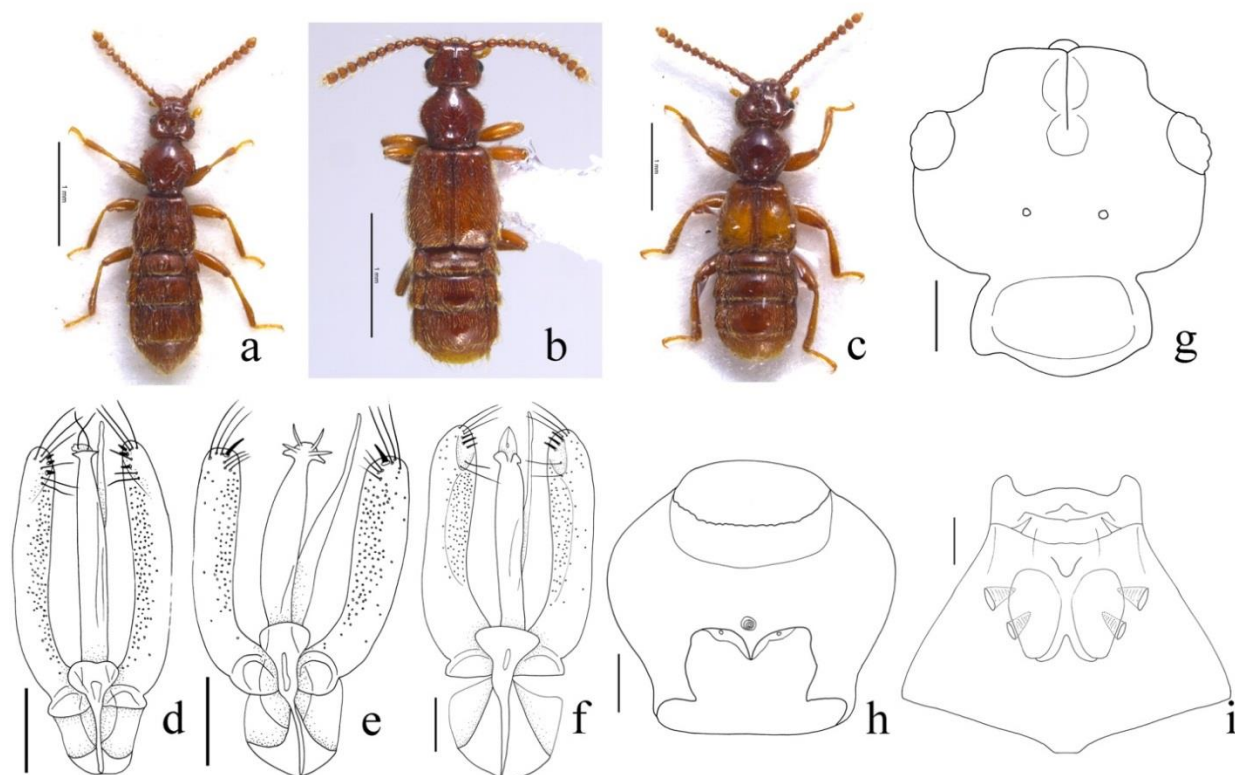


Figure 113. Habitus, dorsal views. a) “*Ahnea*” *ventralis* (Broun); b) *A. lineata* (Broun); c) *A. sp. nov.* 60; Scale bars = 1 mm. Aedeagus, dorsal view. d) *A. ventralis*; e) *A. lineata*; f) *A. sp. nov.* 60. Scale bars = 0.1 mm. *A. ventralis*. g) head, dorsal view; h) prosternum, ventral view; i) meso- and metaventrite, ventral view. Scale bars = 0.1 mm.

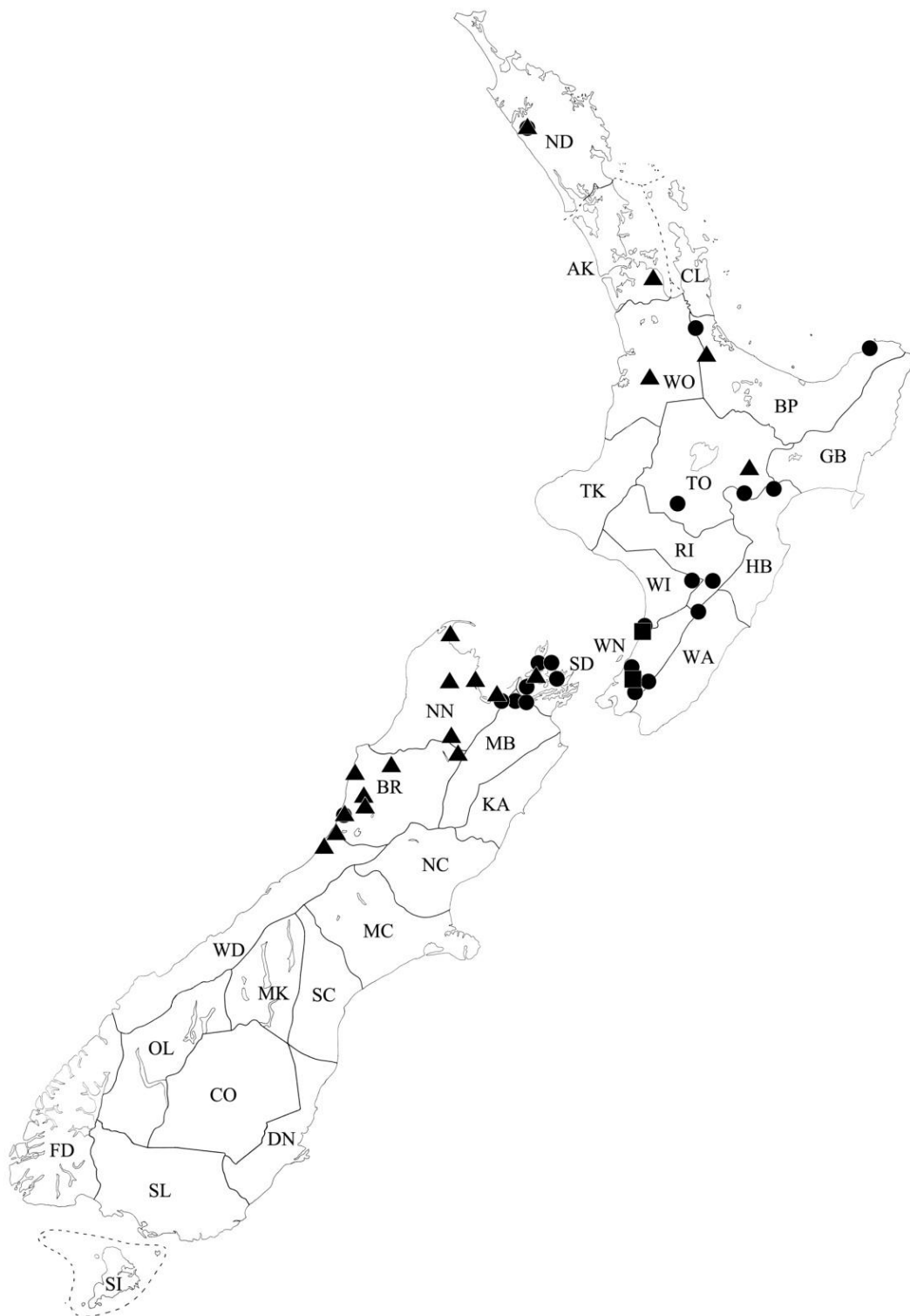


Figure 114. Locations where "*Ahnea*" *ventralis*, *A. lineata* and *A. sp. nov. 60* specimens have been collected in New Zealand. *A. ventralis*: black circles; *A. lineata*: triangles; *A. sp. nov. 60*: black square.

Genus “*Pseudoexeirarthra*” Park & Carlton, new genus (10 species)

Diagnosis. The members of “*Pseudoexeirarthra*” may be separated from other faronite genera by the following combination of characters: body length 1.8–2.8 mm; antennomere 1 approximately 1.5 times longer than wide; frontal sulcus broad and shallow reaching midpoint of eye (Figure 116k); anterior and posterior frontal fovea absent (Figure 116k); prosternum with lateral procoxal foveae (Figure 116l); mesoventrite without promesocoxal foveae (Figure 116m); abdominal tergite IV–VI with reversed triangular process from anterior margin (Figure 116n); ventrites IV–VI with basolateral foveae.

Etymology. The generic name refers to the superficial similarity of the genus *Exeirarthra* Broun.

Key to species of “*Pseudoexeirarthra*”

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Elytra as long as wide (Figure 115e), abdominal tergite IV without patch of microtrichia.....“*Pseudoexeirarthra*” sp. nov.93-2
- 1'. Elytra longer than wide, abdominal tergite IV with transverse patches of microtrichia.....2
- 2 (1). Left paramere at least twice broader than right (Figure 116a).....*P. spinifer* (Broun)
- 2'. Left paramere as wide as right.....3
- 3 (2). Median lobe of genitalia over 3 times broader than paramere (Figure 116d).....*P. sp. nov.*93-1
- 3'. Median lobe of genitalia not exceeding 2 times broader than paramere.....4
- 4 (3). Paramere broader than median lobe of genitalia (Figure 116c).....*P. puncticollis* (Broun)
- 4'. Paramere narrower than median lobe of genitalia.....5
- 5 (4). Median lobe of genitalia with acute branch at one-third length (Figure 116j).....*P. sp. nov.*94-8
- 5'. Median lobe of genitalia without branch.....6
- 6 (5). Apical lobe of genitalia triangular (Figure 116g).....*P. sp. nov.*94-2
- 6'. Apical lobe of genitalia blunt.....7
- 7 (6). Left paramere longer than right (Figure 116h).....*P. sp. nov.*94-4
- 7'. Right paramere longer than left.....8
- 8 (7). Apical lobe of genitalia blunt (Figure 116b).....*P. colorata*
- 8'. Apical lobe of genitalia broad apically.....9
- 9 (8). Apical lobe of genitalia with slightly wider apical margin (Figure 116f).....*P. sp. nov.*94
- 9'. Apical lobe of genitalia with distinctly wider apical margin (Figure 116i).....*P. sp. nov.*94-7

“*Pseudoexeirarthra*” *spinifer* (Broun)

Sagola spinifer Broun, 1895: 75. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 233. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 244.

Sagola dilucida Broun, 1914b: 157. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola guinnessi Broun, 1911: 502. Hudson, 1923: 365; 1934: 184. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Sagola longicollis Broun, 1911: 498. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Sagola longula Broun, 1912b: 625. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Sagola rectipennis Broun, 1921a: 489. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243. **New Synonym.**

Type Material. Syntypes. New Zealand: Waikato (WO): ♀, glued on rectangular card, “Type” [red label, printed]; “2723.” [white label, handwritten]; “Pirongia” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola spinifer” [white label, handwritten]. 1♂, glued on rectangular card, “2723.” [white label, handwritten]; “Mount. Pirongia” [white label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Sagola spinifer” [white label, handwritten]. **Holotype of *Sagola dilucida*: New Zealand: Auckland (AK):** ♀, glued on rectangular card, “Type” [red label, printed]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Epsom. Jany.1912.” [white label, handwritten]; “3520.♂” [white label, handwritten]; “Sagola dilucida” [white label, handwritten]. The original label indicates the specimen is male, but it is female. **Holotype of *Sagola guinnessi*: New Zealand: Taupo (TO):** ♂, glued on rectangular card, “Type” [red label, printed]; “3373.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Erua. 5.3.1912.” [white label, handwritten]; “Sagola guinnessi.” [white label, handwritten]. The original label indicates the specimen is female, but it is male. **Holotype of *Sagola longicollis*: New Zealand: Taupo (TO):** ♀, glued on rectangular card, “Type” [red label, printed]; “3369” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mahuia. Jany.1911.” [white label, handwritten]; “Sagola longicollis.” [white label, handwritten]. **Holotype of *Sagola longula*: New Zealand: Auckland (AK):** glued on rectangular card, “Type” [red label, printed]; “15.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “auckland. N.Z. Lawson” [white label, handwritten]; “Sharp Coll. 1905-313.” [white label, printed]; “Sagola longula.” [white label, handwritten]. **Syntype of *Sagola rectipennis*: New Zealand: Otago Lakes (OL):** 1♂, glued on rectangular card, “3997.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Alfred. 9.2.1914” [white label, handwritten]; “Sagola ♂. rectipennis” [white label, handwritten]. 1♂, glued on rectangular card, “3997.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Alfred. 9.2.1914” [white label, handwritten]; “Sagola rectipennis” [white label, handwritten]. 1♂, glued on rectangular card, “3997.♂” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Mt. Alfred. 9.2.1914” [white label, handwritten].

Additional Material (n= 198; 95 males, 103 females). New Zealand: Auckland (AK): 1♂1♀, Waitakere Ra, Cascade-Kauri Park, Up. Kauri tr, 170m, 8 XII 1984–25 I 1985, kauri-podo-hdwd, A. Newton, M. Thayer 680, FIT&window trap; 1♂, Lynfield, Tropicana dr, 14 VIII 1976, G. Kuschel, litter; 1♂1♀, Lynfield, 7 IX 1980, G. Kuschel, litter; 2♀♀, Woodhill, 27 II 1976, C.F. Butcher, pit trap; 1♂, Lynfield, 16 IV 1977, G. Kuschel; **Bay of Plenty (BP):** 1♀, Orete Forest, Te Puia Hut, 230m, 29 I 1993, R.M. Emberson, litter; 1♂1♀, Lottin Pt Rd, Waenga Bush, 24 XI 1992–29 I 1993, R.C. Henderson, Malaise trap; 1♂, Lottin Rt Rd, Waenga, 27 I 1993, R.C. Henderson, litter; 1♂, Te Koau, Main Ridge, 220m, 23 IX 1992, J.S. Dugdale, litter; 1♂, Te Koau, Twin Puriri’s, 31 I–15 III 1993, R.C. Henderson, pit trap; 1♂, Papatea, 13 X–23 XI 1992, G. Hall, pit trap; 1♂, Mamaku Ra, 18 I 1972, G.W. Ramsay, litter; 1♀, Te Koau, Bush

Track, 23 IX 1992, J.S. Dugdale, litter; 1♀, Mount Te Aroha, summit, 19 XI 2005, J. Nunn, moss; 1♀, Kaimai-Mamaku Forest Park, Mt. Te Aroha summit rd, 450m, 37°31.429'S 175°44.005'E, 19 XI 2005, mixed broadleaf forest with many tree ferns, nikau plams, FMHD#2005-016, FIT, A. Newton, M. Thayer, ANMT site 1144; **Buller (BR)**: 5♂♂6♀♀, Nelson Lakes NP, Mt. Robert, Speargrass tr, 875m, 41°49.469'S, 172°48.311'E, 17 XII 2005, *Nothofagus* forest, FMHD#2005-110, litter, A. Solodovnikov, D. Clarke, ANMT site 1161; 22♂♂12♀♀, (1♂, slide-mounted), Lewis Pass NR, 11.9km ese Spring Junction, 540m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer, 715, window trap; 8♂♂14♀♀, Nelson Lakes NP, Lake Rotorua, Braeburn tr, 470m, 16 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 712, window trap; 4♂♂8♀♀, Nelson Lakes NP, n slope Mt. Robert, Pinchgut tr, 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, window trap; 2♀♀, Nelson Lakes NP, n slope Mt. Robert, Pinchgut tr, 950m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 707, litter; 1♂2♀♀, Nelson Lakes NP, Lake Rotoiti, St. Arnaud tr, 645m, 14 XII 1984–6 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 705, window trap; 1♂, Nelson Lakes NP, Mt. Robert rd, 660m, 26 XII 1984–6 I 1985, *Leptospermum-Nothofagus* forest, A. Newton, M. Thayer 722, FIT&window trap; 1♂, Lewis Pass NR, 13.2km s Lewis Pass, 650m, 17 XII 1984–21 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 713, FIT&window trap; 2♂♂, Mt. Misery, Ecology Div Stn, 460m, 24–26 I 1977, J.S. Dugdale, water trap; 1♀, Greymouth, Boddytown, 8 II 1984, J.C. Watt, litter; 2♂♂, Rd to Mt. Robert, 762m, Lake Rotoiti, 3 V 1966, J.I. Townsend, moss; **Central Otago (CO)**: 1♂1♀, Waipori, 610m, Stony Stream, 2 XI 1979, J.C. Watt, moss; 1♀, Piani Flat, Waikaia Forest, 25 IV 2007, washed soil beech forest; **Coromandel (CL)**: 2♀♀, Cuvier I, Northwest Ridge, 25 II–2 III 1982, G. Hall, malaise trap; 1♂, Cuvier I, 25 II–2 III 1982, G. Hall, pit trap; 1♂, Great Barrier I, Little Windy Hill, 100m, 25 II–19 III 2003, K. Parsons, malaise trap; 1♂3♀♀, Great Barrier I, Little Windy Hill, 13 XII 2002–17 I 2003, P. Sutton, Malaise; 1♂1♀, Cuvier I, Ridge tr, 100m, 10–18 XI 1999, J.W. Early, S.E. Thorpe, malaise trap; 1♂, Great Barrier I, Little Windy Hill, 17 I–27 II 2003, K. Parsons, malaise trap; 1♂, Great Barrier I, Little Windy Hill, 220m, 7 XI–11 XII 2001, P. Sutton, J. Gilbert, malaise trap; 3♀♀, Great Barrier I, Little Windy Hill, 220m, 11 XII 2001–18 I 2002, P. Sutton; 1♀, Cuvier I, Pumphouse Stream, 120m, 14 XI 1999, J.W. Early, S.E. Thorpe, litter; 1♀, Great Barrier I, Little Windy Hill, 220m, 21 II 2001–26 III 2002, P. Sutton, malaise trap; 1♀, Great Barrier I, Little Windy Hill, 220m, 18 I–21 II 2002, P. Sutton, malaise trap; **Fiordland (FD)**: 2♂♂, Lake Hauroko, Southland, 2 II 1966, J.I. Townsend, moss; 1♂, Secretary I, Gut Bay, 24 XI 1981, C.F. Butcher, beech litter and rotten wood; 1♂, Fiordland NP, Monowai Lake, 4km sw Monowai, 11–14 III 2010, J.W. Early, yellow pan traps, *Nothofagus solandri* forest; 1♂1♀, Fiordland NP, Milford Sound rd, Smithy Creek Campground area, 400m, 44°57.065'S 168°01.155'E, 9 XII 2005, *Nothofagus fusca* & *N. menziesii* open forest, FMHD#2005-089, litter, M. Thayer, A. Newton, ANMT site 1170; 1♀, Secretary I, 850m, 30 XI 1981, C.F. Butcher, pit trap; **Gisborne (GB)**: 1♂, Urewera NP, Waikaremoana rd, s end Matanunui ridge, 720m, 38°44.404'S, 177°05.806'E, 22 XI–23 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)-podocarp, FMHD#2005-028, FIT, M. Thayer, A. Solodovnikov, ANMT site 1149; 1♀, Lake Waikaremoana, 17 I 1972, G.W. Ramsay, litter; 1♀, Urewera NP, at large, #021, 6–8 III 2000, C. Carlton, A. Weir; 1♀, Urewera NP, Lake Waikaremoana, nr Caravan Park, shoreline toetoe, FIT, 23 III 2000, C. Carlton, A. Weir, #078; **Northland (ND)**: 1♀, Paihia Opua SF, 22 I 1981, G. Kuschel, litter and rotten wood; 1♀, Waipoua SF, Waipoua Stm, 70m, 16–21 III 1978, S. Peck, J. Peck, malaise trap; **Nelson (NN)**: 2♂♂1♀, 0.6km e Gowanbridge, 330m, 18 XII 1984–7 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 717, FIT&window trap; 1♂,

Kahurangi NP, Cobb Ridge, above Cobb Reservoir, 1050m, 41°06.351'S, 172°41.658'E, 29 XI–18 XII 2005, *Nothofagus* forest, FMHD#2005-051, FIT, A. Newton, M. Thayer, A. Solodovnikov, ANMT site 1159; 1♂, Kahurangi NP, Arthur Range, above Flora Saddle, 1000m, 41°11.351'S, 172°44.456'E, 29 XI–18 XII 2005, *Nothofagus* forest, FMHD#2005-046, litter, A. Newton, M. Thayer, ANMT site 1156; 1♀, Cobb Ridge, east of Cobb Reservoir, 990m, 2 I 1985, *Nothofagus* forest, A. Newton, M. Thayer 728, litter; 1♂1♀, Canaan Harwoods tr, 4 II 1965, L.P. Marchant, litter; 1♂, Dovedale, 11 X 1963, J.I. Townsend, litter; 2♀♀, Lake Rotoiti, 19 II 1965, L.P. Marchant, moss; 1♀, Lake Rotoiti, 27 VII 1965, A.K. Walker, moss; **Otago Lakes (OL):** 1♂1♀, 44.5 km nw Wanaka, 350m, Matukituki Valley, 44°29'S 168°47'E, #079, *Nothofagus* forest litter, 18 I 1998, C. Carlton, R. Leschen; 1♂1♀, Makarora Bush, Makarora, 7–9 XI 1997, J. Nunn; 1♂1♀, Paradise, 2 II 1984, J.C. Watt, wood mould; 1♂, Upper Makarora, 17 I 1968, F.A. Alack, litter; 1♀, 10.5km nw Glenorchy, *Nothofagus* forest, 44°47'S 169°27'E, FIT #143, 19–24 I 1998, C. Carlton, R. Leschen; **Rangitikei (RI):** 1♀, Ruahine Ra, Armstrong Saddle, 1370m, 26 XII 1983, J.C. Watt, litter; 1♀, Ruahine Ra, Triplex, 10 II 1980, C.F. Butcher, litter; **Marlborough Sounds (SD):** 3♂♂2♀♀, Wairau V, Schrodcs Ck, 7 IX 1966, J.I. Townsend, litter 66/295; 1♀, Upper Wairau Valley, 731m, 5 IX 1966, J.I. Townsend, moss; 3♀♀, Head Fabians Valley, 23 X 1963, J.I. Townsend, litter; 1♂, Rainbow SF, Connors Ck, 825m, 21 XII 1981, J.W. Early, sweeping; **Southland (SL):** 2♀♀, Catlins SF Park, 15 II 1982, C.F. Butcher, J.S. Dugdale, litter; 1♀, Owaka Glenomaru Reserve, 18 I 1978, S. Peck, J. Peck, litter; **Taupo (TO):** 1♂, Kaimanawa North Forest Park, 850m, 11 III 1978, J.S. Dugdale, moss; 1♂, Kaimanawa N Forest Park Saddle, 20 II 1978, J.S. Dugdale, litter; 1♀, Erua, 27 I 1982, C.F. Butcher, litter and moss; 1♀, Erua, 16 XII 1961, G. Kuschel, litter; **Westland (WD):** 1♂, Doughboy Creek, 6km sw Mahitai, 5 II 1984, J.C. Watt, wood mould; 1♀, Hokitika Gorge, 29 I 1978, S.B. Peck, litter; 1♀, Jacksons Bay, 23 IX 1979, A.K. Walker, moss; **Wanganui (WI):** 1♂1♀, nr Glow-worm Cave, Table Hill rd nr Apiti, 8 II 1997, J. Nunn; 1♂, Ashurst Domain, Ashurst, 23 X 1998, J. Nunn, litter; **Wellington (WN):** 3♂♂1♀, Mana Island, 4–6 II 1994, J. Nunn, decayed wood; 1♂, Tararua Ra, e Basin Logan, 1300m, 6 XII 1984, R.C. Craw, turf plants; 1♂, Pakuratahi Forks, 8 VII 1994, J. Nunn, litter; 1♀, Tararua Ra, Dundas Hut Ridge, 990m, 13 II 1985, C.F. Butcher, litter; 1♀, n Titahi Bay, Rocky Bay, 28 XII 1980, J.C. Watt, litter and humus; 1♀, Tararua Forest Park, Waitewaewae tr, 220m, 40°51.98'S 175°15.319'E, 26 XI–21 XII 2005, broadleaf-podo forest, FMHD#2005-034, FIT, A. Newton, M. Thayer, ANMT site 1152; **Waikato (WO):** 1♂, Pirongia Forest Park, Mahaukura tr, 270m, 37°58.218'S, 175°06.523'E, 18 XI–27 XII 2005, broadleaf forest, FMHD#2005-009, FIT, A. Newton, M. Thayer, et al., ANMT site 1142.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.3–2.8 mm; eye large, as long as temple; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.3–2.8 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115a). *Head.* Head bluntly rectangular, longer than wide, widest across eyes (Figure 115k). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Eye large and prominent, as long as temple (Figure 115k). *Thorax.* Prosternum as long as wide, widest at one-third length of prosternum (Figure 115l). Elytra rectangular (Figure 115a). Meso- and metathorax trapezoidal, longer than wide (Figure 115m). *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia divided, broad at base (Figure 116a). Phallobase of median lobe symmetrical and rounded (Figure 116a). Paramere asymmetrical, left broader than right (Figure 116a).

Type locality. Mount Pirongia (WO), New Zealand.

Distribution. Auckland (AK), Bay of Plenty (BP), Buller (BR), Central Otago (CO), Coromandel (CL), Fiordland (FD), Gisborne (GB), Northland (ND), Nelson (NN), Otago Lakes (OL), Rangitikei (RI), Marlborough Sounds (SD), Southland (SL), Taupo (TO), Westland (WD), Wanganui (WI), Wellington (WN), Waikato (WO) (Figure 117: black circles).

Habitat. Most specimens of this species were collected mostly using malaise, flight intercept, window traps, or by sifting leaf litter in broadleaf, podocarp, hardwood and *Nothofagus* forests.

Comments. Specimens of “*Pseudoexeirarthra*” *spinifer* can be separated from those of other species by the large eye, shapes of antennomere and genitalia. The type specimens of *S. dilucida*, *S. guinnessi*, *S. longicollis*, *S. longula* and *S. rectipennis* share these diagnostic characters, and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. dilucida*, *S. guinnessi*, *S. longicollis*, *S. longula* and *S. rectipennis* in synonymy with *P. spinifer*.

“*Pseudoexeirarthra*” *colorata* (Broun)

Sagola colorata Broun, 1914b: 156. Hudson, 1923: 365; Hudson, 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 241.

Sagola insueta Broun, 1914b: 157. Hudson, 1923: 365; 1934: 184. Newton & Thayer, 2005b. Nomura and Leschen, 2006: 242. **New Synonym.**

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♀, glued on rectangular card, “Type” [red label, printed]; “3519.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “McClellans. 25.3.1912.” [white label, handwritten]; “*Sagola colorata*.” [white label, handwritten]. **Holotype of *Sagola insueta*. New Zealand: Mid Canterbury (MC):** ♀, glued on rectangular card, “Type” [red label, printed]; “3521.” [white label, handwritten]; “New Zealand Broun Coll. Brit. Mus. 1922–482.” [white label, printed]; “Rakaia. 6.7.1912.” [white label, handwritten]; “*Sagola insueta*” [white label, handwritten].

