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Subsidy from Nature: Green Sea Turtles in the Colonial Caribbean

Throughout their careers, Archie Carr, James Parsons, and Bernard Nietschmann – the latter two were early and influential members of the Conference of Latin American Geographers (CLAG) – asked challenging questions about human-environmental relations and, in so doing, highlighted the essential relationship between the green sea turtle and human activities in the colonial Caribbean. They interrogated the fundamental linkages between specific ecosystems and the sociopolitical and economic developments these links contributed to. Today we may call this sort of research coupled human-environment systems, but exemplary cultural-historical geography has always strived to analyze the mutual entanglements uniting society with environment. The purpose of this commentary is to encourage Latin American geographers to continue this vein of research, and specifically to do so in a way that elucidates the broader significance of society-environment relations. I do this here by following up on the powerful historical implications suggested throughout the works of Carr, Parsons, and Nietschmann.

Geographers have long analyzed how subsidies from nature allowed particular patterns of human settlement and resource use, and the intrepid scholarship of Carr, Parsons, and Nietschmann was no exception.¹ Although their work with *Chelonia mydas*, or the green sea turtle, is well-known among marine ecologists and conservation biologists today (Rieser 2012), the far-reaching significance of their historical deductions have been largely overlooked. This is unfortunate because their assertions suggest that *Chelonia*'s abundance and lifecycle ecology undergirded settler colonialism, plantation agriculture, piracy, the slave trade, and intra-imperial conflicts throughout the Caribbean basin and from the earliest days of the European presence. Despite this claim, much of the work by Carr, Parsons, and Nietschmann remains unknown or underutilized by historians of the colonial Caribbean.

The abundant, predictable, and easily taken