Additional Material (n= 27; 21 males, 6 females). New Zealand: Dunedin (DN): 1 ♀, Herbert Forest, 8 VIII 2004, J. Nunn, broadleaf litter; 1 ♂, Nicol Creek, Leith Valley, 25 V 2006, J. Nunn, litter; 1 ♂, Vauxhall, 13 IX 2001, J. Nunn, FIT; 1 ♂, The Tunnels, Silverpeaks, 2 VI 2001, J. Nunn, moss and litter; 1 ♂, Vauxhall, 26 II 2011, 45°54.244'S 170°31.886'E, 167m, J. Nunn, washes soil; 1 ♂, Town Belt, 26 VII 1997, J. Nunn, decayed wood; 1 ♂, Vauxhall, 27 I 2000, J. Nunn, FIT; **Fiordland (FD):** 6 ♂ 1 ♀, Lake Hauroko, 2 XI 1966, J.I. Townsend, litter; 1 ♂, Hollyford Camp, 10 XII 1966, A.K. Walker, litter; 1 ♀, Barrier Ra, Little Red Hill, 2 II 1975, G.W. Ramsay, litter and moss; 1 ♀, Bauza I, Doubtfull Saddle, III 1986, Pitfall trap, G.M. Bremner; **Mid Canterbury (MC):** 7 ♂ ♂, Banks Peninsula, Hay Scenic Res, Pigeon Bay, 25m, 11 XII 1984–22 I 1985, Podocarp-hdwd forest, A. Newton, M. Thayer 702, window trap; 1 ♂, Craigieburn SF, 850m, #023, 42°108S 171°42E, *Nothofagus* litter, 9 I 1998, C. Carlton, R. Leschen; 1 ♀, McLellans Bush, Mt. Hutt, 11 I 2008, J. Nunn, on sooty mould on beech bole; 1 ♀, Lake Ellesmere, 9 XI 2000, R.M. Emberson, water trap.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.2–2.5 mm; eye large, two-third length of temple; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.2–2.5 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115b). *Head.* Head rectangular, longer than wide, widest across eyes (Figure

115b). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Eye large and prominent, two-third length of temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115b). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided, minor lobe longer than major lobe and covered with tubercles (Figure 116b). Phallobase of median lobe symmetrical and rounded (Figure 116b). Paramere symmetrical, setae from tip to middle (Figure 116b).

Type locality. McClennan's Bush, near Methven (MC), New Zealand.

Distribution. Dunedin (DN), Fiordland (FD), Mid Canterbury (MC) (Figure 117: triangles).

Habitat. Specimens of this species were collected using flight intercept traps, or by soil washing or sifting leaf and wood litter.

Comments. Specimens of "*Pseudoexeirarthra*" *colorata* can be separated from those of other species by the large eye, shapes of antennomere and genitalia. The type specimen of *S. insueta* shares these diagnostic characters, and additional specimens have been collected at or near the type locality. For these reasons, I have placed *S. insueta* in synonymy with *P. colorata*.

"*Pseudoexeirarthra*" *puncticollis* (Broun)

Sagola puncticollis Broun, 1911: 499. Hudson, 1923: 365; 1934: 183. Raffray, 1924: 232.

Newton & Thayer, 2005b. Nomura and Leschen, 2006: 243.

Type Material. Holotype. New Zealand: South Canterbury (SC): ♂, glued on rectangular card, "Type" [red label, printed]; "3370." [white label, handwritten]; "New Zealand Broun Coll. Brit. Mus. 1922–482." [white label, printed]; "Timaru. –Wallace." [white label, handwritten]; "Sagola puncticollis" [white label, handwritten].

Additional Material (n= 32). New Zealand: Mackenzie (MK): 8♂♀, White Horse Hill, Mt. Cook, 26 X 2009, J. Nunn, litter in podocarp forest; 1♂, White Horse Hill, Mt. Cook, 25 X 2009, J. Nunn, litter in podocarp grove; **South Canterbury (SC):** 18♂♀, Gunns Bush, Waimate, 23 XII 2006, washed soil in broadleaf forest, J. Nunn; 1♂1♀, Orari Gorge SR, Geraldine, 7 VI 2009, J. Nunn, washed soil in broadleaf forest; 1♀, Pioneer Park, Raincliff, 9 VIII 2009, J. Nunn, washed soil in totara and kahikatea forest; 1♂, Kelceys Bush, Waimate, 20 I 1966, J.I. Townsend, moss; 1♀, Mt. Dalgety, 1737m, 19 I 1966, G.W. Ramsay, J.I. Townsend, moss.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.3–2.6 mm; eye one-half length of temple; shapes of antennomeres and genitalia unique to species.

Redescription. Length 2.3–2.6 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115c). *Head*. Head round, as long as wide, widest across eyes (Figure 115c). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–5 longer than wide, 6–10 subquadrate. Eye one-half length temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115c). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided, apical lobe triangular, minor lobe slightly longer covered with tubercles (Figure 116c). Phallobase of median lobe symmetrical and rounded (Figure 116c). Paramere symmetrical, setae from tip to midpoint (Figure 116c).

Type locality. Timaru (SC), New Zealand.

Distribution. Mackenzie (MK), South Canterbury (SC) (Figure 117: black squares).

Habitat. Specimens of this species were collected by soil washing and sifting moss litter in broadleaf or podocarp forests.

***“Pseudoexeirarthra”* sp. nov. 93-1**

Type Material. Holotype. New Zealand: Nelson (NN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND NN Mt Arthur/Flora Sdl Tck, c1400m 28-Nov-05”, “On mossy overhangs by gully. D Clarke, J Nunn”. **Paratype (1 male): New Zealand: Nelson (NN):** 1♂, Cobb, L. Sylvester, 1329m, 31 III 1969, J.S. Dugdale, litter (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.9–2.1 mm; eye one-half length of temple; shapes of antennomeres and genitalia unique to species; only known from Nelson.

Description of male. Length 1.9–2.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115d). *Head.* Head round, as long as wide, widest across eyes (Figure 115d). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–8 subquadrate, 9–10 weakly transverse. Eye one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115d). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia divided, broad at base, major lobe short with semicircular depression anteriorly (Figure 116d). Phallobase of median lobe symmetrical and rounded (Figure 116d). Paramere symmetrical, setae at tip (Figure 116d).

Distribution. Nelson (NN) (Figure 118: black circles).

Habitat. Specimens of this species were collected by sifting moss and leaf litter.

***“Pseudoexeirarthra”* sp. nov. 93-2**

Type Material. Holotype. New Zealand: Stewart Island (SI): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand: SI: Table Hill, 366-610m 15 II 1968, G. Kuschel Moss 68/52”. **Paratypes (2 females): New Zealand: Stewart Island (SI):** 2♀♀, same data as holotype (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.8–2.0 mm; eye one-half length of temple; elytra subquadrate; abdominal tergite IV without patch of microtrichia; shapes of antennomeres and genitalia unique to species; known from Stewart Island.

Description. Length 1.8–2.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115e). *Head.* Head round, as long as wide, widest across eyes (Figure 115e). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–8 subquadrate, 9–10 weakly transverse. Eye one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra subquadrate (Figure 115e). Meso- and metathorax trapezoidal, as long as wide. *Abdomen.* Abdominal tergite IV without patch of microtrichia. *Aedeagus.* Median lobe of genitalia deeply divided (Figure 116e). Phallobase of median lobe symmetrical and rounded (Figure 116e). Paramere symmetrical, setae at tip (Figure 116e).

Distribution. Stewart Island (SI) (Figure 118: triangle).

Habitat. Specimens of this species were collected by sifting moss litter.

***“Pseudoexeirarthra”* sp. nov. 94**

Type Material. Holotype. New Zealand: Mid Canterbury (MC): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND: MC: Banks Peninsula, Ahuriri Scen. Res., 450m, 43°39.971’S, 172°37.427’E, 3 XII 2005, mixed broadleaf w/emergent podocarp; FMHD#2005-069, berl., leaf & log litter, A. Newton, M. Thayer, & A. Solodovnikov; ANMT site 1162”. **Paratypes (n= 18; 8 males, 10 females): New Zealand: Mid Canterbury (MC):** 6♂♂6♀♀, same data as holotype (FMHD); 1♂, Banks Peninsula, Ahuriri SR, 450m, 43°39.971’S, 172°37.427’E, 3–6 XII 2005, mixed broadleaf w/emergent podocarp, FMHD#2005-069, FIT, A. Newton, M. Thayer, ANMT site 1162 (FMHD); 4♀♀, Bank Peninsula, Mt. Sinclair SR, 775m, 43°42.977’S, 172°51.098’E, 3–16 XII 2005, ridgetop mixed broadleaf w/emergent *podocarpus tataru*, FMHD#2005-070, FIT, A. Newton, M. Thayer, ANMT site 1163 (FMNH); 1♂, Prices Valley, 3–24 IV 1981, J.W. Early, yellow pan trap (LUNZ).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.9–2.2 mm; eye large, two-third length of temple; shapes of antennomeres and genitalia unique to species.

Description. Length 1.9–2.2 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115f). *Head.* Head round, as long as wide, widest across eyes (Figure 115f). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Eye large and prominent, two-third length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115f). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia divided, major lobe rectangular, minor lobe longer than major lobe bearing tubercles (Figure 116f). Phallobase of median lobe symmetrical and rounded (Figure 116f). Paramere symmetrical, but right slightly longer than left with setae from tip midpoint (Figure 116f).

Distribution. Mid Canterbury (MC) (Figure 118: black square).

Habitat. Specimens of this species were collected using flight intercept, yellow pan traps, or by sifting moss and leaf litter in broadleaf and podocarp forests.

***“Pseudoexeirarthra”* sp. nov. 94-2**

Type Material. Holotype. New Zealand: Wellington (WN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND WN 4 km along Waiotauru Rd. 16/11/91 Tararua FP”, “1159”. The original label does not mention who collected the specimen, but it was collected by J. Nunn. **Paratype (1 male): New Zealand: Mid Canterbury (MC):** 1♂, Banks Penin., Peraki Saddle Scen Res, 500m, 11 XII 1984, hdwd-podo.elfin forest, A. Newton, M. Thayer 701, log and leaf litter (FMNH).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.9–2.1 mm; eye large, as long as temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 1.9–2.1 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115g). *Head.* Head bluntly rectangular, longer than wide, widest across eyes (Figure 115g). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4–7 longer than wide, 8–10 subquadrate. Eye large and

prominent, as long as temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Male elytra rectangular (Figure 115g). Male meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Male abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided, major lobe triangular apically, minor longer with tubercles (Figure 116g). Phallobase of median lobe symmetrical and rounded (Figure 116g). Paramere symmetrical, but right slightly longer than left with setae from tip to midpoint (Figure 116g).

Distribution. Mid Canterbury (MC), Wellington (WN) (Figure 118: stars).

Habitat. The paratype of this species was collected by sifting leaf and moss litter.

***“Pseudoexeirarthra”* sp. nov. 94-4**

Type Material. Holotype. New Zealand: Dunedin (DN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND DN Rocklands 21 Nov 1981 C.F. Butcher”, “Sweeping tussock nr stream”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n= 16; 12 males, 4 females): New Zealand: Central Otago (CO):** 2♂♂, Carrick Range, Watts Rock, 1400m, 11 III 1979, J.C. Watt, litter (NZAC); **Mid Canterbury (MC):** 1♂2♀♀, Bealy Spur, 750m, 1 VI 1981, C.A. Muir, moss and rotten logs (NZAC); **Otago Lakes (OL):** 4♂♂, E Matukituki V, 400m, J.W. Early, 30 I–4 II 1987, yellow pan tap (LUNZ); 1♂, Mt. Aspiring NP, Glacier Burn, 30 I 1987, J.W. Early, 400m, sweeping Nothofagus forest (LUNZ); **Westland (WD):** 3♂♂1♀, Klondyke Cornner, Arthurs Pass, 25 X 1970, D.S. Horning, litter (NZAC); 1♂, Mt. Tuhua, 1067m, e side of L. Kaniere, 20 X 1984, C.F. Butcher, litter and mats (NZAC); 1♀, Okarito Trig, 150m, 15 I 1982, J.W. Early, sweeping ferns and kiekie in rimu forest (LUNZ).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.8–2.0 mm; eye large, as long as temple; shapes of antennomeres and genitalia unique to species.

Description. Length 1.8–2.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115h). *Head*. Head round, as long as wide, widest across eyes (Figure 115h). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3–10 subquadrate. Eye large and prominent, as long as temple. *Thorax*. Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115h). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided, minor lobe longer than major lobe bearing tubercles (Figure 116h). Phallobase of median lobe symmetrical and rounded (Figure 116h). Paramere asymmetrical, but left longer than right with setae from tip to base (Figure 116h).

Distribution. Central Otago (CO), Dunedin (DN), Mid Canterbury (MC), Otago Lakes (OL), Westland (WD) (Figure 118: white circles).

Habitat. Specimens of this species were collected using yellow pan traps, or by sweeping, or by sifting forest litter.

***“Pseudoexeirarthra”* sp. nov. 94-7**

Type Material. Holotype. New Zealand: Dunedin (DN): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “New Zealand DN Leith Saddle / Leith trig tck, 420m 26 Sep 2011”, “Washed soil sample. temperate cloud forest”, “NZMS 260 144: 173868 430m”, “Voucher specimen “Beetles of Dunedin” project. JT Nunn coll.” **Paratypes (n= 29; 11 males,**

18 females): New Zealand: Dunedin (DN): 2♂♂, Swampy Summit, Dunedin, 29 X 2000, J. Nunn, tussock litter (JTN); 1♂, Leith Saddle, Swampy Spur Tck, 14 X 2001, J. Nunn, surface soil (JTN); 1♂, Waitati, 2 VIII 2008, washed soil sample in broadleaf forest (JTN); 1♂, Grahamm Bush, Mt Cargill, 6 XII 2002, J. Nunn, FIT (JTN); 1♀, Swamp Summit, Dunedin, 7 I 2000, J. Nunn, shrubbery (JTN); 1♀, Cloud Forest of Leith tr, 30 XI 2003, J. Nunn, moss from tree trunk (JTN); 1♀, Grahams Bush, Mt. Cargill, 9 XII 2001, J. Nunn, podocarp-kamahigriselinia litter (JTN); 1♀, Careys Creek near Waitati, 12 IV 2008, J. Nunn, washed soil in kanuka forest (JTN); 1♀, Swallow tr, Herbert Forest, 28 VII 2007, washed soil, J. Nunn (JTN); 1♀, Waipori Falls, 17 V 1998, *Nothofagus* forest litter (JTN); **Southland (SL):** 3♂♂, Papatowai, 9 II 1989, J. Nunn (JTN); 1♂3♀♀, Bog Burn, Waterloo Burn tck, 4 VI 2007, J. Nunn, washed soil in *Nothofagus* forest (JTN); 1♂, Purakaunui Falls, Catlins, 24 VI 2006, J. Nunn, soil sample in *Nothofagus* forest (JTN); 1♂, Pourakina River Walk, 27 X 2002, J. Nunn, bracket fungus (JTN); 2♀♀, Princhester Base Hut, Takitimu Forest, 4 VI 2007, J. Nunn, washed soil beech forest, 425m (JTN); 3♀♀, Blacks Gully, Blue Mtns, 390m, 2 XII 2006, J. Nunn, washed soil in *Nothofagus* forest (JTN); 2♀♀, Tautuku, 8 III 1989, J. Nunn (JTN); 1♀, Rakahouka, 2 IX 2007, J. Nunn, washed soil (JTN).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.3–2.6 mm; eye large, as long as temple; shapes of antennomeres and genitalia unique to species.

Description. Length 2.3–2.6 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115i). *Head.* Head round, as long as wide, widest across eyes (Figure 115i). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Eye large and prominent, as long as temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure 115i). Meso- and metathorax trapezoidal, longer than wide. *Abdomen.* Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus.* Median lobe of genitalia divided, major lobe broader apically, minor longer with tubercles (Figure 116i). Phallobase of median lobe symmetrical and rounded (Figure 116i). Paramere symmetrical, but right slightly longer than left with setae from apex to basal two-third (Figure 116i).

Distribution. Dunedin (DN), Southland (SL) (Figure 119: black circles).

Habitat. Specimens of this species were collected mostly using soil washing in *Nothofagus* and broadleaf forests.

“*Pseudoexeirarthra*” sp. nov. 94-8

Type Material. Holotype. New Zealand: North Canterbury (NC): ♂, aedeagus dissected and mounted in balsam on a clear plastic card, “NEW ZEALAND NC Arthur Pass Kellys Creek, 8 Nov 2005 R Leschen S Nomura”, “ex litter RL1007 42°47’S 171°34’E”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”.

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 2.0 mm; eye one-half length of temple; shapes of antennomeres and genitalia unique to species.

Description of male. Length 2.0 mm. Body reddish brown, antennae, legs, maxillary palpi, elytra, paler (Figure 115j). *Head.* Head round, as long as wide, widest across eyes (Figure 115j). Male antennomere 1 approximately 1.5 times longer than wide, 2 longer than wide, 3 subquadrate, 4 longer than wide, 5–10 subquadrate. Eye one-half length of temple. *Thorax.* Prosternum as long as wide, widest one-third length of prosternum. Elytra rectangular (Figure

115j). Meso- and metathorax trapezoidal, longer than wide. *Abdomen*. Abdominal tergite IV with a pair of transverse patches of microtrichia reaching middle. *Aedeagus*. Median lobe of genitalia divided with acute branch at one-third length (Figure 116j). Phallobase of median lobe symmetrical and rounded (Figure 116j). Paramere symmetrical, setae from tip to two-third level (Figure 116j).

Distribution. North Canterbury (NC) (Figure 119: triangle).

Habitat. The holotype of this species was collected by sifting leaf litter.

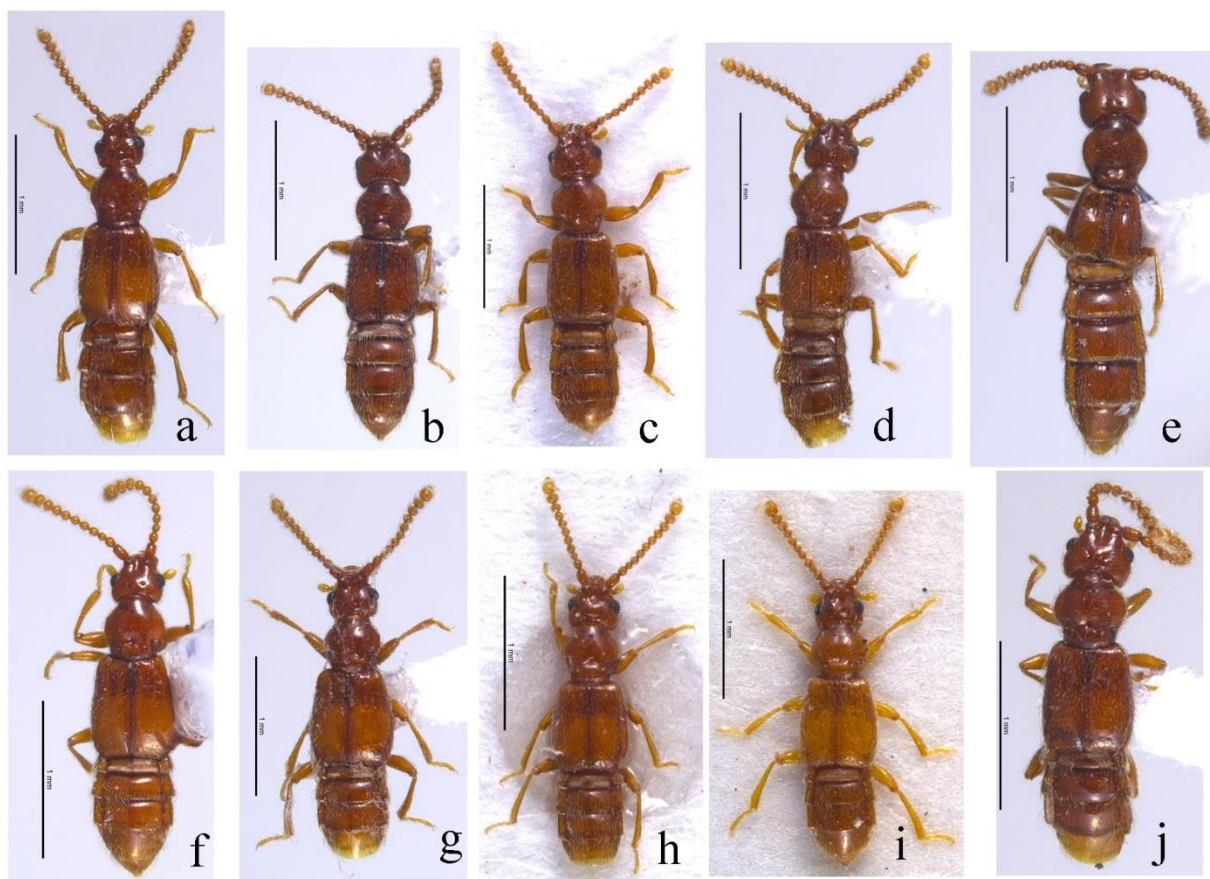


Figure 115. Habitus, dorsal view. a) “*Pseudoexeirarthra*” *spinifer* (Broun); b) *P. colorata* (Broun); c) *P. puncticollis* (Broun); d) *P. sp. nov. 93-1*; e) *P. sp. nov. 93-2*; f) *P. sp. nov. 94*; g) *P. sp. nov. 94-2*; h) *P. sp. nov. 94-4*; i) *P. sp. nov. 94-7*; j) *P. sp. nov. 94-8*; Scale bars = 1 mm.

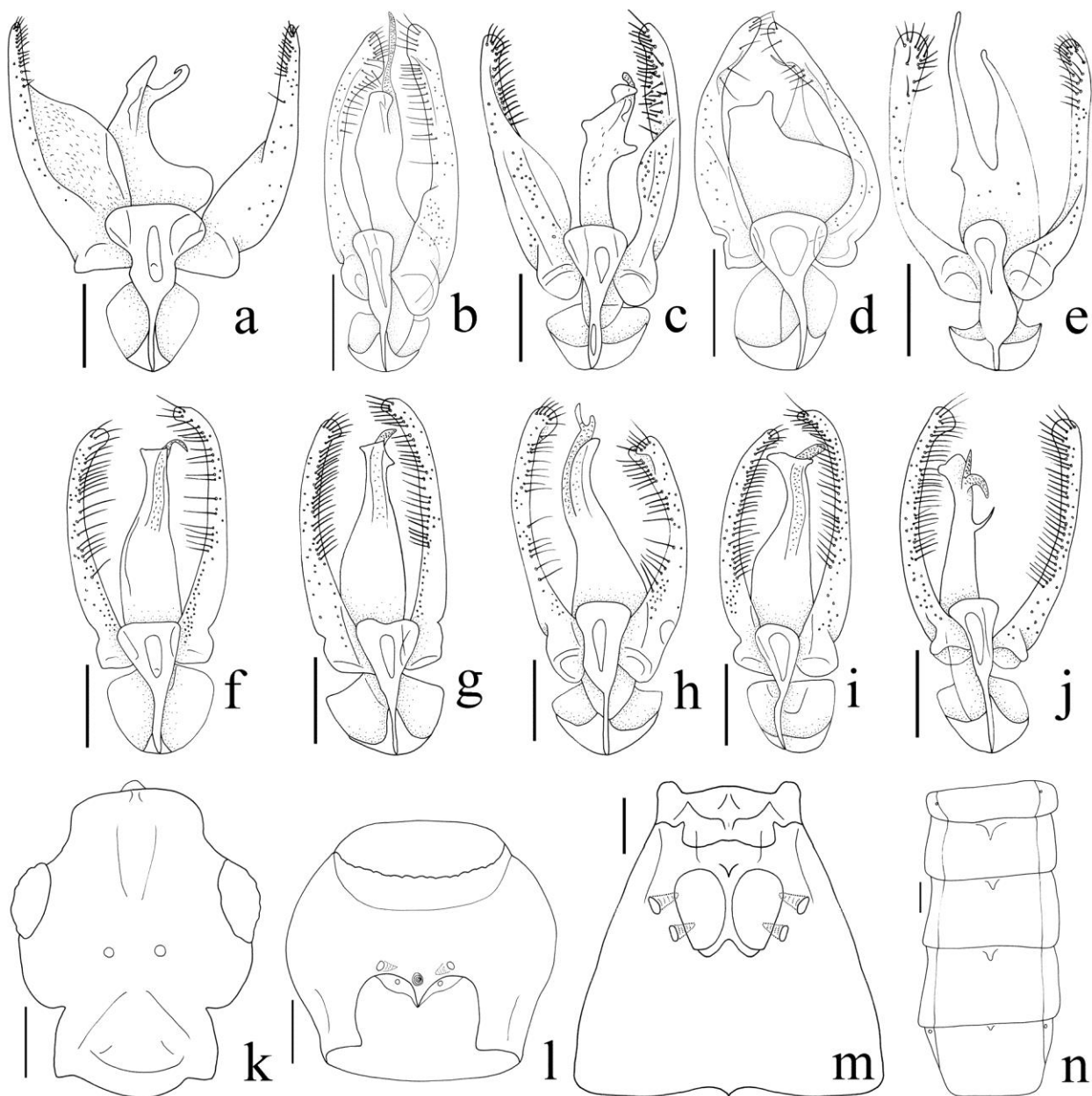


Figure 116. Aedeagus, dorsal view. a) “*Pseudoexeirarthra*” *spinifer* (Broun); b) *P. colorata* (Broun); c) *P. puncticollis* (Broun); d) *P. sp. nov.* 93-1; e) *P. sp. nov.* 93-2; f) *P. sp. nov.* 94; g) *P. sp. nov.* 94-2; h) *P. sp. nov.* 94-4; i) *P. sp. nov.* 94-7; j) *P. sp. nov.* 94-8; Scale bars = 0.1 mm. *P. spinifer*. k) head, dorsal view; l) prosternum, ventral view; m) meso- and metaventrite, ventral view; n) abdomen, dorsal view; Scale bars = 0.1 mm.

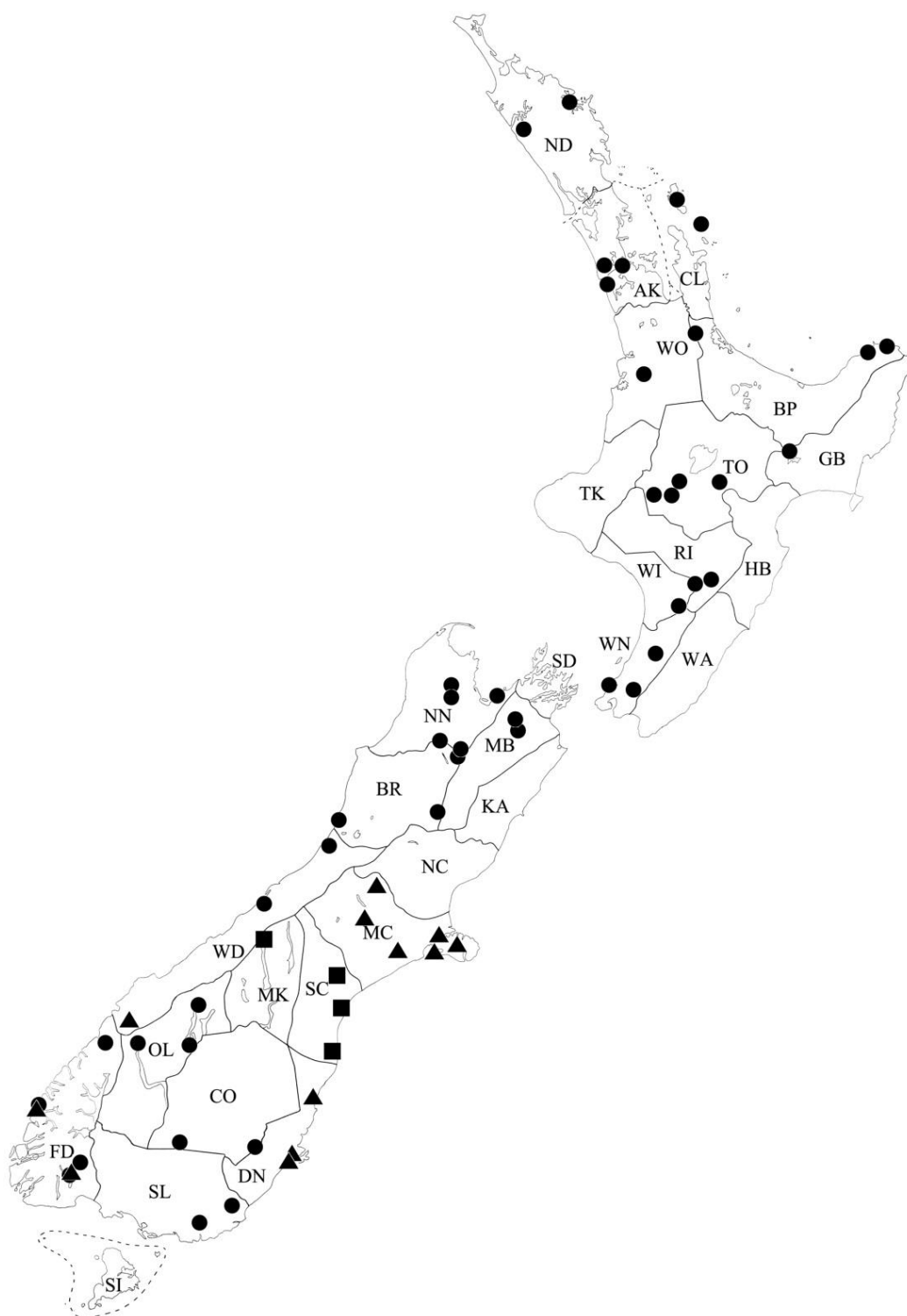


Figure 117. Locations where "*Pseudoexeirarthra*" *spinifer*, *P. colorata* and *P. puncticollis* specimens have been collected in New Zealand. *P. spinifer*: black circles; *P. colorata*: triangles; *P. puncticollis*: black squares.



Figure 118. Locations where "*Pseudoexeirarthra*" sp. nov. 93-1, *P. sp. nov. 93-2*, *P. sp. nov. 94*, *P. sp. nov. 94-2* and *P. sp. nov. 94-4* specimens have been collected in New Zealand. *P. sp. nov. 93-1*: black circles; *P. sp. nov. 93-2*: triangle; *P. sp. nov. 94*: black square; *P. sp. nov. 94-2*: stars; *P. sp. nov. 94-4*: white circles.

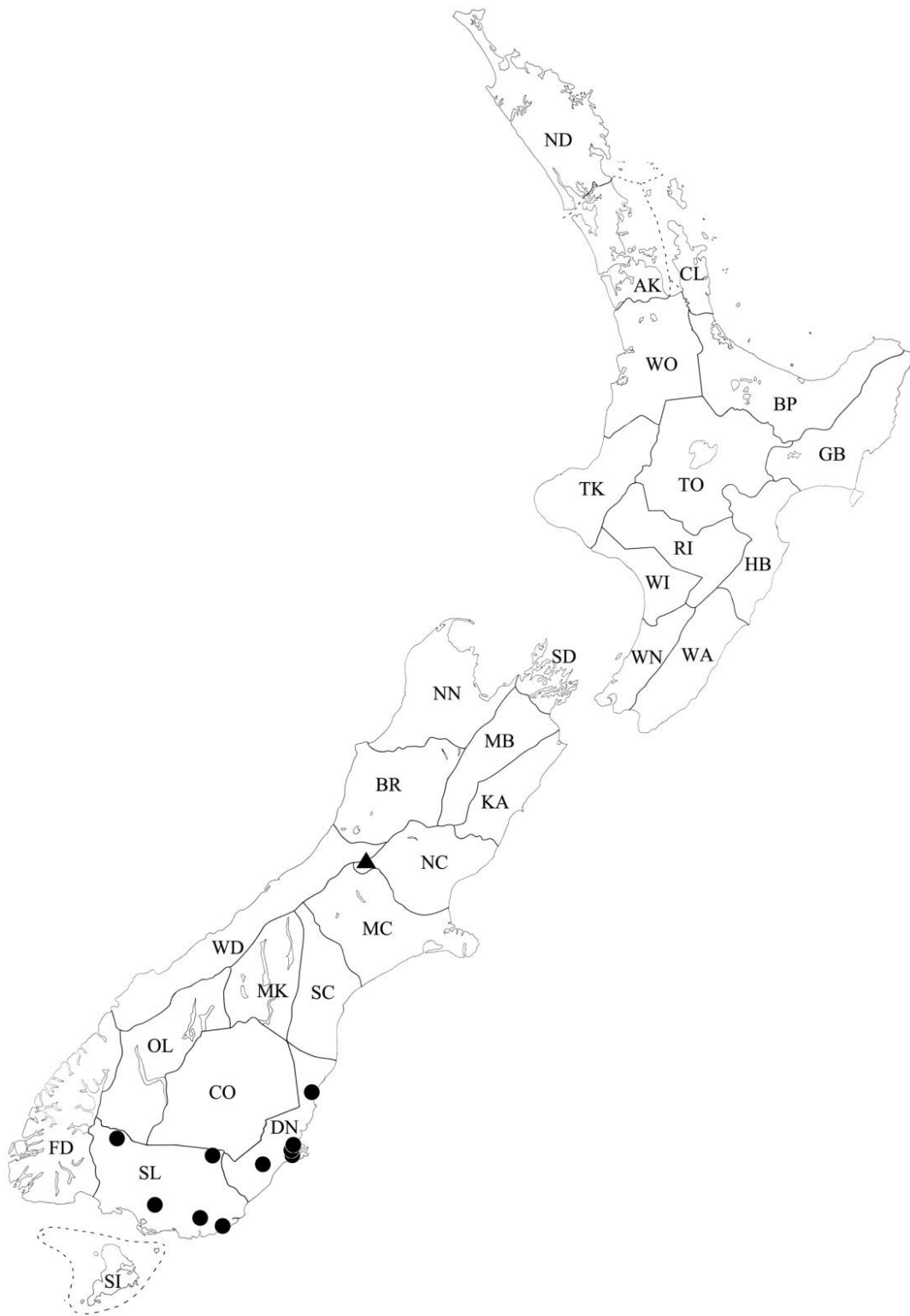


Figure 119. Locations where "*Pseudoexeirarthra*" sp. nov. 94-7 and *P. sp. nov. 94-8* specimens have been collected in New Zealand. *P. sp. nov. 94-7*: black circles; *P. sp. nov. 94-8*: triangle.

Genus “*Pseudostenosagola*” Park & Carlton, new genus (3 species)

Diagnosis. The members of “*Pseudostenosagola*” may be separated from other faronite genera by the following combination of characters: smaller size, length 1.8–2.1 mm; last three antennomeres weakly clubbed (Figure 120); head at least 1.8 times longer than wide, frontal sulcus narrow or linear at apex, and circular or drop-shaped basally (Figures 121 a–b); prosternum with lateral procoxal foveae (Figure 122c); hind wings reduced to small pads; mesoventrite with promesocoxal foveae (Figure 122e); tergite and ventrite VI distinctly larger than V and VII (Figure 122g); tergite and ventrite VIII with distinctive strut (Figure 122h); median lobe of genitalia with microsculpture anteriorly (Figures 121d–f).

Etymology. The generic name refers to the superficial similarity of the genus *Stenosagola* Broun.

Key to species of “*Pseudostenosagola*”

The key is based on male specimens because most female specimens are indistinguishable based on external morphology.

1. Frontal sulcus reaching eye (Figure 121a); apical lobe of genitalia rectangular, base of genitalia inverted-triangular (Figure 121d)..... “*Pseudostenosagola*” sp. nov.98-1
- 1’. Frontal sulcus not reaching eye; apical lobe of genitalia triangular, base of genitalia round....2
- 2 (1). Genitalia with two apical lobes, right lobe triangular (Figure 121e); recorded only from Wellington (Figure 123: triangles).....*P.* sp. nov.98
- 2’. Genitalia with one triangular apical lobe on right (Figure 121f); recorded only from Nelson (Figure 123: black square).....*P.* sp. nov.99

“*Pseudostenosagola*” sp. nov. 98-1

Type material. Holotype. New Zealand: Coromandel (CL): ♂, “New Zealand: CL: Coromandel Ra., nr Summit, 19 I 1972 G.W. Ramsay, litter 7two-third5”. **Paratypes (n=18; 10 males, 8 females). New Zealand: Coromandel (CL):** ♂, same data as holotype (NZAC); **Nelson (NN):** ♂, Wooded Pk., Dun Mt. Tr., 14 IX 1971, G. W. Ramsay, litter 71/110 (NZAC); 6♂♂1♀ (♂, slide-mounted), Dun Mt., 31 VII 1966, A. K. Walker, litter 66/274 (NZAC); ♀, Dun Mt., 580m, 12 VII 1966, J. I. Townsend, moss 61/1 (NZAC); 3♀, Dun Mt., 762m, 13 I 1961, G. Kuschel, litter 61/1 (NZAC); 1♂1♀ (♀, slide-mounted), Dun Mt., Mineral Belt, 18 XI 1964, J. I. Townsend, moss 64/134 (NZAC); 2♀♀, Dun Mt., 2500’ 13 II 1961, G. Kuschel (NZAC); 1♀, Ridge Westside, Waingaro R., 3000’, Upper Takaka, moss in bush, G. W. Ramsay, 29 VIII 1965 (NZAC).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: body length 1.7–1.9 mm; frontal sulcus reaching eye; shapes of antennomeres and genitalia unique to species.

Description. Length 1.78–1.88 mm. Body brown, smooth, glossy. Antenna, maxillary palpi, legs yellowish brown (Figure 120a). **Head.** Head approximately 1.8 times longer than wide (Figure 121a). Eye approximately one-third length of temple (Figure 121a). Antennomeres 1–2 longer than wide, 3–6 subquadrate, 7–10 weakly transverse. **Thorax.** Prosternum approximately 1.1 times longer than wide. Elytra approximately 1.5 times longer than prosternum (Figure 122d). Meso- and metaventrite trapezoidal, approximately 1.2 times longer than prosternum (Figure 122e). **Abdomen.** Abdominal tergite IV without patches of microtrichia (Figure 122g). **Aedeagus.**

Male genitalia with one apical lobe on right, rectangular (Figure 121d). Base of genitalia inverted-triangular (Figure 121d).

Distribution. Coromandel (CL) and Nelson (NN) (Figure 123: black circles).

Habitat. Specimens of this species were collected by sifting leaf litter.

“Pseudostenosagola” sp. nov. 98

Type material. Holotype. New Zealand: Wellington (WN): ♂, “NEW ZEALAND WN Tararua Ra Dundas Hut Ridge 990m 13 Feb 1985”, “C. F. Butcher Litter 85/19”, “N.Z. Arthropod Collection, NZAC Private Bag 92170 AUCKLAND New Zealand”. **Paratypes (n=5; 2 males, 3 females). New Zealand: Wellington (WN):** 2♂♂2♀♀ (1♂1♀, slide-mounted), same data as holotype (NZAC); 1♀, Waioata Rd., Tararua FP, 22 X 1991, in litter under silver beech (JTN).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: length 2.0–2.1 mm; frontal sulcus not reaching eye; shape of the genitalia; known from Wellington.

Description. Length 2.0–2.1 mm. Body brown, smooth, glossy. Antenna, maxillary palpi, legs yellowish brown (Figure 120b). *Head.* Head approximately 1.8 times longer than wide (Figure 121b). Eye approximately one-third length of temple (Figure 121b). Antennomeres 1–2 longer than wide, 3–8 subquadrate, 9–10 weakly transverse. *Thorax.* Prosternum approximately 1.10 times longer than wide. Elytra approximately 1.45 times longer than prosternum (Figure 120b). Meso- and metaventrite trapezoidal, approximately 1.23 times longer than prosternum. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Male genitalia with two apical lobes, right lobe triangular (Figure 121e).

Distribution. Wellington (WN) (Figure 123: triangles)

Habitat. Specimens of this species were collected by sifting leaf litter.

“Pseudostenosagola” sp. nov. 99

Type material. Holotype. New Zealand: Nelson (NN): ♂, “NEW ZEALAND: NN: Kahurangi N.P., Cobb Dam Rd., Asbestos Track, 459m, 41°06.333’S, 172°43.174’E, 29 XI-18 XII 2005, mixed broadleaf (incl. *Nothofagus fusca*)- podocarp forest; FMHD#2005-111, berl., leaf & log litter, A. Solodovnikov, D. Clarke, et al.; ANMT site 1160”. **Paratypes (n=3; 1 male, 2 females). New Zealand: Nelson (NN):** 1♂2♀♀ (1♀, slide-mounted), same data as holotype (FMNH).

Diagnosis. This species is separated from other species of this genus by the following combination of characters: length 2.0–2.1 mm; frontal sulcus not reaching eye; shapes of antennomere and genitalia; known from Nelson.

Description. Length 2.0–2.1 mm. Body brown, smooth, glossy. Antenna, maxillary palpi, legs yellowish brown (Figure 120c). *Head.* Head approximately 1.8 times longer than wide (Figure 121c). Eye approximately one-third length of temple (Figure 121c). Antennomeres 1–2 longer than wide, 3 subquadrate, 4 longer than wide, 5–8 subquadrate, 9–10 weakly transverse. *Thorax.* Prosternum approximately 1.1 times longer than wide. Elytra approximately 1.5 times longer than prosternum. Meso- and metaventrite trapezoidal, approximately 1.2 times longer than prosternum. *Abdomen.* Abdominal tergite IV without patches of microtrichia. *Aedeagus.* Male genitalia with one triangular apical lobe on right (Figure 121f).

Distribution. Nelson (NN) (Figure 123: black square).

Habitat. Specimens of this species were collected by sifting leaf and log litter in broadleaf and podocarp forests.

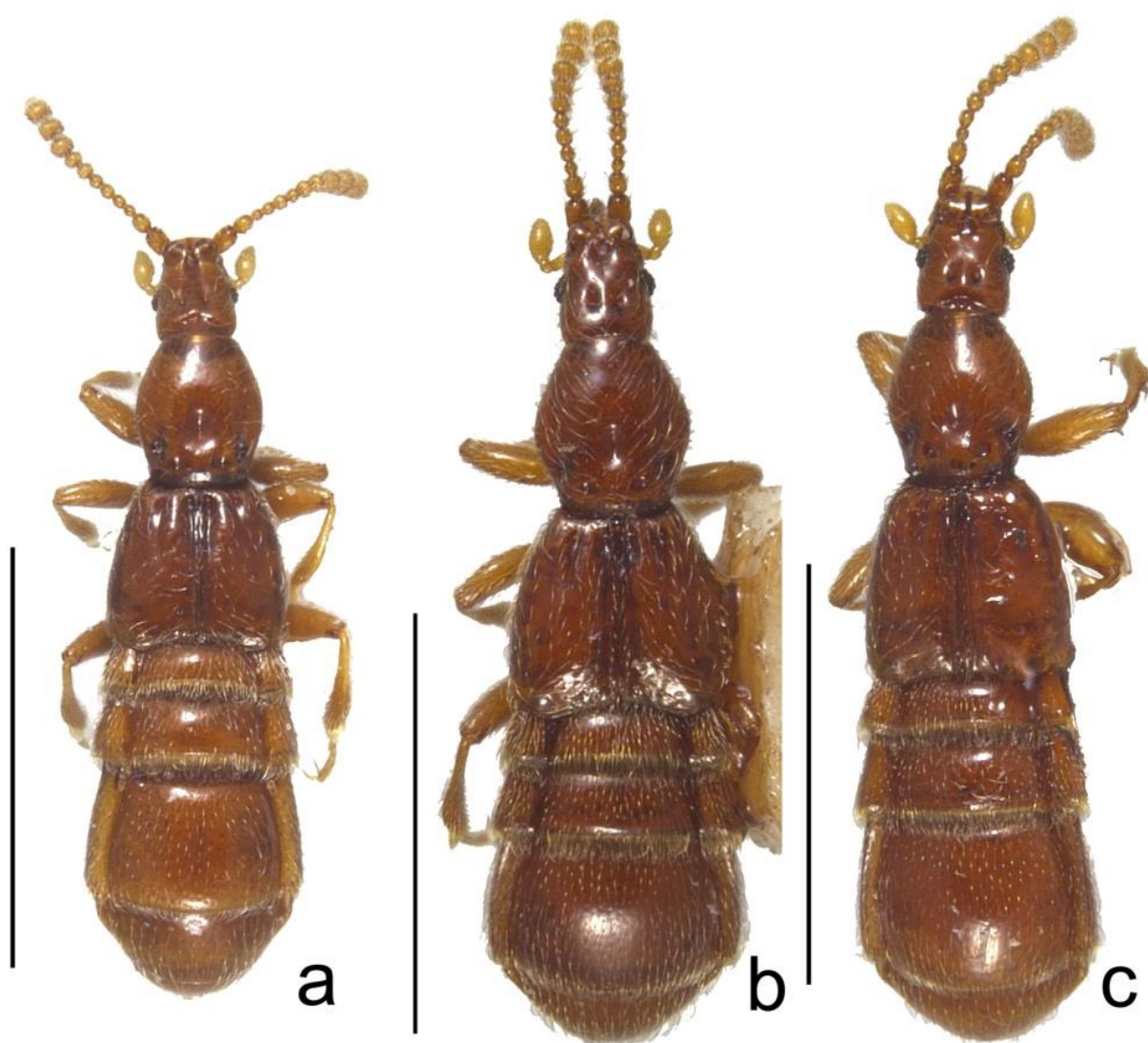


Figure 120. Habitus, dorsal view. a) “*Pseudostenosagola*” sp. nov. 98-1; b) *P.* sp. nov. 98; c) *P.* sp. nov. 99; Scale bars = 1 mm.

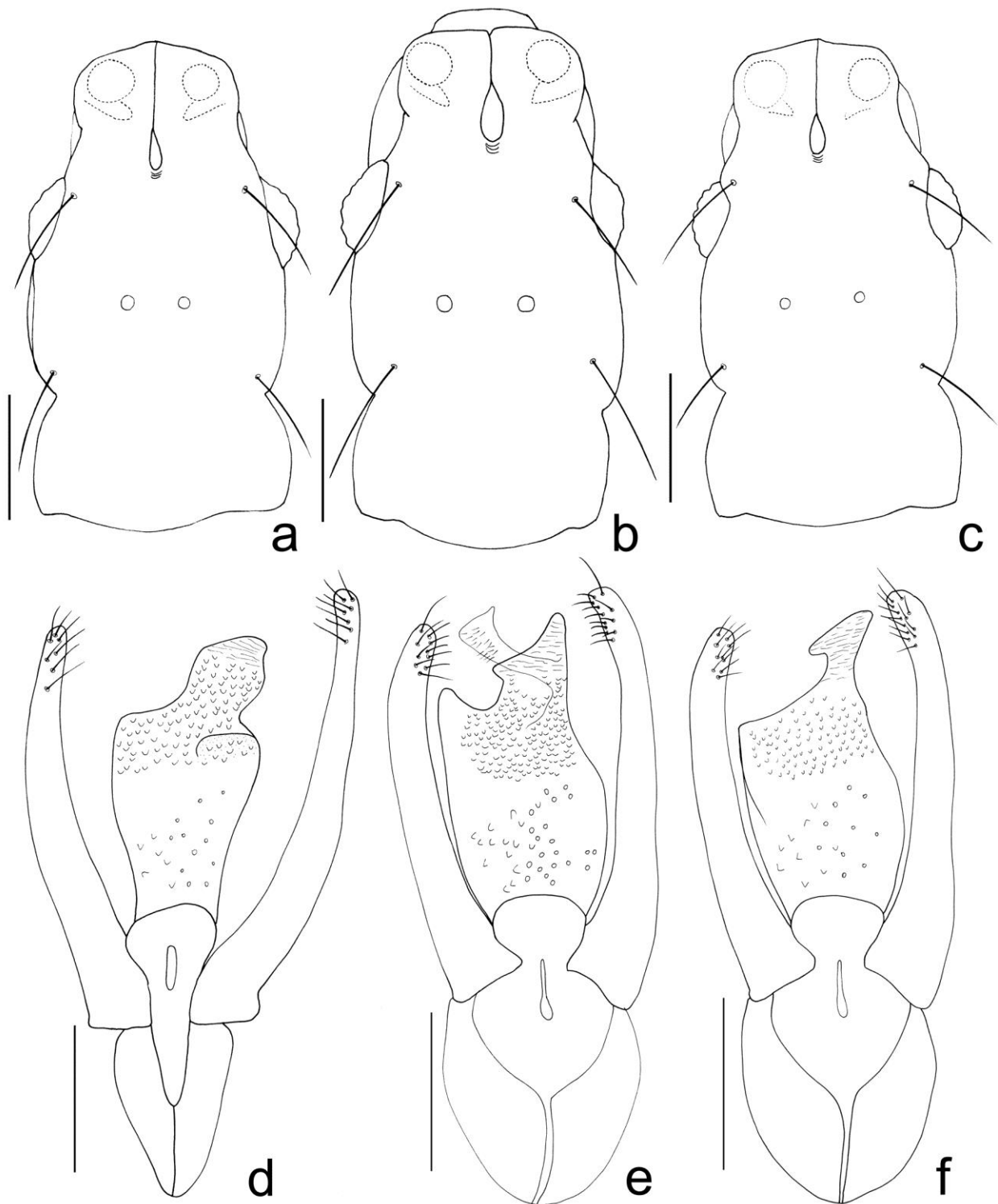


Figure 121. Head, dorsal view. a) *“Pseudostenosagola”* sp. nov. 98-1; b) *P. sp. nov. 98*; c) *P. sp. nov. 99*. Aedeagus, dorsal view. d) *“Pseudostenosagola”* sp. nov. 98-1; e) *P. sp. nov. 98*; f) *P. sp. nov. 99*. Scale bars = 0.1 mm.

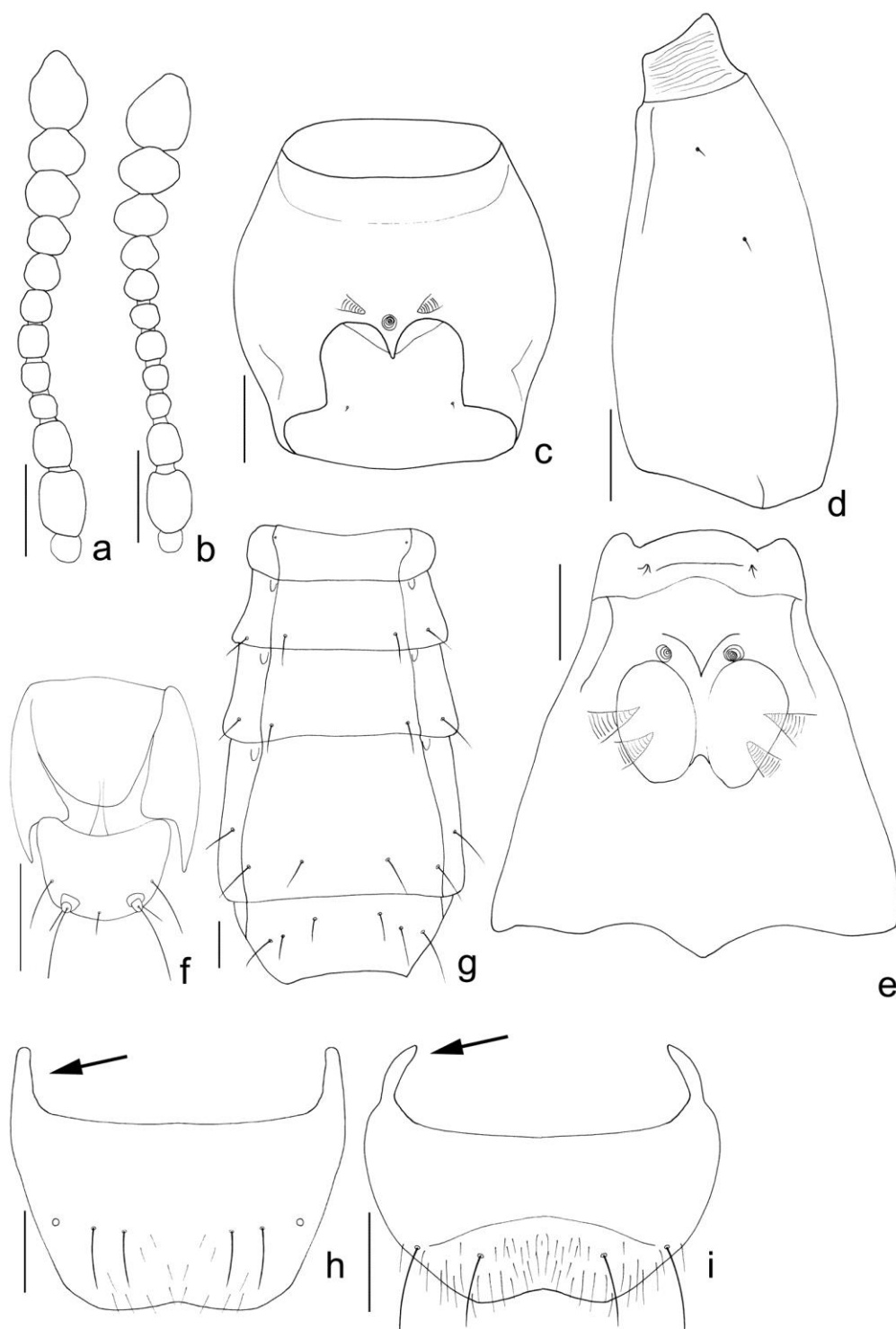


Figure 122. "*Pseudostenosagola*" sp. nov. 98-1. a) male antenna; b) female antenna; c) prosternum, ventral view; d) elytra, dorsal view; e) meso- and metaventrite, ventral view; f) female abdominal ventrite IX; g) abdomen, dorsal view; h) male abdominal tergite VIII, dorsal view; i) male abdominal ventrite VIII, ventral view. Scale bars = 0.1 mm.

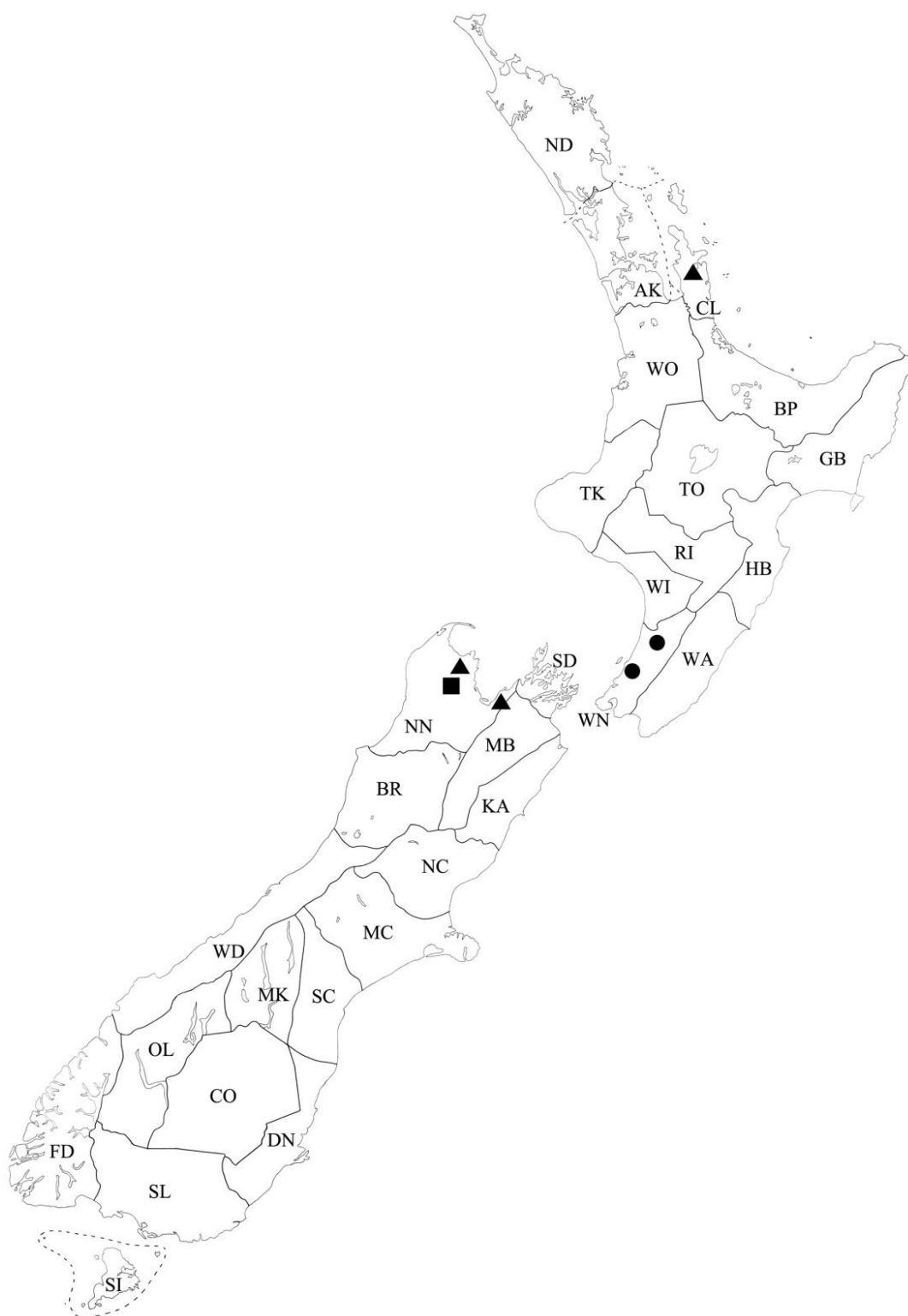


Figure 123. Locations where "*Pseudostenosagola*" sp. nov. 98-1, *P. sp. nov.* 98 and *P. sp. nov.* 99 specimens have been collected in New Zealand. *P. sp. nov.* 98-1: black circles; *P. sp. nov.* 98: triangles; *P. sp. nov.* 99: black square.

CHAPTER 4. PHYLOGENETIC RESULTS

Tree Results and comparisons.

Morphological results. Two most parsimonious trees resulted from the morphology analysis with length (L) 144, consistency index (Ci) 29, and retention index (Ri) 59. A strict consensus (L=145; Ci=29; Ri=59) of those trees was generated for nodes > 50 % bootstrap values (Figure 124). The tree does not support the genus *Sagola* as a monophyletic group. Two taxa, “*Brounea*” *setiventris* and “*Aucklandea*” sp. 22, occur in the middle of the *Sagola* clade. The Australian *Sagola* species, *S. rugicornis* Oke, is not placed in the *Sagola* clade. Two groups of the genus *Stenosagola* are paraphyletic. Six of eight new genera designated in this study are placed outside the *Sagola* clade.

Molecular results. A single most parsimonious tree resulted from the molecular parsimony (MP) analysis with L = 4767, Ci = 48 and Ri = 34 (Figure 125). Nodes supported by >50% bootstrap values are shown (Figure 125). The monophyly of the genus *Sagola* is not supported. Three of eight new genera designated in this study are included in the analysis, and one genus, “*Ahnea*”, is placed within the *Sagola* clade. The Australian species, *Sagola rugicornis* Oke is sister to all other faronites. Two groups of the genus *Stenosagola* are included, and those are not recovered as a monophyletic group.

A maximum likelihood (ML) tree (Figure 126) was reconstructed based on the GTR+G+I evolutionary model. Nodes supported by >50 % bootstrap values are shown (Figure 126). The monophyly of the genus *Sagola* was not supported. Three of eight new genera designated in this study are included in the analysis, and one genus, “*Ahnea*”, is placed in the middle of the *Sagola* clade. The Australian species, *Sagola rugicornis* Oke is sister to all other faronites. Two groups of the genus *Stenosagola* are included, and those are not recovered as a monophyletic group.

A Bayesian inference tree was reconstructed based on the GTR model (Figure 127). Posterior probabilities are shown at the nodes (Figure 127). The monophyly of the genus *Sagola* is not supported. Three of eight new genera designated in this study are included in the analysis, and one genus, “*Ahnea*”, is placed within the *Sagola* clade. The Australian species, *Sagola rugicornis* Oke is sister to all other faronites. Two groups of the genus *Stenosagola* are included, and those are not recovered as a monophyletic group.

Comparison of three molecular inferences. (MP, ML and Bayesian). The three molecular trees based on maximum parsimony, maximum likelihood, Bayesian analysis have different topologies for the *Sagola* clade (Figure 128). However, “*Ahnea*”, newly designated this study, is placed inside of the *Sagola* clade in all three. All *Sagola* groups are reconstructed as a monophyletic group without “*Ahnea*”. The other two newly designated genera, “*Brounea*” and “*Pseudoexeirarthra*” are placed outside the *Sagola* clade. The three trees also recovered two groups of *Stenosagola* as paraphyletic. The clades having high bootstrap values in the MP tree (Figure 128a) are also supported as monophyletic in the ML and Bayesian trees (Figure 128b–c). The ML tree is in greater accord with the MP tree than the Bayesian tree.

Comparison of morphology and molecular analysis. The relationships among species and genera are basically different in two trees (Figure 129). However, if the three taxa, “*Brounea*”, “*Aucklandea*” and “*Ahnea*”, are excluded, the New Zealand members of *Sagola*, which was redefined in this study (chapter 5) is supported as monophyletic. “*Brounea*” is located

within the *Sagola* clade for the morphology tree, but it is excluded from *Sagola* in the molecular tree. On the contrary, “*Ahnea*” is excluded from the *Sagola* clade on the morphology tree, but it is within that clade on the molecular tree. “*Aucklandea*” which is a sister to “*Brounea*” in the morphology tree, is not included in the molecular tree due to absence of DNA grade specimens. Both trees indicate paraphyly of *Stenosagola*. The Australian *Sagola* species, *S. rugicornis*, is excluded from the New Zealand *Sagola* clade.

Discussion.

Two characters, male fore-femur with semi-circular depression (Figure 27u) and triangular male head (Figure 93z) are mapped onto the morphology parsimony tree (Figure 129a) and the molecular ML tree (Figure 129b). The semi-circular depression on the inner margin of the male fore-femur character (Figure 27u) is found in 50 species in 9 groups of the genus *Sagola*. Results from the morphology tree suggest that the character has evolved twice (Figure 129a; red bars), but the molecular tree suggests five independent origins (Figure 129b; red bars). Thirty-one species within 3 groups of *Sagola* have males with large and triangular heads due to the temporal projections (Figure 93z). This character evolved once based on the morphology tree (Figure 129a; black bars), but it evolved 3 times based on the molecular tree (Figure 129b; black bars). Based on the revisional study (chapter 5), those two characters are concrete and stable at genus and species levels. For molecular analysis, four genes and over 4200 base pairs were used, which is a much larger dataset than was used in the morphological analysis, but the interspecific relationships of *Sagola* seems to be more reliable in the tree based on morphological data, at least in terms of the ability to recognize similarity. Polarization of these characters as derived within the New Zealand faronite taxa is supported by their absence from members of other faunal regions examined, particularly the presumptive closely related Australian taxa. The genes used in this study included one mitochondrial and three nuclear genes. More sequence data from rapidly evolving genes such as mitochondrial DNA are needed along with more complete taxon sample to improve resolution within the genus *Sagola*.

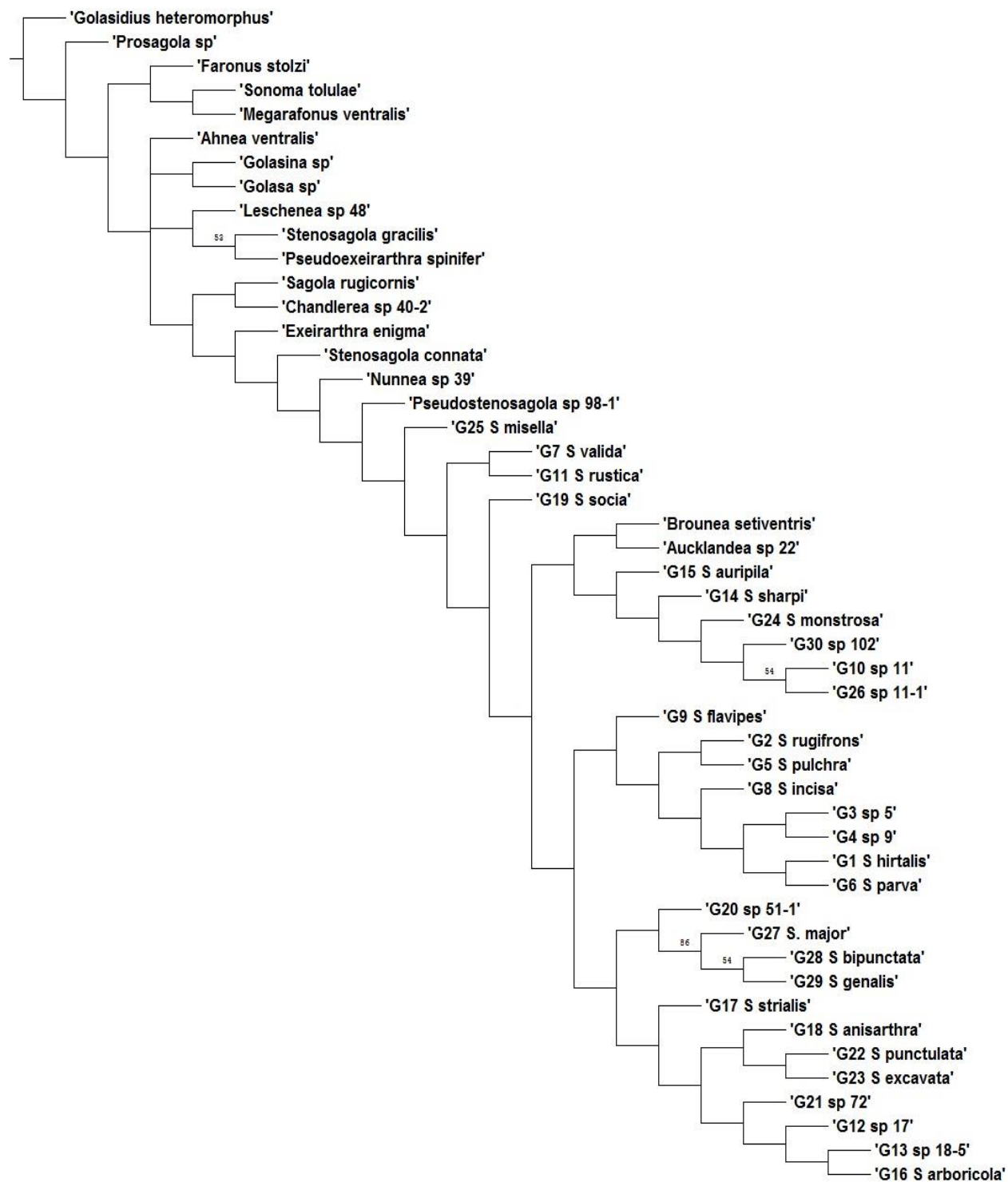


Figure 124. Strict consensus tree of maximum parsimony analysis of morphological data (L=145, Ci=29, Ri=58). Numbers at nodes are bootstrapping values. >50 % values are shown.

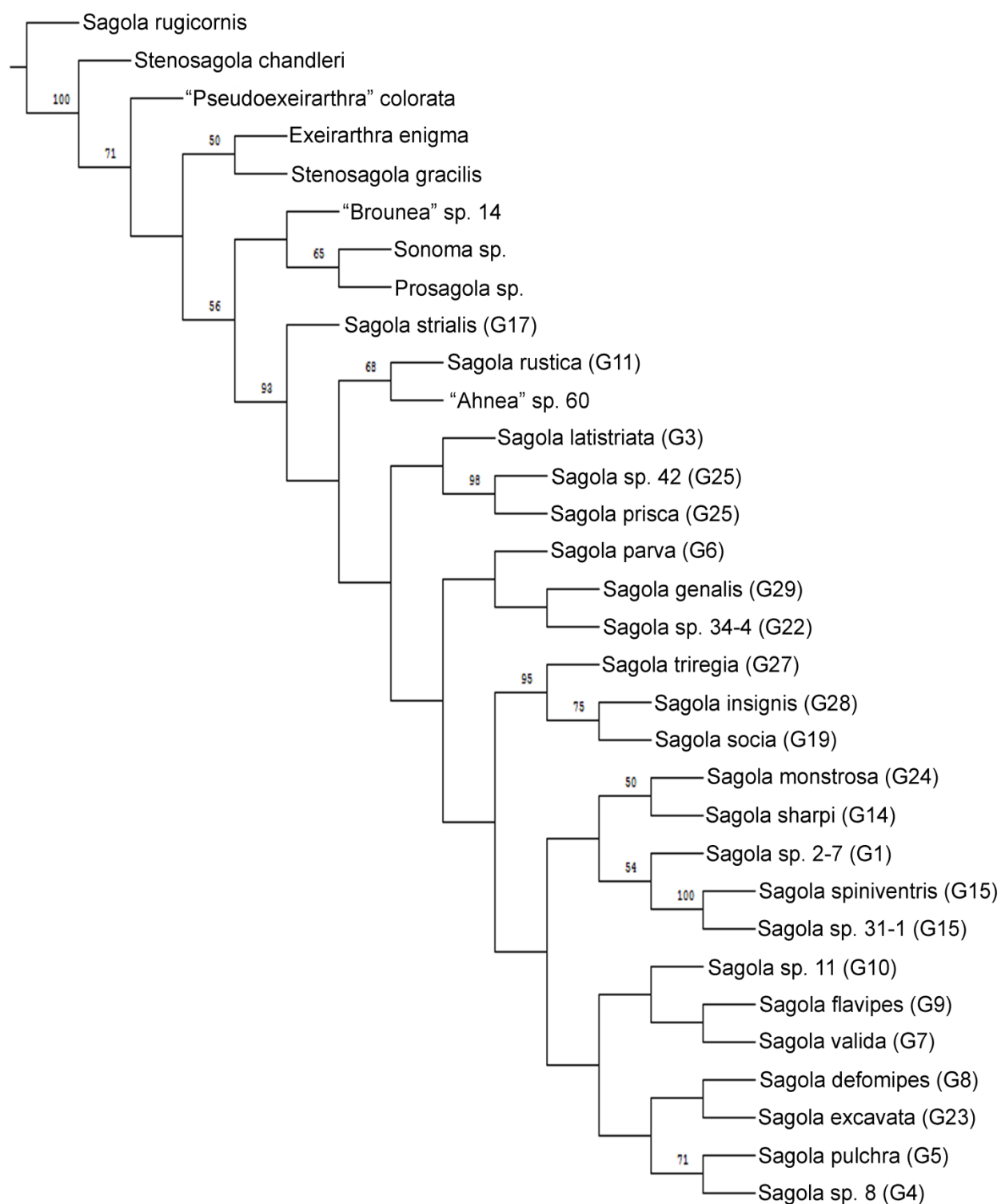


Figure 125. Most parsimonious tree based on molecular data (L=4767, Ci=48, Ri=34). Numbers at nodes are bootstrapping values. >50 % values are shown.



Figure 126. Best tree from maximum likelihood analysis based on molecular data. Numbers at nodes are bootstrapping values. >50 % values are shown.

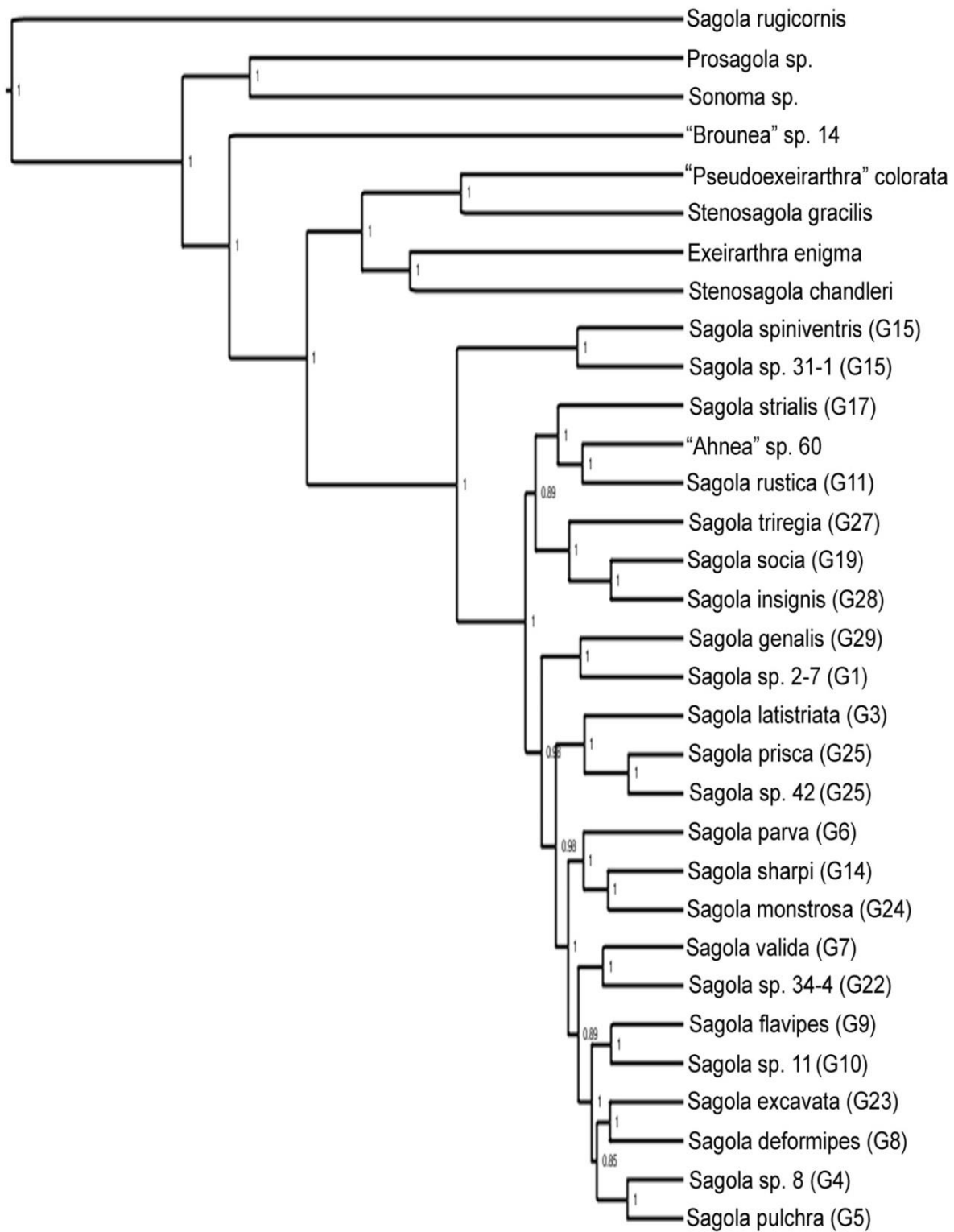


Figure 127. Best tree from Bayesian inference based on molecular data. Numbers at nodes are posterior probabilities.

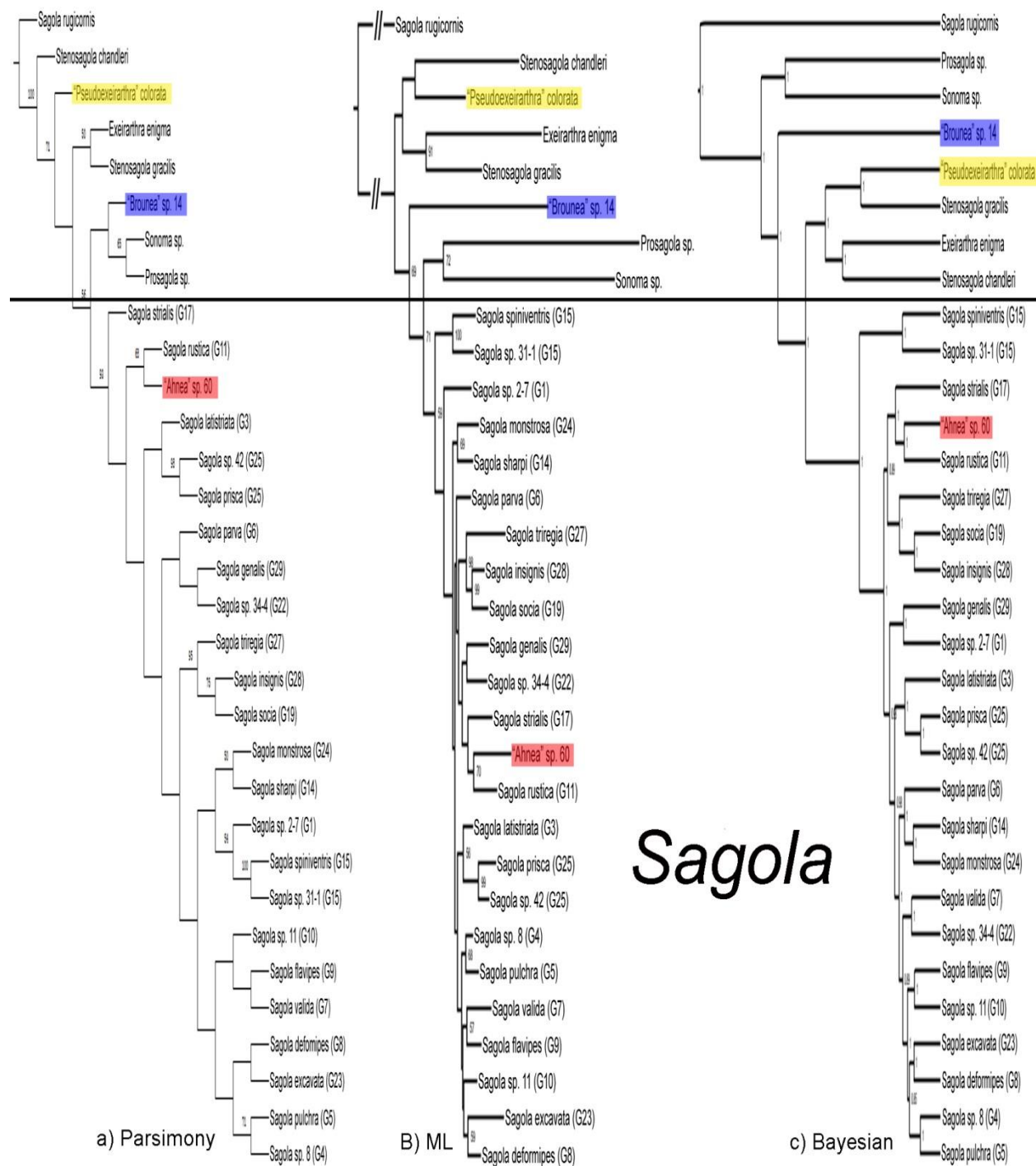


Figure 128. Comparison of three molecular inferences. a) Maximum parsimony tree; b) Maximum likelihood tree; c) Bayesian tree.

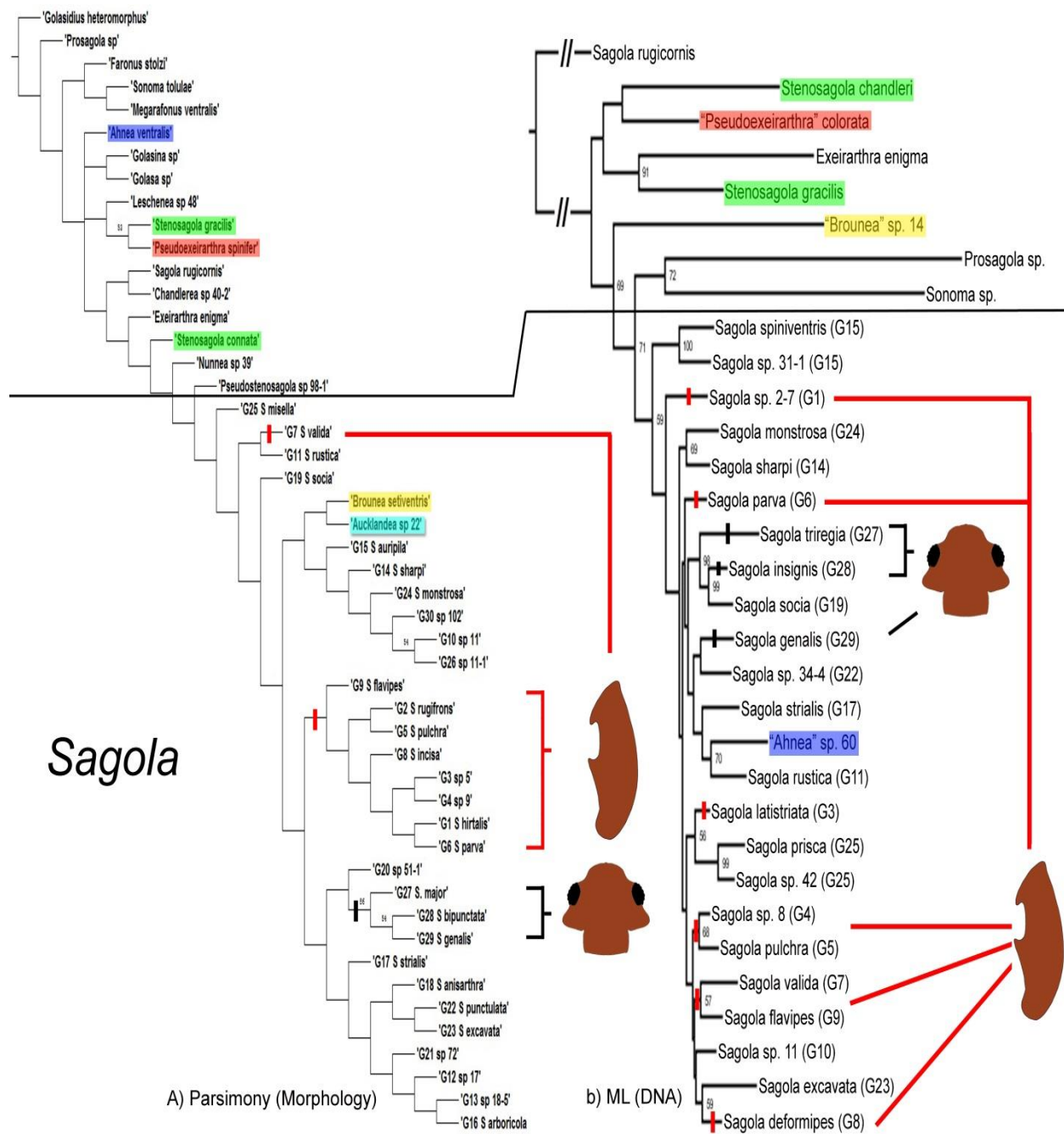


Figure 129. Comparison of morphology and molecular inferences. a) parsimony tree based on morphological data; b) Maximum likelihood tree based on molecular data.

CHAPTER 5. SUMMARY AND CONCLUSIONS

This study was the first comprehensive modern taxonomic and systematic study of any major genus-group taxon of New Zealand pselaphines since Broun described the last species in 1921. Before I started this study, the New Zealand Faronitae held 145 species within 3 genera, and this number exceeded the total species number of the world Faronitae from other regions (see Appendix B). This could lead to a misinterpretation that the New Zealand faronite fauna is well known relative to other regions. However, almost the same number (143) of new species was found and 84 species names, mostly described by Broun, were synonymized under other valid species in this study. Poor microscopic technology and absence of taxonomic specialization during that time probably account for Broun's lack of precision in delimiting species. He described size, color and external characters in comparative detail but did not deal with fine scale characters of the mouthparts, foveae, internal structures, and genitalia. He also studied and described species in virtually all other beetle taxa in New Zealand, so probably had only a superficial grasp of the true variation in many groups, especially minute beetles such as pselaphines. This study was mostly based on fine scale characters of the foveal system and genitalia that must be observed using compound microscopes. No single character or combination of characters separated New Zealand genera from each other. Generic boundaries, newly defined in this study, were defined in many cases based on the foveal system and genitalia, and at least so far as genus boundaries are concerned, followed the pattern established by Chandler (2001a), who described 81 new genera from Australia, effectively doubling the generic fauna of the region.

The new generic boundaries were tested using phylogenetic analyses based on morphological and molecular data. The three new genera, “*Brounea*”, “*Aucklandea*” and “*Ahnea*” were incongruous with the resulted trees. However, all of these three genera were congruent on either the morphology or molecular tree. Moreover, the molecular tree revealed problems in resolving relationships among *Sagola* species. Other new generic boundaries were consistent with the phylogenetic analysis.

Approximately 6000 specimens were used for this study, and those included Sharp's and Broun's specimens collected during the late nineteenth century to recent specimens collected during 2012. Generally, the Coleoptera fauna of New Zealand is well collected, but some regions such as Central Otago (CO), Hawkes Bay (HB), Kaikoura (KA), Marlborough (MB), Mackenzie (MK), North Canterbury (NC), Rangitikei (RI) and Wanganui (WI) are represented by a small number of collecting events (Figure 130). Moreover, New Zealand has a number of small islands, but few collecting events have occurred in places such as the Three Kings Islands, Auckland Islands, Snares Islands and Chatham Islands. Comprehensive collecting, especially to obtain fresh molecular grade specimens, remains a priority for New Zealand Faronitae study.

Ten species within two genera, *Sagola* and *Logasa* are described in Australia, but Chandler (2001a) mentioned there are at least additional 120 new species. According to the phylogenies based on morphological and molecular data, the Australian species, *Sagola rugicornis* Oke, is excluded from the New Zealand *Sagola* clade, suggesting a new genus. A comprehensive modern revisional study of the Australian Faronitae will be the reasonable next step to improve understanding the supertribe Faronitae and fundamental information necessary for ecological, environmental, and evolutionary studies.

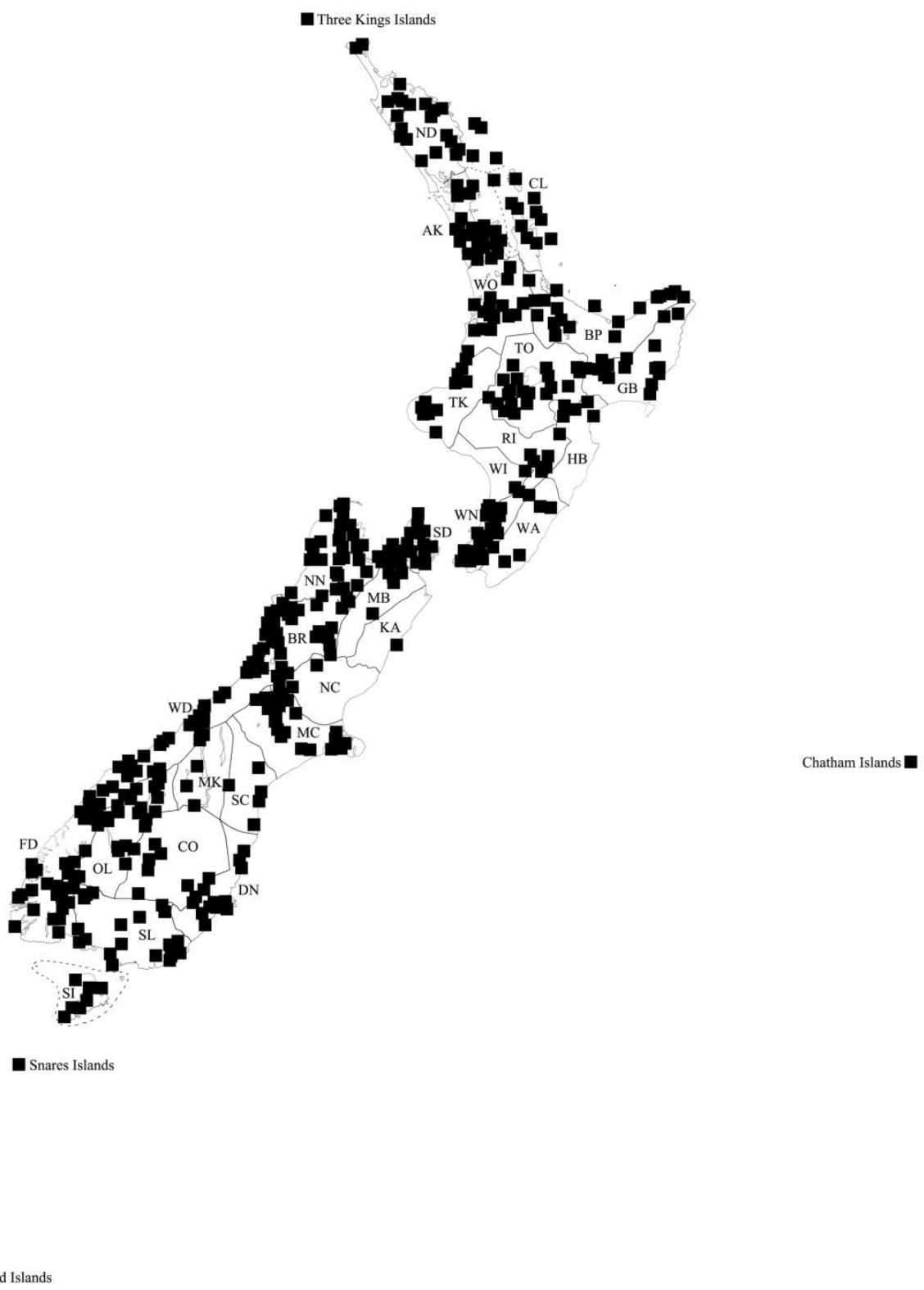


Figure 130. Locations where New Zealand faronite specimens have been collected (black squares).

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APPENDIX A: DATA MATRIX FOR MORPHOLOGICAL PHYLOGENY

Taxon \ Character	c01	c02	c03	c04	c05	c06	c07	c08	c09	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	c20	c21	c22	c23	c24	c25	c26	c27	c28	c29	c30	c31	c32	c33	c34	c35	c36	c37	c38	c39	c40	c41	c42			
G1_S_hirtalis	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	2	1	2	1	2	2	1	1	2	2	2	1	2	2	1	2	2	1	1		
G2_S_rugifrons	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	2	1	1	2	2	1	1	2	2	1	2	2	1	1		
G3_S_sp_5	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	2	1	2	2	1	1			
G4_S_sp_9	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	2	2	2	1	1	2	2	1	2	2	1	2	1			
G5_S_pulchra	1	1	1	1	1	2	-	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	2	1	2	2	1	2	1		
G6_S_pavva	1	1	1	1	1	1	1	2	-	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	1		
G7_S_valida	1	1	1	1	1	1	2	-	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	1		
G8_S_incosa	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	1		
G9_S_flavipes	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	-	2	2	2	2	1	2	1	1	2	2	1	2	1	2	1	2	1	1	2	2	1	2	2	1	1	1			
G10_S_sp_11	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	2	2			
G11_S_rustica	2	1	1	1	1	2	-	1	2	1	2	1	2	1	1	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	2	1	1	1		
G12_S_sp_17	2	1	1	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1		
G13_S_sp_18-5	2	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	3	1	1	1		
G14_S_sharpi	2	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	3	1	1	1	1	
G15_S_auripila	2	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	1	2	2	1	2	2	
G16_S_ambrolicola	2	1	1	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	2	1	2	1	
G17_S_strialis	1	1	1	1	1	1	2	1	1	1	2	1	2	1	2	2	2	2	2	1	2	1	1	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	
G18_S_ansarathra	2	1	1	2	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	2	1	1	1	1	
G19_S_socia	2	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	2	1	1	1	1	
G20_S_sp_51-1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	2	1	1	
G21_S_sp_72	2	1	1	1	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1	
G22_S_punctulata	2	1	1	1	1	1	2	2	-	1	2	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1	
G23_S_excavata	2	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	2	
G24_S_monstrosa	1	1	1	2	1	1	2	1	1	2	1	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	2	2	1	2	2	
G25_S_misella	2	1	1	1	1	2	-	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1	
G26_S_sp_11-1	1	2	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	2	2	2	
G27_S_major	1	2	1	1	1	1	1	1	1	2	1	2	2	1	1	2	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1
G28_S_bipunctata	1	2	1	1	1	1	1	1	1	2	1	2	2	1	1	1	2	2	2	1	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1
G29_S_genuilis	1	2	1	1	1	1	1	1	1	2	1	2	2	1	1	1	2	2	2	1	1	2	1	2	2	2	2	2	1	1	2	2	2	2	1	2	2	2	2	2	2	1	1	1	1
G30_S_sp_102	1	1	1	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
Sagolia rugicornis	2	1	1	1	2	1	1	1	1	2	1	2	1	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	2	2
Sonoma lobulae	2	1	1	1	1	1	1	1	1	2	2	1	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	
Aucklandia sp_22	2	1	1	2	1	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2
Brounea selventris	2	1	1	1	1	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1
Chandleria sp_40-2	2	1	1	2	1	1	1	1	1	2	1	1	2	1	-	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Nunnea sp_39	1	1	1	2	1	1	2	-	1	1	2	1	2	1	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Leschenaea_sp_48	2	1	1	2	1	2	2	-	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Ahnea ventralis	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Pseudoeuxearthra spinifer	2	1	1	1	1	2	-	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Pseudostenosagola_sp_98-	2	1	1	1	1	2	-	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Stenosagola gracilis	2	1	1	1	1	2	-	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Stenosagola comata	2	1	1	2	1	1	2	-	1	2	1	2	1	2	1	-	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Golaina sp	1	1	1	2	1	1	2	-	1	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Euxearthra enigma	2	1	1	2	1	1	2	1	1	1	2	2	1	1	2																														

APPENDIX B: WORLD CATALOGUE OF THE SUPERTRIBE FARONITAE REITTER

Supertribe Faronitae Reitter, 1882

Type genus: *Faronus* Aubé, 1844.

Newton & Thayer, 1995: 303 (proposal of Pselaphinae and Faronitae status novo).

Genus *Delenda* Croissandeau

Type species: *Delenda carthago* Croissandeau (monotypy).

Delenda Croissandeau, 1891: 152 (original description). Casey, 1894: 434 (key to Faronini genera). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis, catalog entry). Newton and Chandler, 1989: 18 (generic catalog entry). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species). Newton & Thayer, 2005a (catalog of Staphyliniformia).

Syn. *Eusonoma* Reitter, 1893: 172 (original description). Raffray, 1904: 500 (catalog entry, as a synonym of genus *Delenda*). Raffray, 1911: 7 (catalog entry, as a synonym of genus *Delenda*). Newton and Chandler, 1989: 18 (as a synonym of genus *Delenda*). Löbl and Besuchet, 2004: 295 (as a synonym of genus *Delenda*). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Eusonoma frivaldszkyi* Reitter (monotypy).

Delenda carthago Croissandeau

Delenda carthago Croissandeau, 1891: 152 (original description, illustrations of diagnostic characters). Croissandeau, 1893: 153 (diagnosis). Raffray, 1904: 500 (catalog entry). Raffray, 1911: 7 (catalog entry). Raffray, 1924: 71 (distribution). Jeannel, 1961: 49 (brief discussion of biogeography). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Eusonoma frivaldszkyi* Reitter, 1893: 173 (original description). Raffray, 1904: 500 (catalog entry, as a synonym of *D. carthago*). Löbl and Besuchet, 2004: 295 (as a synonym of *D. carthago*). Type locality: Constantinople (Turkey). Distribution: Bulgaria, Turkey.

Genus *Exeirarthra* Broun

Type species: *Exeirarthra enigma* Broun (monotypy).

Exeirarthra Broun, 1893b: 1054 (original description). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton and Chandler, 1989: 18 (generic catalog entry). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland). Klimaszewski *et al.*, 1996: 147 (New Zealand generic summary). Newton & Thayer, 2005a (catalog of Staphyliniformia). Nomura and Leschen, 2006: 240 (remarks, list of New Zealand species). Park & Carlton, 2011: 1170 (species revision).

Exeirarthra enigma Broun

Exeirarthra enigma Broun, 1893b: 1054 (original description). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Hudson, 1923: 366 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Park & Carlton, 2011: 1174 (redescription, illustrations of habitus and diagnostic characters).

Type locality: near Howick (Auckland; AK).

Distribution: New Zealand.

Syn. *Exeirarthra angustula* Broun, 1917: 374 (original description, comparison with *E. enigma*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Park & Carlton, 2011: 1174 (synonym of *E. enigma*).

Syn. *Exeirarthra pallida* Broun, 1893b: 1424 (original description). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Hudson, 1923: 366 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Park & Carlton, 2011: 1174 (synonym of *E. enigma*).

***Exeirarthra longiceps* Broun**

Exeirarthra longiceps Broun, 1917: 375 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Park & Carlton, 2011: 1179 (redescription, illustrations of habitus and diagnostic characters).

Type locality: Hollyford, north of Lake Wakatipu (Otago Lakes; OL).

Distribution: New Zealand.

***Exeirarthra maclellanensis* Park & Carlton**

Exeirarthra maclellanensis Park & Carlton, 2011: 1180 (original description, habitus photo, illustrations of diagnostic characters and aedeagus).

Type locality: MacLennan (Southland; SL).

Distribution: New Zealand.

***Exeirarthra mccollae* Park & Carlton**

Exeirarthra mccollae Park & Carlton, 2011: 1180 (original description, habitus photo, illustrations of diagnostic characters and aedeagus).

Type locality: Mt. Greenland (Westland; WD).

Distribution: New Zealand.

***Exeirarthra nunni* Park & Carlton**

Exeirarthra nunni Park & Carlton, 2011: 1181 (original description, habitus photo, illustrations of diagnostic characters and aedeagus).

Type locality: Ailsa Craig Lammermoor Range (Central Otago; CO).

Distribution: New Zealand.

***Exeirarthra parviceps* Broun**

Exeirarthra parviceps Broun, 1921a: 486 (original description, comparison with *E. angustula*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Park & Carlton, 2011: 1181 (redescription, illustrations of habitus and diagnostic characters).

Type locality: Mount Hope, near Nelson, nearly 4000 ft. (Nelson; NN).
Distribution: New Zealand.

Genus *Faronidiellus* Jeannel

Type species: *Faronidiellus monilis* Raffray (Original designation).

Faronidiellus Jeannel, 1964: 37 (original description, discussion, key to African genera). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Faronidiellus monilis* (Raffray)**

Faronidius monilis Raffray, 1898: 382 (original description, comparison with *Faronidius africanus*). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 112 (distribution, as genus of *Faronidius*). Jeannel, 1955: 20 (diagnosis, genitalia illustration). Jeannel, 1964: 38 (combined as genus *Faronidiellus*, diagnosis, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Cape Town.

Distribution: South Africa.

Genus *Faronidius* Casey

Type species: *Faronidius africanus* Casey (monotypy).

Faronidius Casey, 1887a: 381 (original description). Raffray, 1893: 2 (key to Faronini genera, description). Casey, 1894: 434 (key to Faronini genera). Raffray, 1897: 47 (description). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Jeannel, 1955: 20 (diagnosis, key to African species). Jeannel, 1960b: 53 (key to Madagascan genera including genus *Faronidius*). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1964: 32 (key to African genera and species). Jeannel, 1967: 442 (biogeographic study). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Faronidius africanus* Casey**

Faronidius africanus Casey, 1887a: 382 (original description, habitus illustration). Raffray, 1893: 4 (description, illustration of diagnostic character). Raffray, 1897: 48 (description). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 226 (distribution). Jeannel, 1954: 154 (genitalia illustration). Jeannel, 1955: 20 (diagnosis, diagnostic character illustrations). Jeannel, 1964: 35 (diagnosis, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Cape Town, Wellington.

Distribution: South Africa.

***Faronidius caviventris* Jeannel**

Faronidius caviventris Jeannel, 1964: 35 (Original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Oqalweni.

Distribution: South Africa.

***Faronidius dejagerae* Jeannel**

Faronidius dejagerae Jeannel, 1964: 34 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Woodbush.

Distribution: South Africa.

***Faronidius joannae* Jeannel**

Faronidius joannae Jeannel, 1964: 36 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Ndedama.

Distribution: South Africa.

***Faronidius leleupi* Jeannel**

Faronidius leleupi Jeannel, 1964: 37 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Wit Els Bos.

Distribution: South Africa.

Genus *Faronites* Jeannel

Type species: *Faronites vadoni* Jeannel (Original designation).

Faronites Jeannel, 1954: 153 (original description, key to *Faronites* species, comparison with genus *Faronidius*). Jeannel, 1960b: 53 (key to Madagascan genera including genus *Faronidius*). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Faronites ankaratrae* Jeannel**

Faronites ankaratrae Jeannel, 1959: 190 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Manjakalompo.

Distribution: Madagascar.

***Faronites curtipennis* Leleup**

Faronites curtipennis Leleup, 1977: 72 (original description based on female). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Mt. Ambre.

Distribution: Madagascar.

***Faronites franzi* Leleup**

Faronites franzi Leleup, 1977: 74 (original description based on female). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Périnet.

Distribution: Madagascar.

***Faronites gracilicornis* Jeannel**

Faronites gracilicornis Jeannel, 1959: 190 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Ambila

Distribution: Madagascar

***Faronites jeanneli* Leleup**

Faronites jeanneli Leleup, 1977: 73 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Mt. Ambre.

Distribution: Madagascar.

***Faronites longicollis* Jeannel**

Faronites longicollis Jeannel, 1960a: 6 (original description based on female). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Andasy.

Distribution: Madagascar.

***Faronites longifrons* Jeannel**

Faronites longifrons Jeannel, 1960b: 54 (original description, habitus and genitalia illustrations, key to Madagascan species). Jeannel, 1961: 48 (habitus illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Nosy-Komba.

Distribution: Madagascar.

***Faronites pachycerus* Jeannel**

Faronites pachycerus Jeannel, 1959: 192 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Analamazoatra.

Distribution: Madagascar.

***Faronites robinsoni* Jeannel**

Faronites robinsoni Jeannel, 1959: 191 (original description, genitalia illustration, comparison with *F. longicollis*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Mt. Ambre.

Distribution: Madagascar.

***Faronites vadoni* Jeannel**

Faronites vadoni Jeannel, 1954: 154 (original description, habitus and genitalia illustrations). Jeannel, 1960b: 54 (key to Madagascan species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Andranofotsy.

Distribution: Madagascar.

***Faronites wewalkai* Leleup**

Faronites wewalkai Leleup, 1977: 75 (original description based on female). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Nossy Mangabe.

Distribution: Madagascar.

Genus *Faronitopsis* Jeannel

Type species: *Faronites convexicollis* Jeannel (Original designation).

Faronitopsis Jeannel, 1960b: 54 (original description, comparison with genus *Faronites*, key to Madagascan genera including genus *Faronidius*). Jeannel, 1967: 442 (biogeographic study). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Faronitopsis convexicollis* (Jeannel)**

Faronites convexicollis Jeannel, 1954: 155 (original description). Jeannel, 1960b: 55 (designated genus *Faronitopsis* with *F. convexicollis*, habitus illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Andranofotsy.

Distribution: Madagascar.

Genus *Faronus* Aubé

Type species: *Faronus lafertei* Aubé (monotypy).

Faronus Aubé, 1844: 157 (original description). LeConte, 1849: 108 (diagnosis). Jacquelin, 1857: 135 (diagnosis, key to pselaphine genera, catalog entry). Brendel, 1866: 38 (diagnosis). Saulcy, 1874: 83 (description). Sharp, 1874: 507 (comparison with genus *Sagola*). Reitter, 1882a: 451 (key to European genera and species). Reitter, 1882b: 137 (generic diagnosis and description). Reitter, 1882c: 199 (generic key to Faronides). Reitter, 1884a: 63 (key to European pselaphine genera). Brendel, 1888: 302 (key to pselaphid genera). Schaufuss, 1888: 64 (catalog entry). Brendel, 1890: 226 (key to North American genera). Raffray, 1890: 85 (key to genera of Faronini, synonym note). Schaufuss, 1890: 158 (fossil species). Brendel, 1891: 75 (diagnosis, key to North American species). Raffray, 1893: 2 (key to Faronini genera, description, key to *Faronus* species). Reitter, 1893: 173 (key to European genera). Casey, 1894: 434 (key to Faronini genera). Ganglbauer, 1895: 778 (diagnosis, key to *Faronus* species). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Klebs, 1910: 241 (amber fossil catalog). Sainte-Claire Deville, 1914: 140 (Corsican catalog). Handlirsch, 1925: 230 (fossil catalog). Porta, 1926: 215 (diagnosis, key to Italian species). Portevin, 1929: 462 (key to French species). Jeannel, 1950: 47 (description, key to French species). Jeannel, 1956: 10 (diagnosis, key to Mediterranean genera). Besuchet, 1960: 17 (comparison with *Faronellus* Jeannel). Jeannel, 1967: 442 (biogeographic study). Besuchet, 1969a: 106 (description and key to Iberian peninsular species). Larsson, 1978: 110 (Baltic amber fossil catalog). Newton and Chandler, 1989: 18 (generic catalog entry). Sabella, 1998: 36 (key to Sicilian species). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species). Newton & Thayer, 2005a (catalog of Staphyliniformia).

Syn. *Faronellus* Jeannel, 1956: 13 (original description, key to Mediterranean genera). Besuchet 1960: 17 (synonymized with genus *Faronus*). Newton and Chandler, 1989: 18 (as a synonym of genus *Faronus*). Löbl and Besuchet, 2004: 295 (as a synonym of genus *Faronus*). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Faronus nicaeensis* Saulcy (Original designation).

***Faronus andalusiacus* Besuchet**

Faronus andalusiacus Besuchet, 1969a: 114 (originals description, key to Iberian peninsular species, genitalia illustration). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Puerto de los Alazores (Granada).

Distribution: Spain.

***Faronus aubei* Lucas**

Faronus aubei Lucas, 1854: xxxv (original description, comparison with *F. lafertei*). Saulcy, 1874: 85 (as a synonym of *F. lafertei*). Reitter, 1882b: 138 (as a synonym of *F. lafertei*). Schaufuss, 1888: 64 (catalog entry, as a synonym of *F. lafertei*). Raffray, 1904: 496 (catalog entry, as a synonym of *F. lafertei*). Raffray, 1911: 4 (catalog entry, as a synonym of *F. lafertei*). Jeannel, 1950: 50 (diagnosis, genitalia illustration, as a synonym of *F. lafertei*). Jeannel, 1956: 11 (diagnosis, habitus and genitalia illustrations, comparison with *F. lafertei*). Besuchet, 1962: 334 (distribution). Poggi, 1976: 13 (mention). Besuchet, 1980: 611 (new distribution). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Faronus brachypterus* Pic, 1907: 145 (as form of *lafertei*). Raffray, 1911: 4 (catalog entry, as variety of *F. lafertei*). Poggi, 1976: 13 (as a synonym of *F. aubei*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. aubei*).

Type locality: Algeria.

Distribution: Algeria, Morocco, Italy, Tunisia.

***Faronus besucheti* Castellini**

Faronus besucheti Castellini, 1990a: 87 (original description, illustrations of diagnostic characters). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Gairo Marina (Sardegna).

Distribution: Italy.

***Faronus brucki* Saulcy**

Faronus brucki Saulcy, 1874: 87 (original description). Reitter, 1882a: 460 (key to European species). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 12 (description, illustration of diagnostic character). Raffray, 1924: 34, 58 (distribution). Porta, 1926: 216 (key to Italian species). Jeannel, 1950: 51 (diagnosis, as a synonym of *F. nicaeensis*). Castellini, 1975: 37 (description, genitalia illustration, list of Toscana, Italy species). Castellini, 1990b: 23 (faunastical remarks). Sabella, 1993: 154 (illustrations of diagnostic characters, comparison with *F. vitalei* and *F. pyraeneus*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Faronus grouvellei* Raffray, 1893: 8 (original description, illustrations of diagnostic characters). Ganglbauer, 1895: 779 (diagnosis, as a valid name). Raffray, 1904: 496 (catalog entry, as a valid name). Raffray, 1911: 4 (catalog entry, as a valid name). Raffray, 1924: 33 (distribution, as a valid name). Porta, 1926: 216 (key to Italian species, as a valid name). Portevin, 1929: 462 (key to French species, as a valid name). Jeannel, 1950: 51 (diagnosis, habitus illustration, as a valid name). Poggi, 1976: 13 (new distribution, as a valid name). Sabella, 1993: 155 (illustration of diagnostic character, comparison with *F. nicaeensis*, as a valid name). Besuchet 2004: 28 (synonymized with *F. brucki*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. brucki*).

Type locality: Toscana (Italy).

Distribution: France, Italy.

***Faronus depressus* Besuchet**

Faronus depressus Besuchet, 1960: 15 (original description, genitalia illustration, key to *Faronus* species). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Bolka Dağı (Ankara).
Distribution: Turkey.

***Faronus distinctus* Besuchet**

Faronus distinctus Besuchet, 1999: 792 (original description, comparison with *F. parallelus*, genitalia illustration). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).
Type locality: Antalya (Turkey).
Distribution: Greece, Turkey.

***Faronus espanoli* Normand**

Faronus espanoli Normand, 1945: 277 (original description, habitus picture (*Figure 3; see comments), comparison with *F. nicaeensis* and *F. pyrenaeus*). Besuchet, 1969a: 109 (as *espanoli*; key to Iberian peninsular species, genitalia illustration). Löbl and Besuchet, 2004: 295 (as *espanoli*; catalog of Palaearctic species).
Type locality: Islas Baleares (Iviza).
Distribution: Spain.
Comments. Figure 1 in the original description does not seem to be of *F. espanoli*. The picture may be switched with figure 3, which is of *Astenus lepidulus*.

***Faronus festivus* Besuchet**

Faronus festivus Besuchet, 1960: 12 (original description, genitalia illustration, key to *Faronus* species). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).
Syn. *Faronus festivus apterus* Besuchet, 1960: 13 (original description, key to *Faronus* species). Besuchet 2004: 28 (synonymized with *F. festivus*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. festivus*).
Type locality: Judea (Israel).
Distribution: Israel, Lebanon.

***Faronus gracilis* Besuchet**

Faronus gracilis Besuchet, 1969a: 115 (original description, key to Iberian peninsular species). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).
Type locality: Alfacar (Granada).
Distribution: Spain.

***Faronus gravidus* Reitter**

Faronus gravidus Reitter, 1884a: 81 (original description). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 12 (description, illustration of diagnostic character). Raffray, 1904: 496 (catalog entry). Raffray, 1924: 78 (distribution). Raffray, 1911: 5 (catalog entry). Besuchet, 1969a: 109 (description, key to Iberian peninsular species, genitalia illustration). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).
Type locality: South Spain.
Distribution: Spain.

***Faronus guimjuani* Doderó**

Faronus guimjuani Doderò, 1918: 107 (original description). Raffray, 1924: 78 (distribution). Besuchet, 1969a: 113 (description, key to Iberian peninsular species). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Santa Coloma de Gramenet (Catalonia).

Distribution: Spain.

***Faronus hispanus* Saulcy**

Faronus hispanus Saulcy, 1870: 87 (original description). Saulcy, 1874: 89 (description). Reitter, 1882a: 460 (key to European species). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 11 (description, illustration of diagnostic character). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 78 (distribution). Jeannel, 1956: 15 (diagnosis, as genus of *Faronellus*). Besuchet, 1962: 337 (distribution). Besuchet, 1969a: 107 (key to Iberian peninsular species, genitalia illustration). Sabella, 1993: 148 (comparison with *F. siculus*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Faronellus bedeli* Jeannel, 1956: 13 (original description, genitalia illustration). Besuchet 1969: 107 (synonymized with *F. hispanus*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. hispanus*).

Type locality: Algeria.

Distribution: Algeria, Portugal, Spain.

***Faronus insignis* Besuchet**

Faronus insignis Besuchet, 1958a: 899 (original description, based on female). Besuchet, 1969a: 107 (key to Iberian peninsular species, genitalia illustration). Sabella, 1993: 149 (comparison with *F. siculus*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Majorca (Catalan).

Distribution: Spain.

***Faronus insularis* Sainte-Claire Deville**

Faronus insularis Sainte-Claire Deville, 1908: 140 (original description). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 46 (distribution). Porta, 1926: 216 (key to Italian species). Jeannel, 1950: 51 (diagnosis, diagnostic character illustrations). Laneyrie, 1960: 142 (checklist of French species). Poggi, 1976: 13 (mention). Orousset, 1988: 365 (description, genitalia illustration). Sabella, 1993: 149 (genitalia illustration, comparison with *F. siculus*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Sardinia (Italy).

Distribution: France, Italy.

***Faronus lafertei* Aubé**

Faronus lafertei Aubé, 1844: 158 (original description). Jacquelin, 1857: 52 (illustrations of diagnostic characters). Saulcy, 1874: 85 (description). Reitter, 1882a: 460 (key to European species). Reitter, 1882b: 138 (description, diagnosis). Rey, 1888: 6 (comparison with *F. telonensis*). Schaufuss, 1888: 64 (catalog entry). Pic, 1890: 181 (comparison with *F. bicolor*). Raffray, 1893: 6 (description). Ganglbauer, 1895: 779 (diagnosis). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Fiori, 1913: 1 (comparison with *F. siculus*). Sainte-Claire Deville, 1914: 140 (remarks). Raffray, 1924: 27, 34, 40, 48, 58, 75, 80, 83 (distribution). Porta, 1926: 215 (key to Italian species). Portevin, 1929: 462 (key to French species). Porta,

1934: 134 (mention). Jeannel, 1950: 49 (description, illustrations of diagnostic characters). Laneyrie, 1960: 142 (checklist of French species). Jeannel, 1961: 49 (brief discussion of biogeography). Besuchet, 1969a: 107 (key to Iberian peninsular species, genitalia illustration). Castellini, 1975: 37 (list of Toscana, Italy species). Poggi, 1976: 13 (new distribution, genitalia illustration). Orousset, 1988: 364 (description, genitalia illustration). Castellini, 1990b: 23 (faunistical remarks). Newton & Thayer, 1995: 304 (mention). Hansen, 1997: 298 (habitus illustration). Sabella, 1998: 38 (discussion, ecology). Besuchet, 1999: 792 (distributional discussion). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Faronus bicolor* Pic, 1890: 181 (original description as a variety of *F. lafertei*). Porta, 1934: 134 (as a variety of *F. lafertei*). Jeannel, 1950: 49 (as a synonym of *F. lafertei*). Sabella, 1998: 38 (as a synonym of *F. lafertei*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. lafertei*).

Syn. *Faronus mesmini* Croissandeau, 1893: 153 (original description, illustration of diagnostic character). Raffray, 1904: 495 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 13 (distribution, as a valid name). Jeannel, 1950: 49 (as a synonym of *F. lafertei*). Sabella, 1998: 38 (as a synonym of *F. lafertei*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. lafertei*).

Syn. *Faronus telonensis* Fairmaire, 1860: XLV (original description). Reitter, 1882b: 138 (as a synonym of *F. lafertei*). Schaufuss, 1888: 64 (as a synonym of *F. lafertei*). Rey, 1888: 6 (considered as valid species, comparison with *F. lafertei*). Ganglbauer, 1895: 779 (as a synonym of *F. lafertei*). Raffray, 1904: 496 (catalog entry, as a synonym of *F. lafertei*). Raffray, 1911: 4 (catalog entry, as a synonym of *F. lafertei*). Jeannel, 1950: 49 (as a synonym of *F. lafertei*). Sabella, 1998: 38 (as a synonym of *F. lafertei*). Löbl and Besuchet, 2004: 295 (as a synonym of *F. lafertei*).

Type locality: Chinon (France).

Distribution: France, Italy, Portugal, Spain, Switzerland.

***Faronus lusitanicus* Besuchet**

Faronus lusitanicus Besuchet, 1969a: 111 (original description, key, genitalia illustration). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Manteigas (Serra da Estrela).

Distribution: Portugal.

***Faronus nicaeensis* Saulcy**

Faronus nicaeensis Saulcy, 1874: 89 (original description). Reitter, 1882a: 460 (key to European species). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 10 (description, illustration of diagnostic character). Ganglbauer, 1895: 779 (diagnosis). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 33 (distribution). Porta, 1926: 216 (key to Italian species). Portevin, 1929: 462 (key to French species). Jeannel, 1950: 52 (diagnosis, diagnostic character illustrations). Poggi, 1976: 13 (new distribution, genitalia illustration). Sabella, 1993: 153 (illustrations of diagnostic characters, comparison with *F. vitalei*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Corsica (France).

Distribution: France, Italy.

***Faronus parallelus* Besuchet**

Faronus parallelus Besuchet, 1958a: 897 (original description, based on female). Besuchet, 1960: 18 (key to *Faronus* species). Besuchet, 1999: 792 (comparison with *F. parallelus*, genitalia illustration). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Syn. *Faronus sahlbergi* Besuchet, 1960: 11 (original description, genitalia illustration, key to *Faronus* species). Löbl and Besuchet, 2004: 295 (as a synonym of *F. parallelus*).

Type locality: Taurus (Turkey).

Distribution: Croatia, Cyprus, Greece, Israel, Lebanon, Turkey.

***Faronus parnassius* Besuchet**

Faronus parnassius Besuchet, 1969b: 397 (original description, genitalia illustration, comparison with *F. spartanus*). Löbl and Besuchet, 2004: 295 (catalog of Palaearctic species).

Type locality: Parnassus.

Distribution: Greece.

***Faronus planipennis* J. Sahlberg**

Faronus planipennis J. Sahlberg, 1908: 37 (original description). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 94 (distribution). Besuchet, 1960: 16 (description, key to *Faronus* species). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Mount Baruk (Lebanon).

Distribution: Israel, Lebanon.

***Faronus porrectus* Schaufuss**

Faronus porrectus Schaufuss, 1890: 158 (original description based on fossil from Baltic amber (Lower Oligocene), antenna illustration). Handlirsch, 1906: 734 (catalog entry). Spahr, 1981: 83 (catalog entry). Newton & Chandler, 1989: 68 (catalog entry).

***Faronus pyrenaeus* Saulcy**

Faronus pyrenaeus Saulcy, 1867: 173 (original description, comparison with *F. lafertei*). Saulcy, 1874: 88 (description). Reitter, 1882a: 460 (key to European species). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 6 (description, illustration of diagnostic character). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 26 (distribution). Portevin, 1929: 462 (key to French species). Jeannel, 1950: 51 (diagnosis, habitus illustration). Besuchet, 1969a: 108 (key to Iberian peninsular species). Sabella, 1993: 155 (illustration of diagnostic character, comparison with *F. brucki*). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Hautes-Pyrénées.

Distribution: France.

***Faronus raffrayi* Lokay**

Faronus raffrayi Lokay, 1910: 94 (original description, habitus illustration). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 7 (distribution). Besuchet, 1960: 18 (genitalia illustration, key to *Faronus* species). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Transylvania.

Distribution: Romania, Slovenia.

***Faronus rifensis* Besuchet**

Faronus rifensis Besuchet, 1963: 227 (original description, genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Azib (Ketama).

Distribution: Morocco.

***Faronus siculus* Fiori**

Faronus siculus Fiori, 1913: 1 (original description, comparison with *F. lafertei*). Raffray, 1924: 68 (distribution). Porta, 1926: 216 (key to Italian species). Jeannel, 1956: 10 (as genus of *Faronellus*). Castellini, 1990b: 23 (faunistical remarks). Sabella, 1993: 146 (description, illustrations of diagnostic characters, comparison with *F. hispanus*, *F. insularis*, *F. insignis* and *F. stolzi*). Sabella, 1998: 41 (discussion, ecology). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Sicily.

Distribution: Italy.

***Faronus simpliceps* Reitter**

Faronus simpliceps Reitter, 1893: 173 (original description). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 83 (distribution). Jeannel, 1956: 14 (diagnosis, genitalia illustration, as genus of *Faronellus*). Sabella, 1993: 154 (illustrations of diagnostic characters, comparison with *F. vitalei*). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Batna.

Distribution: Algeria.

***Faronus spartanus* Reitter**

Faronus spartanus Reitter, 1884b: 51 (original description). Schaufuss, 1888: 64 (catalog entry). Raffray, 1893: 9 (description, illustration of diagnostic character). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 4 (catalog entry). Raffray, 1924: 71 (distribution). Besuchet, 1960: 18 (genitalia illustration, key to *Faronus* species). Besuchet, 1969b: 398 (genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Syn. *Faronus spartanus* Reitter, 1884a: 81 (original description). Löbl and Besuchet, 2004: 296 (as a synonym of *F. spartanus*).

Type locality: Sparta.

Distribution: Greece.

***Faronus stolzi* W. Blattny & Blattny**

Faronus stolzi W. Blattny & Blattny, 1914: 118 (original description, habitus illustration). Porta, 1926: 215 (key to Italian species). Sabella, 1993: 150 (illustrations of diagnostic characters, comparison with *F. siculus*). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Sant'Eufemia d'Aspromonte (Calabria).

Distribution: Italy.

***Faronus testaceus* Besuchet**

Faronus testaceus Besuchet, 1962: 336 (original description, genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palaearctic species).

Type locality: Puente de Fomento (Tetouan).

Distribution: Morocco.

***Faronus tingitanus* Besuchet**

Faronus tingitanus Besuchet, 1962: 334 (original description, genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palearctic species).

Type locality: Puente de Fomento (Tetouan).

Distribution: Morocco.

***Faronus tritomicrus* Schaufuss**

Faronus tritomicrus Schaufuss, 1890: 158 (original description based on fossil from Baltic amber (Lower Oligocene), habitus illustration). Handlirsch, 1906: 734 (catalog entry). Spahr, 1981: 83 (catalog entry). Newton & Chandler, 1989: 68 (catalog entry).

***Faronus variabilis* Besuchet**

Faronus variabilis Besuchet, 1969a: 110 (original description, key to Iberian peninsular species, genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palearctic species).

Type locality: Pego (Alicante).

Distribution: Spain.

***Faronus venustus* Besuchet**

Faronus venustus Besuchet, 1958b: 333 (original description, genitalia illustration). Löbl and Besuchet, 2004: 296 (catalog of Palearctic species).

Type locality: Penyalgosa (Castellón de la Plana).

Distribution: Spain.

***Faronus vitalei* Raffray**

Faronus vitalei Raffray, 1913: 236 (original description). Raffray, 1924: 68 (distribution). Porta, 1926: 216 (key to Italian species). Jeannel, 1956: 10 (as genus *Faronellus*). Besuchet, 1969a: 109 (key to Iberian peninsular species, genitalia illustration). Poggi, 1991: 221 (description, habitus and genitalia illustrations). Sabella, 1993: 150 (description, illustrations of diagnostic characters, comparison with *F. nicaeensis*, *F. brucki*, *F. simpliciceps*, *F. pyraeneus* and *F. grouvellei*). Sabella, 1998: 44 (discussion, ecology). Löbl and Besuchet, 2004: 296 (catalog of Palearctic species).

Type locality: Sicily.

Distribution: Italy.

Genus *Golasa* Raffray

Type species: *Sagola microcephala* Reitter (monotypy).

Golasa Raffray, 1904: 494 (original description, key to genera of Faronini, generic diagnosis). Park, 1942: 35 (key to Neotropical genera). Blackwelder, 1944: 88 (checklist of Neotropical genera). Park, 1952: 6 (key to Neotropical genera). Jeannel, 1962: 308 (diagnosis, key to south American genera). Jeannel, 1967: 442 (biogeographic study). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Golasa delamarei* Jeannel**

Golasa delamarei Jeannel, 1962: 310(original description, key to *Golasa* species, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Puerto Blest.

Distribution: Argentina.

***Golasa kuscheli* Jeannel**

Golasa kuscheli Jeannel, 1962: 308 (original description, key to *Golasa* species, illustrations of diagnostic characters). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chepu.

Distribution: Chile.

***Golasa microcephala* (Reitter)**

Sagola microcephala Reitter, 1883: 53 (original description, habitus illustration). Reitter, 1885: 331 (key to Chilean Faronini species). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Raffray, 1893: 6 (as genus of *Sagola*, description, illustration of diagnostic character). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 6 (catalog entry, as genus of *Golasa*). Raffray, 1924: 223 (distribution). Park, 1942: 36 (checklist of Neotropical species). Blackwelder, 1944: 88 (checklist of Neotropical species). Park, 1952: 6 (checklist of Neotropical species). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1962: 309 (diagnosis, genitalia illustration, key to *Golasa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Valdivia.

Distribution: Chile.

***Golasa sinuata* Jeannel**

Golasa sinuata Jeannel, 1963: 355 (original description, genitalia illustration, comparison with other *Golasa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Quebrada de la Plata.

Distribution: Argentina.

***Golasa valida* Jeannel**

Golasa valida Jeannel, 1963: 355 (original description, based on female, comparison with other *Golasa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Quebrada de la Plata.

Distribution: Argentina.

Genus *Golasidius* Jeannel

Type species: *Golasidius microps* Jeannel (Original designation).

Golasidius Jeannel, 1962: 311 (original description, key to south American genera). Jeannel, 1963: 356 (diagnosis). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Golasidius heteromorphus* Jeannel**

Golasidius heteromorphus Jeannel, 1963: 356 (original description, habitus and genitalia illustrations, comparison with *Golasa sinuata*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Zapallar.

Distribution: Chile.

***Golasidius microps* Jeannel**

Golasidius microps Jeannel, 1962: 311 (original description, key to *Golasa* species, illustrations of diagnostic characters). Franz, 1996: 84 (diagnosis, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Frutillar.

Distribution: Chile.

Genus *Golasina* Jeannel

Type species: *Golasina robusta* Jeannel (Original designation).

Golasina Jeannel, 1962: 311 (original description, key to south American genera). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Golasina holdgatei* Jeannel**

Golasina holdgatei Jeannel, 1962: 313 (original description, key to *Golasina* species, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: San Pedro.

Distribution: Chile.

***Golasina longiceps* Jeannel**

Golasina longiceps Jeannel, 1962: 313 (original description, key to *Golasina* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chepu.

Distribution: Chile.

***Golasina paralongiceps* Franz**

Golasina paralongiceps Franz, 1996: 84 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Cuesta lastarria (Bosque Valdiviano).

Distribution: Chile.

***Golasina robusta* Jeannel**

Golasina robusta Jeannel, 1962: 312 (original description, key to *Golasina* species, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chill n.

Distribution: Chile.

***Golasina sulcata* Jeannel**

Golasina sulcata Jeannel, 1962: 313 (original description, key to *Golasina* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Frutillar.

Distribution: Chile.

Genus *Golasites* Jeannel

Type species: *Golasites longicornis* Jeannel (Original designation).
Golasites Jeannel, 1962: 310 (original description, key to south American genera). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Golasites longicornis* Jeannel**

Golasites longicornis Jeannel, 1962: 310 (original description, illustrations of diagnostic characters). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chepu.

Distribution: Chile.

Genus *Logasa* Chandler

Type species: *Logasa novaeanglia* Chandler (Original designation).

Logasa Chandler, 2001a: 47 (original description, list of Australian species). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Logasa novaeanglia* Chandler**

Logasa novaeanglia Chandler, 2001a: 49 (original description, habitus and genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: New England National Park (New South Wales).

Distribution: Australia.

***Logasa tricolor* (Oke)**

Sagola tricolor Oke, 1928: 5 (original description). Chandler, 2001a: 49 (combined as genus of *Logasa*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Warburton (Victoria).

Distribution: Australia.

***Logasa ventralis* (Oke)**

Sagola ventralis Oke, 1928: 4 (original description). Chandler, 2001a: 49 (combined as genus of *Logasa*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Carrum (Victoria).

Distribution: Australia.

Genus *Megarafonus* Casey

Type species: *Megarafonus ventralis* Casey (monotypy).

Megarafonus Casey, 1897: 550 (original description). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Leng, 1920: 127 (checklist of America, North of Mexico). Bowman, 1934: 3 (key to North American genera, diagnosis). Park, 1944: 242 (key to Mexican genera). Park, 1952: 6 (key to Neotropical genera). Park, 1953: 303 (key to American genera). Schuster and Marsh, 1958: 187 (revision of *Megarafonus*). Park and Wagner, 1962: 5 (key to Pacific Northwestern genera). Arnett, 1963: 314 (key to the genera and subgenera of Faronini of the united States). Newton and Chandler, 1989: 18 (generic catalog entry). Chandler, 1990: 1181 (key to North American genera, diagnostic character illustration). Bousquet, 1991: 126 (checklist of Canadian and Alaskan genera and species). Poole and Gentili 1996: 397 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico). Chandler, 2001b:

344 (summary of American species, key to American genera). Chandler, 2003: 570 (key to pselaphine species of Tehama County, California). Newton & Thayer, 2005a (catalog of Staphyliniformia).

Subgenus. *Nafonus* Schuster & Marsh, 1958: 194 (original description). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Megarafonus fundus* Park (original designation).

Subgenus. *Nanorafonus* Schuster & Marsh, 1958: 192 (original description). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Megarafonus parvus* Schuster & Marsh (original designation).

***Megarafonus (Nafonus) fundus* Park**

Megarafonus (Nafonus) fundus Park, 1943: 172 (original description). Park, 1944: 261 (key to Mexican species). Park, 1952: 6 (checklist of Neotropical species). Schuster and Marsh, 1958: 194 (designated subgenus *Nafonus*, discussion). Poole and Gentili 1996: 397 (check list of North American species).

Type locality: Las Vigas (Veracruz).

Distribution: Mexico.

***Megarafonus (Nanorafonus) lajuneae* Chandler**

Megarafonus (Nanorafonus) lajuneae Chandler, 2003: 579 (original description, genitalia illustration).

Type locality: Cascade Mountains, Tehama County (California).

Distribution: USA.

***Megarafonus (Nanorafonus) parvus* Schuster and Marsh**

Megarafonus (Nanorafonus) parvus Schuster and Marsh, 1958: 192 (original description, diagnostic characters illustration, designated subgenus *Nanorafonus*). Chandler, 1983: 218 (new distribution). Poole and Gentili 1996: 397 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico).

Type locality: near Stringtown Hill (California).

Distribution: USA.

***Megarafonus (Nanorafonus) yahiorum* (Chandler)**

Sonoma yahiorum Chandler, 1983: 218 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species, as genus of *Sonoma*). Chandler, 1997: 5 (catalog of America north of Mexico, as genus of *Sonoma*). Chandler, 2003: 579 (combined as genus *Megarafonus*).

Type locality: Little Chico Creek (California).

Distribution: USA.

***Megarafonus (Megarafonus) haigi* Chandler**

Megarafonus (Megarafonus) haigi Chandler, 2003: 578 (original description, genitalia illustrations).

Type locality: Coast Ranges, Kneeland (California).

Distribution: USA.

***Megarafonus (Megarafonus) lentus* Schuster and Marsh**

Megarafonus (Megarafonus) lentus Schuster and Marsh, 1958: 189 (original description, diagnostic characters illustration). Park and Wagner, 1962: 7 (key to Pacific Northwestern species, genitalia illustration). Poole and Gentili 1996: 397 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico).

Type locality: Seaside (Oregon).

Distribution: USA.

***Megarafonus (Megarafonus) mancus* Schuster and Marsh**

Megarafonus (Megarafonus) mancus Schuster and Marsh, 1958: 192 (original description, diagnostic characters illustration). Park and Wagner, 1962: 6 (key to Pacific Northwestern species). Poole and Gentili 1996: 397 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico).

Type locality: Gold Beach (Oregon).

Distribution: USA.

***Megarafonus (Megarafonus) ventralis* Casey**

Megarafonus ventralis Casey, 1897: 550 (original description). Raffray, 1904: 500 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 7 (description). Schuster and Marsh, 1958: 191 (diagnosis, diagnostic characters illustration). Park and Wagner, 1962: 7 (key to Pacific Northwestern species, genitalia illustration). Bousquet, 1991: 126 (checklist of Canadian and Alaskan species). Poole and Gentili 1996: 397 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico). Chandler, 2000: 9 (new distribution, key to Queen Charlotte Islands, Canada species, illustration of diagnostic character, biology).

Type locality: Portland (Oregon).

Distribution: Canada, USA.

Genus *Nugaculus* Schaufuss

Type species: *Nugaculus calcitrans* Schaufuss (monotypy).

Nugaculus Schaufuss, 1890: 147 (original description). Larsson, 1978: 110 (Baltic amber fossil catalog). Newton & Chandler, 1989: 68 (catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Nugaculus calcitrans* Schaufuss**

Nugaculus calcitrans Schaufuss, 1890: 148 (original description based on fossil from Baltic amber (Lower Oligocene)). Handlirsch, 1906: 733 (catalog entry). Spahr, 1981: 83 (catalog entry). Newton & Chandler, 1989: 68 (catalog entry).

Genus *Parafaronus* Jeannel

Type species: *Parafaronus pauliani* Jeannel (Original designation).

Parafaronus Jeannel, 1954: 156 (original description, comparison with genus *Faronites*). Jeannel, 1960b: 54 (key to Madagascan genera including genus *Faronidius*). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1967: 442 (biogeographic study). Leleup, 1976: 301 (diagnosis). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Parafaronus foveipennis* Leleup**

Parafaronus foveipennis Leleup, 1976: 301 (original description, genitalia illustration, comparison with *P. franzi* and *P. pauliani*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Manangorty.

Distribution: Madagascar.

***Parafaronus franzi* Leleup**

Parafaronus franzi Leleup, 1976: 303 (original description, habitus illustration, comparison with *P. foveipennis* and *P. pauliani*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Manangotry.

Distribution: Madagascar.

***Parafaronus pauliani* Jeannel**

Parafaronus pauliani Jeannel, 1954: 156 (original description, habitus and genitalia illustration). Jeannel, 1960b: 55 (habitus and genitalia illustration). Leleup, 1976: 305 (comparison with *P. foveipennis* and *P. franzi*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Anosibe.

Distribution: Madagascar.

Genus *Prosagola* Raffray

Type species: *Prosagola elfridae* (Reitter) (monotypy)

Prosagola Raffray, 1904: 494 (original description, key to genera of Faronini, generic diagnosis). Park, 1942: 35 (key to Neotropical genera). Blackwelder, 1944: 88 (checklist of Neotropical genera). Park, 1952: 6 (key to Neotropical genera). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1962: 313 (diagnosis, key to south American genera). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

Syn. *Chequenia* Franz, 1996: 124 (original description). Hlaváč and Chandler, 2005: 86 (as a synonym of genus *Prosagola*). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Chequenia cekalovici* Franz (original designation).

***Prosagola cekalovici* (Franz)**

Chequenia cekalovici Franz, 1996: 124 (original description, genitalia illustration). Hlaváč and Chandler, 2005: 86 (combined as genus *Prosagola*). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chequen.

Distribution: Chile.

***Prosagola elfridae* (Reitter)**

Sagola elfridae Reitter, 1885: 332 (original description, key to Chilean Faronini species). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Raffray, 1893: 23 (description, as genus of *Sagola*, illustration of diagnostic character). Raffray, 1904: 499 (catalog entry, as genus of *Prosagola*). Raffray, 1911: 6 (catalog entry, as genus of *Prosagola*). Raffray, 1924: 223 (distribution). Park, 1942: 36 (checklist of Neotropical species). Blackwelder, 1944: 88 (checklist of Neotropical species). Park, 1952: 6 (checklist of Neotropical species). Jeannel, 1962:

314 (diagnosis, key to *Prosagola* species, illustrations of diagnostic characters). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Valdivia.

Distribution: Chile.

***Prosagola elongata* Jeannel**

Prosagola elongata Jeannel, 1962: 315 (original description, key to *Prosagola* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chillán.

Distribution: Chile.

***Prosagola punctaticollis* Jeannel**

Prosagola punctaticollis Jeannel, 1962: 315 (original description, key to *Prosagola* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chillán.

Distribution: Chile.

Genus *Sagola* Sharp

Type species: *Sagola misella* Sharp (designated by Oke, 1928: 5).

Sagola Sharp, 1874: 506 (original description, comparison with genus *Faronus*). Broun, 1880: 134 (generic description). Reitter, 1882c: 199 (generic key to Faronides). Brendel, 1888: 302 (key to pselaphid genera). Schaufuss, 1888: 64 (catalog entry). Raffray, 1890: 84 (key to genera of Faronini, synonym note). Raffray, 1893: 2 (description, key to Faronini genera, key to *Sagola* species). Casey, 1894: 434 (key to Faronini genera). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1967: 442 (biogeographic study). Newton, 1985: 195 (brief discussion of distribution). Newton and Chandler, 1989: 18 (generic catalog entry). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland). Klimaszewski *et al.*, 1996: 147 (New Zealand generic summary). Chandler, 2001a: 50 (generic diagnosis and description, list of Australian species). Newton & Thayer, 2005a (catalog of Staphyliniformia). Nomura and Leschen, 2006: 241 (remarks, list of New Zealand species).

***Sagola angulifera* Broun**

Sagola angulifera Broun, 1911: 491 (original description, comparison with *S. eminens*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species).

Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Waimarino (Taupo; TO).

Distribution: New Zealand.

***Sagola anisarthra* Broun**

Sagola anisarthra Broun, 1893b: 1053 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton &

Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Moeraki (Dunedin; DN).

Distribution: New Zealand.

New Syn. *Sagola dickensis* Broun, 1917: 377 (original description, comparison with *S. dickensis*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola suturalis* Broun, 1914b: 158 (original description, comparison with *S. insueta*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

***Sagola arboricola* Broun**

Sagola arboricola Broun, 1921a: 502 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Hollyford (Otago Lakes; OL).

Distribution: New Zealand.

***Sagola auripila* Broun**

Sagola auripila Broun, 1911: 500 (original description, comparison with *S. tenuis*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Erua (Taupo; TO).

Distribution: New Zealand.

***Sagola austaliae* Lea**

Sagola austaliae Lea, 1912: 431 (original description, comparison with *S. tasmaniae*). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: New South Wales.

Distribution: Australia.

***Sagola bifida* Broun**

Sagola bifida Broun, 1915: 290 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Woodhill, Kaipara Railway (Auckland; AK).

Distribution: New Zealand.

***Sagola bipunctata* Broun**

Sagola bipunctata Broun, 1886: 887 (original description). Raffray, 1893: 39 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183

(checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).
Type locality: Near Whangarei Harbour (Northland; ND).
Distribution: New Zealand.

New Syn. *Sagola brevisternis* Broun, 1915: 284 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola confusa* Broun, 1915: 286 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola frontalis* Raffray, 1893: 23 (original description, illustration of diagnostic character). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola fulva* Broun, 1893b: 1052 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola halli* Broun, 1914b: 155 (original description, comparison with *S. laminata*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola immota* Broun, 1893b: 1422 (original description). Raffray, 1911: 6 (catalog entry, as a synonym of *F. laminata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola laetula* Broun, 1915: 291 (original description, comparison with *S. sobrina*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola laminata* Broun, 1893b: 1421 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Watt, 1983: 44 (Auckland fauna, habitus illustration). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, habitus illustration, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola latula* Broun, 1912b: 633 (original description, comparison with *S. laticeps*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola lawsoni* Broun, 1912b: 632 (original description, comparison with *S. sobrina*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232

(distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola osculans* Broun, 1886: 885 (original description). Raffray, 1893: 36 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola bituberata* Broun**

Sagola bituberata Broun, 1914b: 160 (original description, comparison with *S. misella*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Greymouth (Buller; BR).

Distribution: New Zealand.

***Sagola brevipennis* Oke**

Sagola brevipennis Oke, 1925: 8 (original description). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Belgrave (Victoria).

Distribution: Australia.

***Sagola castanea* Broun**

Sagola castanea Broun, 1886: 884 (original description). Raffray, 1893: 20 (description, illustration of diagnostic character). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: West Taieri bush (Dunedin; DN).

Distribution: New Zealand.

***Sagola convexa* Broun**

Sagola convexa Broun, 1886: 889 (original description). Raffray, 1893: 41 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Type locality: Tuakau, Waikato (Auckland; AK).

Distribution: New Zealand.

New Syn. *Sagola basalis* Broun, 1911: 496 (original description, comparison with *S. elongata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola indiscreta* Broun, 1915: 288 (original description, comparison with *S. rectipes* and *S. rustica*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934:

184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

***Sagola deformipes* Broun**

Sagola deformipes Broun, 1880: 138 (original description). Schaufuss, 1888: 84 (catalog entry). Raffray, 1893: 33 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Tairua (Coromandel; CL).

Distribution: New Zealand.

***Sagola denticollis* Broun**

Sagola denticollis Broun, 1880: 138 (original description). Schaufuss, 1888: 84 (catalog entry). Raffray, 1893: 33 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Tairua (Coromandel; CL).

Distribution: New Zealand.

New Syn. *Sagola elevata* Broun, 1886: 886 (original description). Raffray, 1893: 38 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

***Sagola duplicata* Broun**

Sagola duplicata Broun, 1886: 888 (original description). Raffray, 1893: 40 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Parua, near Whangarei Harbour (Northland; ND).

Distribution: New Zealand.

***Sagola eminens* Broun**

Sagola eminens Broun, 1895: 75 (original description, comparison with *S. insignis*). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Tarukenga, near Rotorua (Bay of Plenty; BP) & Mount Pirongia (Waikato; WO).

Distribution: New Zealand.

Comments. The syntypes were collected from two different localities, Tarukenga and Mount Pirongia. A lectotype has not yet been designated.

***Sagola excavata* Broun**

Sagola excavata Broun, 1886: 884 (original description). Raffray, 1893: 35 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Pararoa district, south of Auckland (Auckland; AK).

Distribution: New Zealand.

New Syn. *Sagola brevitarsis* Broun, 1886: 887 (original description). Raffray, 1893: 38 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola citima* Broun, 1893a: 177 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 47 (habitus illustration, checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

Syn. *Sagola citina* Broun, 1895: 73 (misspelling, erroneous year/page citation of *S. citima* Broun 1893a). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 233 (distribution).

New Syn. *Sagola cognata* Broun, 1911: 494 (original description, comparison with *S. brevitarsis*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola diversa* Broun, 1911: 495 (original description, comparison with *S. cognata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola parallela* Broun, 1893b: 1053 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola fasciculata* Broun**

Sagola fasciculata Broun, 1921a: 497 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Glenhope, near Nelson (Nelson; NN).

Distribution: New Zealand.

***Sagola filixicola* Oke**

Sagola filixicola Oke, 1928: 4 (original description). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Gembrook (Victoria).

Distribution: Australia.

***Sagola flavipes* Broun**

Sagola flavipes Broun, 1893b: 1422 (original description). Raffray, 1904: 498 (catalog entry).

Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Maketu (Auckland; AK).

Distribution: New Zealand.

***Sagola formicicola* Oke**

Sagola formicicola Oke, 1925: 8 (original description). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Ferntree Gully (Victoria).

Distribution: Australia.

***Sagola forveicornis* Oke**

Sagola forveicornis Oke, 1932: 151 (original description, illustration of diagnostic character). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Dorrigo (New South Wales).

Distribution: Australia.

***Sagola furcata* Broun**

Sagola furcata Broun, 1921a: 495 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Belgrove, near Nelson (Nelson; NN).

Distribution: New Zealand.

***Sagola genalis* Broun**

Sagola genale Broun, 1881: 663 (original description). Schaufuss, 1888: 84 (catalog entry).

Raffray, 1893: 19 (as *S. genalis*, description, illustration of diagnostic character). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species).

Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Wellington (Wellington; WN).

Distribution: New Zealand.

New Syn. *Sagola bilobata* Broun, 1921a: 486 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species).

Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola fagicola* Broun, 1921a: 494 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola minuscula* Broun, 1921a: 497 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola pallidula* Broun, 1912b: 626 (original description, comparison with *S. prisca* and *S. punctata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola hectorii* Broun**

Sagola hectorii Broun, 1917: 378 (original description, comparison with *S. angulifer*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Belgrove, near Nelson (Nelson; NN).

Distribution: New Zealand.

New Syn. *Sagola distorta* Broun, 1921b: 602 (original description, comparison with *S. angulifer* and *S. eminens*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

***Sagola helenae* Oke**

Sagola helenae Oke, 1925: 7 (original description). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Evelyn (Victoria).

Distribution: Australia.

***Sagola hirtalis* Broun**

Sagola hirtalis Broun, 1893b: 1050 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Near Howick (Auckland; AK).

Distribution: New Zealand.

New Syn. *Sagola cilipes* Broun, 1921a: 491 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

***Sagola incisa* Théry & Leschen**

Sagola incisa Théry & Leschen, 2013: 42 (original description, illustrations of habitus and diagnostic characters).

Type locality: Great Island (Three Kings Islands; TH).

Distribution: New Zealand.

***Sagola ignota* Broun**

Sagola ignota Broun, 1921a: 495 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Routeburn, north of Lake Wakatipu (Otago Lakes; OL).

Distribution: New Zealand.

***Sagola insignis* Broun**

Sagola insignis Broun, 1893b: 1049 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Mokohinou Island (Northland; ND).

Distribution: New Zealand.

New Syn. *Sagola sobrina* Broun, 1893b: 1050 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola laticeps* Broun**

Sagola laticeps Broun, 1911: 490 (original description, comparison with *S. eminens*, *S. castanea* and *S. major*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species).

Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Greymouth (Buller; BR).

Distribution: New Zealand.

***Sagola latistriata* Broun**

Sagola latistriata Broun, 1911: 495 (original description, comparison with *S. laminata* and *S. lineata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Ligar's Bush, Papakura (Auckland; AK).

Distribution: New Zealand.

***Sagola major* Sharp**

Sagola major Sharp, 1874: 507 (original description, comparison with *S. prisca*). Broun, 1880: 135 (diagnosis, comparison with *S. prisca*). Schaufuss, 1888: 84 (catalog entry). Raffray, 1893: 18 (description, illustration of diagnostic character). Raffray, 1904: 497 (catalog entry). Raffray,

1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola elongata* Broun, 1893b: 1423 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola longipes* Broun, 1915: 287 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola mimica* Broun, 1893b: 1419 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola ruficeps* Broun, 1893b: 1053 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola misella* Sharp**

Sagola misella Sharp, 1874: 508 (original description, comparison with *S. prisca*). Broun, 1880: 136 (diagnosis, comparison with *S. prisca*). Schaufuss, 1888: 84 (catalog entry). Raffray, 1893: 26 (description, illustration of diagnostic character). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola foveiventris* Broun, 1921a: 492 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

***Sagola monstrosa* Reitter**

Sagola monstrosa Reitter, 1880: 168 (original description, comparison with *S. prisca*). Schaufuss, 1888: 84 (catalog entry). Raffray, 1893: 17 (description, illustrations of diagnostic characters). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Raffray, 1924: 231 (distribution). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola bifoveiceps* Broun, 1912b: 629 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola biimpressa* Broun, 1912b: 630 (original description, comparison with *S. bifoveiceps*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola nitida* Broun, 1911: 492 (original description, comparison with *S. puncticeps* and *S. duplicata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola monticola* Broun**

Sagola monticola Broun, 1912a: 402 (original description, comparison with *S. eminens*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Mount Ngauruhoe (Taupo; TO).

Distribution: New Zealand.

***Sagola notabilis* Broun**

Sagola notabilis Broun, 1880: 137 (original description). Schaufuss, 1888: 85 (catalog entry). Raffray, 1893: 32 (description). Raffray, 1904: 496 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Tairua (Coromandel; CL).

Distribution: New Zealand.

New Syn. *Sagola electa* Broun, 1914a: 91 (original description, comparison with *S. macronyx*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola fulvipennis* Broun, 1915: 289 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New syn. *Sagola macronyx* Broun, 1893b: 1418 (original description, comparison with *S. notabilis*). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola opercularis* Broun**

Sagola opercularis Broun, 1915: 284 (original description, comparison with *S. insueta*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Rakaia Gorge, near Methven (Mid Canterbury; MC).

Distribution: New Zealand.

***Sagola parva* Sharp**

Sagola parva Sharp, 1874: 508 (original description, comparison with *S. misella*). Broun, 1880: 136 (diagnosis, comparison with *S. misella*). Schaufuss, 1888: 85 (catalog entry). Raffray, 1893: 25 (description, illustration of diagnostic character). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola brevicornis* Raffray, 1893: 27 (original description, illustration of diagnostic character). Raffray, 1893: 6 (description, illustration of diagnostic character). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola concolorata* Broun, 1915: 292 (original description, comparison with *S. indescrta*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola fovealis* Broun, 1886: 886 (original description). Raffray, 1893: 37 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola insolens* Broun, 1893b: 1051 (original description, comparison with *S. convexa*). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola punctata* Broun, 1893b: 1052 (original description, comparison with *S. brevirsis*, *S. tenuis* and *S. duplicata*). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola rectipes* Broun, 1893b: 1051 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species).

species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola rotundiceps* Broun, 1915: 289 (original description, comparison with *S. lineata* and *S. nitida*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola pertinax* Broun**

Sagola pertinax Broun, 1893a: 176 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Ohaupo, near Mr. Kusab's saw-mill (Waikato; WO).

Distribution: New Zealand.

***Sagola planipennis* Broun**

Sagola planipennis Broun, 1921a: 500 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Mount Oakden, Canterbury (Mid Canterbury; MC).

Distribution: New Zealand.

***Sagola prisca* Sharp**

Sagola prisca Sharp, 1874: 507 (original description, comparison with *S. major*). Broun, 1880: 136 (description). Reitter, 1880: 167 (mention). Schaufuss, 1888: 85 (catalog entry). Raffray, 1893: 24 (description, illustrations of diagnostic characters). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Jeannel, 1950: 45 (genitalia illustration). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola acuminata* Broun, 1921a: 498 (original description, comparison with *S. misella*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola disparata* Broun, 1914b: 160 (original description, comparison with *S. misella*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola fuscipalpis* Broun, 1914b: 159 (original description, comparison with *S. misella*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola rufescens* Broun, 1921a: 499 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola striatifrons* Broun, 1921a: 492 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

***Sagola pulchra* Broun**

Sagola pulcher Broun, 1880: 137 (original description). Schaufuss, 1888: 85 (catalog entry, as *S. pulchra*). Raffray, 1893: 31 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species, as *S. pulcher*). Nomura and Leschen, 2006: 243 (list of New Zealand species, as *S. pulchra*).

Type locality: Tairua (Coromandel; CL).

Distribution: New Zealand.

New Syn. *Sagola robusta* Broun, 1893b: 1420 (original description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola punctulata* Raffray**

Sagola punctulata Raffray, 1893: 21 (original description, illustration of diagnostic character). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

***Sagola robustula* Broun**

Sagola robustula Broun, 1917: 377 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species). Type locality: Routeburn, north of Lake Wakatipu (Otago Lakes; OL).

Distribution: New Zealand.

New Syn. *Sagola aemula* Broun, 1921a: 496 (original description, comparison with *S. halli*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola affinis* Broun, 1921a: 500 (original description, comparison with *S. bipuncticeps*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184

(checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola bipuncticeps* Broun, 1921a: 499 (original description, comparison with *S. aemula*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola cordicep* Broun, 1921a: 493 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola remixta* Broun, 1921a: 502 (original description, comparison with *S. laminata* and *S. halli*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola rugicornis* Oke**

Sagola rugicornis Oke, 1932: 149 (original description, illustration of diagnostic character). Chandler, 2001a: 52 (habitus and genitalia illustration, list of Australian species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Mt. Donna Buang, Warburton (Victoria).

Distribution: Australia.

***Sagola rugifrons* Broun**

Sagola rugifrons Broun, 1895: 73 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Mount Pirongia (Waikato; WO).

Distribution: New Zealand.

New Syn. *Sagola puncticeps* Broun, 1911: 489 (original description, comparison with *S. misella* and *S. prisca*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola rustica* Broun**

Sagola rustica Broun, 1915: 285 (original description, comparison with *S. brevisternis*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: Rakaia Gorge (Mid Canterbury; MC).

Distribution: New Zealand.

New Syn. *Sagola brevifossa* Broun, 1921a: 501 (original description, comparison with *S. rectipennis* and *S. rufescens*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson,

1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola subcuneata* Broun, 1921a: 488 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

***Sagola sharpi* Raffray**

Sagola sharpi Raffray, 1893: 26 (original description, illustration of diagnostic character). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

Type locality: New Zealand.

Distribution: New Zealand.

New Syn. *Sagola clavatella* Broun, 1912b: 631 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola grata* Broun, 1912b: 628 (original description, comparison with *S. spiniventris*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola posticalis* Broun, 1915: 291 (original description, comparison with *S. suturalis*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola socia* Broun**

Sagola socia Broun, 1915: 281 (original description, comparison with *S. anisarthra*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

Type locality: Pudding Hill, near Methven (Mid Canterbury; MC).

Distribution: New Zealand.

New Syn. *Sagola unicalis* Broun, 1917: 376 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

***Sagola spiniventris* Broun**

Sagola spiniventris Broun, 1912b: 627 (original description, comparison with *S. occipitalis*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

Type locality: Picton (Marlborough Sounds; SD).

Distribution: New Zealand.

New Syn. *Sagola occipitalis* Broun, 1912b: 624 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

***Sagola strialis* Broun**

Sagola strialis Broun, 1921a: 489 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species). Type locality: Moa Hill, Canterbury (Mid Canterbury; MC). Distribution: New Zealand.

***Sagola sulcator* Broun**

Sagola sulcator Broun, 1886: 885 (original description). Raffray, 1893: 36 (description). Raffray, 1904: 497 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species). Type locality: Woodhill, on the Kaipara Railway, near Helensville (Auckland; AK). Distribution: New Zealand.

New Syn. *Sagola crassulipes* Broun, 1915: 283 (original description, comparison with *S. flavipes*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

***Sagola tasmaniae* Lea**

Sagola tasmaniae Lea, 1911: 693 (original description, habitus illustration, comparison with *S. immota*). Lea, 1912: 431 (comparison with *S. australiae*). Raffray, 1924: 211 (distribution). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species). Type locality: New Norfolk, Mount Wellington (Tasmania). Distribution: Australia.

***Sagola tenebrica* Broun**

Sagola tenebrica Broun, 1921a: 487 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species). Type locality: Moa Basin, Canterbury (Mid Canterbury; MC). Distribution: New Zealand.

***Sagola terricola* Broun**

Sagola terricola Broun, 1886: 832 (original description). Raffray, 1893: 34 (description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 231 (distribution). Hudson, 1934: 183

(checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).
Type locality: Waitakerei Range (Auckland; AK).
Distribution: New Zealand.

***Sagola triregia* Théry & Leschen**

Sagola triregia Théry & Leschen, 2013: 45 (original description based on female specimens, illustrations of habitus and diagnostic characters).
Type locality: Great Island (Three Kings Islands; TH).
Distribution: New Zealand.

***Sagola valida* Broun**

Sagola valida Broun, 1921a: 490 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).
Type locality: Mount Owen & Woodhen Bend, near Glenhope (Nelson; NN).
Distribution: New Zealand.
Comments. The syntypes were collected from two different localities, Mount Owen and Woodhen Bend. A lectotype has not yet been designated.

***Sagola victoriae* Oke**

Sagola victoriae Oke, 1925: 7 (original description). Chandler, 2001a: 52 (list of Australian species). Newton & Thayer, 2005b (catalog of austral species).
Type locality: Belgrave, Macedon, Daylesford (Victoria).
Distribution: Australia.
Comments. The syntypes found in three different localities, Belgrave, Macedon, Daylesford. A lectotype is not designated yet.

Genus *Salagosa* Raffray

Type species: *Salagosa brevipennis* (Reitter) (monotypy).
Salagosa Raffray, 1904: 494 (original description, key to genera of Faronini, generic diagnosis). Park, 1942: 35 (key to Neotropical genera). Blackwelder, 1944: 88 (checklist of Neotropical genera). Park, 1952: 6 (key to Neotropical genera). Jeannel, 1961: 47 (brief discussion of biogeography). Jeannel, 1962: 315 (diagnosis, key to south American genera). Newton and Chandler, 1989: 18 (generic catalog entry). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Salagosa brevipennis* (Reitter)**

Sagola brevipennis Reitter, 1885: 332 (original description, key to Chilean Faronini species). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Raffray, 1893: 6 (as genus of *Sagola*, description, illustration of diagnostic character). Raffray, 1904: 499 (catalog entry, as genus of *Sagola*). Raffray, 1911: 6 (catalog entry, as genus of *Salagosa*). Raffray, 1924: 223 (distribution). Park, 1942: 36 (checklist of Neotropical species). Blackwelder, 1944: 88 (checklist of Neotropical species). Park, 1952: 6 (checklist of Neotropical species). Jeannel, 1962: 317 (diagnosis, key to *Salagosa* species, illustrations of diagnostic characters). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Valdivia.

Distribution: Chile.

***Salagosa cekalovici* Franz**

Salagosa cekalovici Franz, 1996: 84 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Periquillo (Concepción).

Distribution: Chile.

***Salagosa depressa* Jeannel**

Salagosa depressa Jeannel, 1962: 319 (original description, key to *Salagosa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chillán.

Distribution: Chile.

***Salagosa gracilis* Jeannel**

Salagosa gracilis Jeannel, 1962: 318 (original description, key to *Salagosa* species, genitalia description). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chepu.

Distribution: Chile.

***Salagosa kuscheli* Jeannel**

Salagosa kuscheli Jeannel, 1962: 316 (original description, key to *Salagosa* species, illustrations of diagnostic characters). Newton & Thayer, 2005b (catalog of austral species).

Type locality: San Pedro.

Distribution: Chile.

***Salagosa longipennis* Jeannel**

Salagosa longipennis Jeannel, 1962: 319 (original description, key to *Salagosa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: río Clarillo.

Distribution: Chile.

***Salagosa minuscula* Franz**

Salagosa minuscula Franz, 1996: 85 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: between Lastarria and Loncoche (Bosque Valdiviano)

Distribution: Chile.

***Salagosa nahuelbutae* Franz**

Salagosa nahuelbutae Franz, 1996: 85 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Sierra de Nahuelbuta (Cordillera de la Costa).

Distribution: Chile.

***Salagosa obtusifrons* Jeannel**

Salagosa obtusifrons Jeannel, 1962: 318 (original description, key to *Salagosa* species). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chillán.

Distribution: Chile.

Genus *Salagosita* Franz

Type species: *Salagosita chomei* Franz (Original designation).

Salagosita Franz, 1996: 86 (original description). Newton & Thayer, 2005a (catalog of Staphyliniformia).

***Salagosita chomei* Franz**

Salagosita chomei Franz, 1996: 86 (original description, genitalia illustration). Newton & Thayer, 2005b (catalog of austral species).

Type locality: Chome (Concepción).

Distribution: Chile.

Genus *Sonoma* Casey

Type species: *Sonoma corticina* Casey (designated by Lucas, 1920: 597). not *Sonoma tolulae* LeConte (Ferro & Carlton, 2010).

Sonoma Casey, 1886: 195 (original description). Brendel, 1888: 302 (key to pselaphid genera). Schaufuss, 1888: 84 (catalog entry, as a synonym of genus *Sagola*). Raffray, 1890: 84 (key to genera of Faronini, synonym note). Reitter, 1893: 173 (key to European genera). Casey, 1894: 435 (diagnosis, discussion, key to Faronini genera). Raffray, 1904: 492 (key to genera of Faronini, generic diagnosis). Leng, 1920: 127 (checklist of America, North of Mexico). Bowman, 1934: 3 (key to the North American genera, diagnosis). Park, 1953: 303 (key to American genera). Marsh and Schuster, 1962: 33 (revision of genus *Sonoma* with key and distribution map). Park and Wagner, 1962: 5 (key to Pacific Northwestern genera). Arnett, 1963: 314 (key to the genera and subgenera of Faronini of the United States). Jeannel, 1967: 442 (biogeographic study). Newton and Chandler, 1989: 18 (generic catalog entry). Chandler, 1990: 1182 (key to North American genera, diagnostic character illustration). Bousquet, 1991: 126 (checklist of Canadian and Alaskan genera and species). Downie and Arnett, 1996: 567 (generic diagnosis). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 2 (catalog of America north of Mexico). Chandler, 2001b: 344 (summary of American species, key to American genera). Chandler, 2003: 571 (key to pselaphine species of Tehama County, California). Newton & Thayer, 2005a (catalog of Staphyliniformia). Ferro and Carlton, 2010: 1 (revision of the eastern United States species).

Syn. *Rafonus* Casey, 1894: 441 (original description). Raffray, 1904: 499 (synonymized with genus *Sonoma*). Raffray, 1911: 6 (catalog entry, as a synonym of *Sonoma*). Arnett, 1963: 319 (as a synonym of *Sonoma*). Bousquet, 1991: 126 (as a synonym of *Sonoma*). Poole and Gentili 1996: 414 (as a synonym of *Sonoma*). Chandler, 1997: 3 (as a synonym of *Sonoma*). Newton & Thayer, 2005a (catalog of Staphyliniformia). Type species: *Faronus tolulae* LeConte (monotypy).

Comments. Ferro & Carlton (2010) designated *Faronus tolulae* as the type species for the genus *Sonoma*. However, it is an erroneous subsequent designation.

***Sonoma baylessae* Ferro & Carlton**

Sonoma baylessae Ferro and Carlton, 2010: 10 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).

Distribution: USA.

***Sonoma brasstownensis* Ferro & Carlton**

Sonoma brasstownensis Ferro and Carlton, 2010: 11 (original description, habitus and genitalia illustrations).

Type locality: Brasstown Bald (Georgia).

Distribution: USA.

***Sonoma cascadia* Chandler**

Sonoma cascadia Chandler, 1986: 335 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: HJ Andrews Experimental Forest (Oregon).

Distribution: USA.

***Sonoma cavifrons* Casey**

Sonoma cavifrons Casey, 1887b: 481 (original description, comparison with *S. corticina*, *S. isabellae* and *S. parviceps*). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Brendel, 1891: 77 (diagnosis, as genus of *Faronus*, habitus illustration). Raffray, 1893: 28 (description, as genus of *Sagola*, illustration of diagnostic character). Casey, 1894: 436 (key to *Sonoma* species). Raffray, 1904: 500 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 6 (key to North American species, description). Marsh and Schuster, 1962: 40 (description, genitalia illustration). Newton, 1991: 354 (larval habitus and diagnostic characters illustrations). Poole and Gentili 1996: 414 (checklist of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Syn. *longicollis* Casey 1894: 483 (original description, key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution, as a valid name). Bowman, 1934: 5 (key to North American species, description). Marsh and Schuster, 1962: 40 (synonymized as *S. cavifrons*). Poole and Gentili 1996: 414 (as a synonym of *S. cavifrons*). Chandler, 1997: 3 (as a synonym of *S. cavifrons*).

Syn. *subsimilis* Casey 1894: 439 (original description, key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution, as a valid name). Bowman, 1934: 5 (key to North American species, description). Marsh and Schuster, 1962: 40 (synonymized as *S. cavifrons*). Poole and Gentili 1996: 414 (as a synonym of *S. cavifrons*). Chandler, 1997: 3 (as a synonym of *S. cavifrons*).

Type locality: Mendocino County (California).

Distribution: USA.

***Sonoma chouljenkoi* Ferro & Carlton**

Sonoma chouljenkoi Ferro and Carlton, 2010: 17 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).

Distribution: USA.

***Sonoma conifera* Chandler**

Sonoma conifera Chandler, 1986: 336 (original description, genitalia illustration).. Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: Mary's Peak (Oregon).

Distribution: USA.

***Sonoma corticina* Casey**

Sonoma corticina Casey, 1887b: 480 (original description, habitus illustration, comparison with *S. parviceps* and *S. isabellae*). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Brendel, 1891: 78 (diagnosis, as genus of *Faronus*, habitus illustration). Raffray, 1893: 30 (description, as genus of *Sagola*). Casey, 1894: 436 (key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 4 (key to North American species, description). Marsh and Schuster, 1962: 41 (description, genitalia illustration). Park and Wagner, 1962: 5 (key to Pacific Northwestern species, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico). Chandler, 2003: 580 (new distribution).

Type locality: Mendocino County (California).

Distribution: USA.

***Sonoma cuneata* Marsh & Schuster**

Sonoma cuneata Marsh and Schuster, 1962: 43 (original description, genitalia and diagnostic character illustrations). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: two miles north of Fort Dick, Del Norte County (California).

Distribution: USA.

***Sonoma cygnus* Ferro & Carlton**

Sonoma cygnus Ferro and Carlton, 2010: 9 (original description, habitus and genitalia illustrations).

Type locality: Rabun Bald (Georgia).

Distribution: USA.

***Sonoma dilopha* Marsh & Schuster**

Sonoma dilopha Marsh and Schuster, 1962: 47 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: fourteen miles east of Blue Lake, Humboldt County (California).

Distribution: USA.

***Sonoma dolabra* Marsh & Schuster**

Sonoma dolabra Marsh and Schuster, 1962: 37 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: eighteen miles south of Klamath, Del Norte County (California).

Distribution: USA.

***Sonoma gilae* Ferro & Carlton**

Sonoma gilae Ferro and Carlton, 2010: 13 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).

Distribution: USA.

***Sonoma gimmeli* Ferro & Carlton**

Sonoma gimmeli Ferro and Carlton, 2010: 14 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).

Distribution: USA.

***Sonoma grandiceps* Casey**

Sonoma grandiceps Casey, 1894: 437 (original description, key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 4 (key to North American species, description). Marsh and Schuster, 1962: 44 (discussion, genitalia illustration). Poole and Gentili 1996: 414 (checklist of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: Santa Cruz County (California).

Distribution: USA.

***Sonoma hespera* Park & Wagner**

Sonoma hespera Park and Wagner, 1962: 6 (original description, genitalia illustration). Marsh and Schuster, 1962: 47 (description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: Boyer (Oregon, USA).

Distribution: Canada, USA.

***Sonoma holmesi* Ferro & Carlton**

Sonoma holmesi Ferro and Carlton, 2010: 23 (original description, habitus and genitalia illustrations).

Type locality: Blue Ridge Parkway (North Carolina).

Distribution: USA.

***Sonoma humilis* Marsh & Schuster**

Sonoma humilis Marsh and Schuster, 1962: 45 (original description, genitalia and diagnostic character illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 3 (catalog of America north of Mexico).

Type locality: Little River, Mendocino County (California).
Distribution: USA.

***Sonoma isabellae* (LeConte)**

Faronus isabellae LeConte, 1851: 215 (original description). Brendel, 1866: 38 (diagnosis, as genus of *Faronus*). Henshaw, 1885: 30 (checklist of America, North of Mexico). Casey 1887a: 482 (diagnosis, as genus of *Sonoma*). Schaufuss, 1888: 84 (catalog entry, as genus of *Sagola*). Brendel, 1891: 79 (diagnosis, as genus of *Faronus*). Raffray, 1893: 29 (description, as genus of *Sagola*). Casey, 1894: 436 (key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Bowman, 1934: 4 (key to North American species, description). Marsh and Schuster, 1962: 38 (description, habitus and genitalia illustrations). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: Santa Ysabel (California).
Distribution: USA.

***Sonoma konkoworum* Chandler**

Sonoma konkoworum Chandler, 2003: 580 (original description, diagnostic character illustrations).

Type locality: Little Chico Creek, Butte County (California).
Distribution: USA.

***Sonoma margemina* Park & Wagner**

Sonoma margemina Park and Wagner, 1962: 6 (original description, genitalia illustration). Marsh and Schuster, 1962: 42 (description, genitalia illustration). Bousquet, 1991: 126 (checklist of Canadian and Alaskan species). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico). Chandler, 2000: 9 (new distribution, key to Queen Charlotte Islands, Canada species, illustrations of diagnostic characters, biology).

Type locality: Peavine Ridge near McMinnville (Oregon, USA).
Distribution: Canada, USA.

***Sonoma mayori* Ferro & Carlton**

Sonoma mayori Ferro and Carlton, 2010: 25 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).
Distribution: USA.

***Sonoma nhunguyeni* Ferro & Carlton**

Sonoma nhunguyeni Ferro and Carlton, 2010: 22 (original description, habitus and genitalia illustrations).

Type locality: 5 mile north of Garth, Jackson County (Alabama).
Distribution: USA.

***Sonoma nicholsae* Ferro & Carlton**

Sonoma nicholsae Ferro and Carlton, 2010: 12 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (North Carolina).

Distribution: USA.

***Sonoma olycalida* Park & Wagner**

Sonoma olycalida Park and Wagner, 1962: 6 (original description, genitalia illustration). Marsh and Schuster, 1962: 49 (description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: Olympic Hot Springs, Olympic National Park (Washington).

Distribution: USA.

***Sonoma parkorum* Ferro & Carlton**

Sonoma parkorum Ferro and Carlton, 2010: 9 (original description, habitus and genitalia illustrations).

Type locality: Great Smoky Mountains National Park (Tennessee).

Distribution: USA.

***Sonoma parviceps* (Mäklin)**

Euplectus parviceps Mäklin, 1852: 372 (original description). Brendel, 1866: 38 (diagnosis, as genus of *Faronus*). Henshaw, 1885: 30 (checklist of America, North of Mexico). Casey, 1887b: 481 (mention). Schaufuss, 1888: 85 (catalog entry, as genus of *Sagola*). Brendel, 1891: 79 (diagnosis, as genus of *Faronus*). Raffray, 1893: 30 (description, as genus of *Sagola*). Casey, 1894: 440 (diagnosis, as genus of *Sonoma*, key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry, as genus of *Sonoma*). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 6 (key to North American species, description). Jeannel, 1961: 49 (brief discussion of biogeography). Marsh and Schuster, 1962: 39 (description, genitalia illustration). Park and Wagner, 1962: 5 (key to Pacific Northwestern species, genitalia and habitus illustration). Bousquet, 1991: 126 (checklist of Canadian and Alaskan species). Newton & Thayer, 1995: 304 (mention). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico). Chandler, 2000: 9 (new distribution, key to Queen Charlotte Islands, Canada species, illustrations of diagnostic characters, biology).

Type locality: Sitkha (Alaska).

Distribution: Canada, USA.

***Sonoma petersi* Chandler**

Sonoma petersi Chandler, 1986: 333 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: MacDonald Forest, Benton County (Oregon).

Distribution: USA.

***Sonoma priocera* Marsh & Schuster**

Sonoma priocera Marsh and Schuster, 1962: 48 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: Berlin, Linn County (Oregon).

Distribution: USA.

***Sonoma quercicola* Chandler**

Sonoma quercicola Chandler, 1986: 336 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: MacDonald Forest, Benton County (Oregon).

Distribution: USA.

***Sonoma repanda* Marsh & Schuster**

Sonoma repanda Marsh and Schuster, 1962: 35 (original description, habitus and genitalia illustrations). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: Stevens Creek Reservoir, Seven miles NW of San Jose, Santa Clara County (California).

Distribution: USA.

***Sonoma rubida* Casey**

Sonoma rubida Casey, 1894: 439 (original description, key to *Sonoma* species). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 7 (catalog entry). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 112 (distribution). Bowman, 1934: 5 (key to North American species, description). Marsh and Schuster, 1962: 46 (description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: San Francisco and Santa Cruz (California).

Distribution: USA.

Comments. The syntypes were collected from two different localities, San Francisco and Santa Cruz. A lectotype has not yet been designated.

***Sonoma russelli* Chandler**

Sonoma russelli Chandler, 1986: 337 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico).

Type locality: Mary's Peak, Benton County (Oregon).

Distribution: USA.

***Sonoma sokolovi* Ferro & Carlton**

Sonoma sokolovi Ferro and Carlton, 2010: 20 (original description, habitus and genitalia illustrations).

Type locality: Cloudland Canyon State Park (Georgia).

Distribution: USA.

***Sonoma spadica* Marsh & Schuster**

Sonoma spadica Marsh and Schuster, 1962: 36 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 4 (catalog of America north of Mexico). Chandler, 2003: 581 (new distribution).

Type locality: Mendocino Nendocino County (California).

Distribution: USA.

***Sonoma squamishorum* Chandler & Klimaszewski**

Sonoma squamishorum Chandler & Klimaszewski (in McLean *et al.*), 2009: 22 (original description, diagnostic character illustrations).

Type locality: Merilees Trail, Stanley Park (Vancouver).

Distribution: Canada.

***Sonoma streptophorophallus* Ferro & Carlton**

Sonoma streptophorophallus Ferro and Carlton, 2010: 21 (original description, habitus and genitalia illustrations).

Type locality: Amherst County (Virginia).

Distribution: USA.

***Sonoma tehamae* Chandler**

Sonoma tehamae Chandler, 2003: 581 (original description, genitalia illustration).

Type locality: Beegun Creek, Coast Ranges, Tehama-Shasta County line (California).

Distribution: USA.

***Sonoma tishechkini* Ferro & Carlton**

Sonoma tishechkini Ferro and Carlton, 2010: 24 (original description, habitus and genitalia illustrations).

Type locality: Chimney Rock State Park (North Carolina).

Distribution: USA.

***Sonoma tolulae* (LeConte)**

Faronus tolulae LeConte, 1849: 109 (original description based on female). Brendel, 1866: 38 (diagnosis, as genus of *Faronus*). Henshaw, 1885: 30 (checklist of America, North of Mexico). Schaufuss, 1888: 85 (catalog entry, as genus of *Sagola*). Brendel, 1891: 76 (diagnosis, as genus of *Faronus*, habitus illustration). Raffray, 1893: 29 (description, as genus of *Sagola*). Casey, 1894: 442 (mentioned as genus of *Faronus*). Raffray, 1904: 500 (catalog entry). Raffray, 1911: 7 (catalog entry, as genus of *Sonoma*). Leng, 1920: 127 (checklist of America, North of Mexico). Raffray, 1924: 100 (distribution). Bowman, 1934: 6 (key to North American species, description). Marsh and Schuster, 1962: 49 (description, genitalia illustration). Downie and Arnett, 1996: 567 (diagnosis). Newton & Thayer, 1995: 304 (mention). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 5 (catalog of America north of Mexico). Ferro and Carlton, 2010: 15 (description of male, habitus and genitalia illustrations).

Type locality: Tallulah Falls Georgia (Georgia).

Distribution: USA.

***Sonoma tridens* Ferro & Carlton**

Sonoma tridens Ferro and Carlton, 2010: 22 (original description, habitus and genitalia illustrations).

Type locality: Natural Bridge State Park (Kentucky).

Distribution: USA.

***Sonoma triloba* Marsh and Schuster**

Sonoma triloba Marsh and Schuster, 1962: 43 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 5 (catalog of America north of Mexico).

Type locality: Fort Bragg, Mendocino County (California).

Distribution: USA.

***Sonoma vanna* Marsh & Schuster**

Sonoma vanna Marsh and Schuster, 1962: 38 (original description, genitalia illustration). Poole and Gentili 1996: 414 (check list of North American species). Chandler, 1997: 5 (catalog of America north of Mexico).

Type locality: seven miles south of Big Sur, Monterey County (California).

Distribution: USA.

***Sonoma wintuorum* Chandler**

Sonoma tehamae Chandler, 2003: 582 (original description, genitalia illustration).

Type locality: Beegun Creek, Coast Ranges, Tehama-Shasta County line (California).

Distribution: USA.

Genus *Stenosagola* Broun

Type species: *Stenosagola planiocula* Broun (designated by Newton & Chandler, 1989: 18).

Stenosagola Broun, 1921a: 504. Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton and Chandler, 1989: 18 (generic catalog entry). Klimaszewski *et al.*, 1996: 147 (New Zealand generic summary). Newton & Thayer, 2005a (catalog of Staphyliniformia). Nomura and Leschen, 2006: 244 (remarks, list of New Zealand species). Park and Carlton, 2013: 1 (species revision).

***gacilis* group**

***Stenosagola gracilis* (Broun)**

Sagola gracilis Broun, 1893b: 1424 (original description). Raffray, 1904: 499 (catalog entry, as genus of *Sagola*). Raffray, 1911: 6 (catalog entry, as genus of *Sagola*). Broun 1921a: 505

(considered as genus *Stenosagola*). Hudson, 1923: 366 (checklist of New Zealand species).

Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of

austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 338 (redescription, illustrations of habitus and diagnostic characteres).

Type locality: Mount Pirongia (Waikato; WO).

Distribution: New Zealand.

Syn. *Sagola crassicornis* Broun, 1911: 501 (original description, comparison with *S. gracilis*). Broun 1921a: 505 (considered as genus *Stenosagola*). Hudson, 1923: 366 (checklist of

New Zealand species). Raffray, 1924: 232 (distribution, as genus of *Sagola*). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 338 (synonym of *S. gracilis*).

Syn. *Stenosagola oblongiceps* Broun, 1921a: 505 (original description, comparison with *S. planiocularis*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 338 (synonym of *S. gracilis*).

Syn. *Stenosagola planiocularis* Broun, 1921a: 505 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 338 (synonym of *S. gracilis*).

***Stenosagola pseudogracilis* Park & Carlton**

Stenosagola pseudogracilis Park and Carlton, 2013: 341 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Tararua Forest Park (Wellington; WN).

Distribution: New Zealand.

***Stenosagola clarkei* Park & Carlton**

Stenosagola clarkei Park and Carlton, 2013: 343 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Kahurangi National Park (Nelson; NN).

Distribution: New Zealand.

***Stenosagola egmontensis* Park & Carlton**

Stenosagola egmontensis Park and Carlton, 2013: 344 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Pouakai Saddle (Taranaki; TK).

Distribution: New Zealand.

***Stenosagola ramsayi* Park & Carlton**

Stenosagola ramsayi Park and Carlton, 2013: 344 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Mt. Messenger (Taranaki; TK).

Distribution: New Zealand.

***Stenosagola domettensis* Park & Carlton**

Stenosagola domettensis Park and Carlton, 2013: 345 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Mt. Domett (Nelson; NN).

Distribution: New Zealand.

***Stenosagola eylesi* Park & Carlton**

Stenosagola eylesi Park and Carlton, 2013: 345 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Turret Range (Fiordland; FD).

Distribution: New Zealand.

***Stenosagola stewartensis* Park & Carlton**

Stenosagola stewartensis Park and Carlton, 2013: 346 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Bigs Cape Island (Stewart Island; SI).

Distribution: New Zealand.

***connata* group**

***Stenosagola connata* (Broun)**

Sagola connata Broun, 1911: 503 (original description, comparison with *S. gracilis*). Broun 1921a: 505 (considered as genus *Stenosagola*). Hudson, 1923: 366 (checklist of New Zealand species). Raffray, 1924: 232 (distribution, as genus of *Sagola*). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 347 (redescription, illustrations of habitus and diagnostic characteres).

Type locality: Erua (Taupo; TO).

Distribution: New Zealand.

Syn. *Stenosagola griseipila* Broun, 1921a: 506 (original description, comparison with *S. connata*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 245 (list of New Zealand species). Park and Carlton, 2013: 347 (synonym of *S. connata*).

Syn. *Sagola longipennis* Broun, 1911: 504 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species). Park and Carlton, 2013: 347 (synonym of *S. connata*).

***Stenosagola huiaensis* Park & Carlton**

Stenosagola huiaensis Park and Carlton, 2013: 349 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Huia (Auckland; AK).

Distribution: New Zealand.

***Stenosagola northlandensis* Park & Carlton**

Stenosagola northlandensis Park and Carlton, 2013: 350 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Trounson Kauri Park (Northland; ND).

Distribution: New Zealand.

***Stenosagola thayerae* Park & Carlton**

Stenosagola thayeraes Park and Carlton, 2013: 351 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Hunua Ranges (Auckland; AK).

Distribution: New Zealand.

***Stenosagola dugdalei* Park & Carlton**

Stenosagola dugdalei Park and Carlton, 2013: 352 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Kakanui (Gisborne; GB).

Distribution: New Zealand.

***Stenosagola tararuaensis* Park & Carlton**

Stenosagola tararuaensis Park and Carlton, 2013: 352 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Tararua Forest (Wellington; WN).

Distribution: New Zealand.

***Stenosagola haunuiensis* Park & Carlton**

Stenosagola haunuiensis Park and Carlton, 2013: 353 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Haunui area (Wairarapa; WA).

Distribution: New Zealand.

***Stenosagola pseudoconnata* Park & Carlton**

Stenosagola pseudoconnata Park and Carlton, 2013: 353 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Tararua Forest Park (Wellington; WN).

Distribution: New Zealand.

***Stenosagola chandleri* Park & Carlton**

Stenosagola chandleri Park and Carlton, 2013: 354 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Maukatua Scenic Reserve (Dunedin; DN).

Distribution: New Zealand.

***Stenosagola nunni* Park & Carlton**

Stenosagola nunni Park and Carlton, 2013: 355 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Big South Cape Island (Stewart Island; SI).

Distribution: New Zealand.

Comments. The Original description indicates the subregion is Southland (SL), but Big South Cape Island subjects in Stewart Island (SI).

***Stenosagola newtoni* Park & Carlton**

Stenosagola newtoni Park and Carlton, 2013: 356 (original description, habitus photos, illustrations of diagnostic characters).

Type locality: Lewis Pass (Buller; BR).
Distribution: New Zealand.

***Stenosagola butcheri* Park & Carlton**

Stenosagola butcheri Park and Carlton, 2013: 356 (original description, habitus photos, illustrations of diagnostic characters).
Type locality: Mt. Karioi (Waikato; WO).
Distribution: New Zealand.

***Stenosagola fiordlandensis* Park & Carlton**

Stenosagola fiordlandensis Park and Carlton, 2013: 357 (original description, habitus photos, illustrations of diagnostic characters).
Type locality: Resolution Island (Fiordland; FD).
Distribution: New Zealand.

New Genus “*Brounea*” Park & Carlton

“*Brounea*” *setiventris* (Broun)

Sagola setiventris Broun, 1915: 282 (original description, comparison with *S. guinnessi*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).
Type locality: Erua (Taupo; TO).
Distribution: New Zealand.

“*Brounea*” *tenuis* (Broun)

Sagola tenuis Broun, 1886: 888 (original description). Raffray, 1893: 40 (description). Raffray, 1904: 499 (catalog entry). Raffray, 1911: 6 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).
Type locality: Tairua (Coromandel; CL).
Distribution: New Zealand.

New Genus “*Ahnea*” Park & Carlton

“*Ahnea*” *ventralis* (Broun)

Sagola ventralis Broun, 1912b: 623 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).
Type locality: Greymouth (Buller; BR).
Distribution: New Zealand.

New Syn. *Sagola dissonans* Broun, 1921b: 601 (original description, comparison with *S. lineata*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola planicula* Broun, 1921a: 503 (original description, comparison with *S. lineata*). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Kuschel, 1990: 48 (annotated list of Lynfield, Auckland, remarks, as genus of *Exeirarthra*). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

“Ahnea” lineata (Broun)

Sagola lineata Broun, 1893a: 175 (original description). Raffray, 1904: 498 (catalog entry). Raffray, 1911: 5 (catalog entry). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

Type locality: Mount Pirongia (Waikato; WO).

Distribution: New Zealand.

New Syn. *Sagola carinata* Broun, 1912b: 622 (original description, comparison with *S. lineata*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species).

New Syn. *Sagola lineiceps* Broun, 1921a: 504 (original description). Hudson, 1923: 366 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Genus “Pseudoexeirarthra” Park & Carlton

“Pseudoexeirarthra” spinifer (Broun)

Sagola spinifer Broun, 1895: 75 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 233 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 244 (list of New Zealand species).

Type locality: Mount Pirongia (Waikato; WO).

Distribution: New Zealand.

New Syn. *Sagola dilucida* Broun, 1914b: 157 (original description, comparison with *S. guinnessi*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola guinnessi* Broun, 1911: 502 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

New Syn. *Sagola longicollis* Broun, 1911: 498 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola longula* Broun, 1912b: 625 (original description, comparison with *S. brevicornis*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232

(distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

New Syn. *Sagola rectipennis* Broun, 1921a: 489 (original description, comparison with *S. longicollis*). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species).

“*Pseudoexeirarthra*” *colorata* (Broun)

Sagola colorata Broun, 1914b: 156 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 241 (list of New Zealand species). Type locality: McClennan’s Bush, near Methven (Mid Canterbury; MC). Distribution: New Zealand.

New Syn. *Sagola insueta* Broun, 1914b: 157 (original description). Hudson, 1923: 365 (checklist of New Zealand species). Hudson, 1934: 184 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 242 (list of New Zealand species).

“*Pseudoexeirarthra*” *puncticollis* (Broun)

Sagola puncticollis Broun, 1911: 499 (original description, comparison with *S. longicollis*). Hudson, 1923: 365 (checklist of New Zealand species). Raffray, 1924: 232 (distribution). Hudson, 1934: 183 (checklist of New Zealand species). Newton & Thayer, 2005b (catalog of austral species). Nomura and Leschen, 2006: 243 (list of New Zealand species). Type locality: Timaru (South Canterbury; SC). Distribution: New Zealand.

**APPENDIX C: WRITTEN PERMISSION TO USE THE PUBLISHED MATERIAL IN
THE DISSERTATION (FOR CHAPTER 3.1)**

October 1, 2013

Jong-Seok Park
Louisiana State Arthropod Museum
Dept. of Entomology - Louisiana State University
404 Life Sciences Bldg. Baton Rouge LA 70803

Dear Jong-Seok Park,

The Entomological Society of America grants you permission to include the article cited below as part of your dissertation for Louisiana State University.

Park, J.-S. and Carlton, C. E. 2011. Revision of the New Zealand Genus **Exeirarthra** (Coleoptera: Staphylinidae: Pselaphinae: Faronitae). *Annals of the Entomological Society of America*, 104(6): 1170–1182.

Best wishes,

Alan Kahan

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**APPENDIX D: WRITTEN PERMISSION TO USE THE PUBLISHED MATERIAL IN
THE DISSERTATION (FOR CHAPTER 3.2)**



1 October 2013

Jong-Seok Park
Louisiana State Arthropod Museum,
Department of Entomology, LSB 402,
Louisiana State University Agricultural Center,
Baton Rouge, LA 70803

Park:

Thank you for publishing your article titled “**A Revision of the New Zealand Genus *Stenosagola* (Coleoptera: Staphylinidae: Pselaphinae: Faronitae)**” that appeared recently in *The Coleopterists Bulletin* (67(3): 335-359). *The Coleopterists Bulletin* is published using the Creative Commons Attribution License (see <http://creativecommons.org/licenses/by/2.5/>). Thus, The Coleopterists Society retains the right to distribute your work, but all other rights are retained by you, the author. Therefore, you do have permission to include this article in your dissertation as a degree requirement at Louisiana State University.

Best regards,

Ronald D. Cave
Managing Editor
The Coleopterists Bulletin
2199 S Rock Road
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Fort Pierce, FL 34945-3138

THE VITA

Jong-Seok Park was born in 1979 in Seoul, South Korea. During his childhood, he spent much time catching bugs such as grasshoppers, cicadas and stag beetles and raising them. At that time, he didn't know the hobby would be his future job, but he had aspirations toward fieldwork. Finally, he enrolled into the Department of Biology, Chungnam National University (Daejeon, Korea) and had the good fortune to meet Dr. Kee-Jeong Ahn, a specialist in insect taxonomy and systematics. He joined Dr. Ahn's lab during 2001 and started to learn about the largest beetle family, Staphylinidae. He completed his Bachelor of Science during February 2004 with his first academic paper, "Three Lomechusini species new to Korea (Coleoptera: Staphylinidae: Aleocharinae)." He obtained a master degree during February 2006. During May 2006, he began his post masters work at the same lab, and prepared for study in the U.S.A. Finally, he began a doctoral program in beetle systematics in the Department of Entomology at Louisiana State University, Baton Rouge during fall 2007, and expect to graduate in December 2013.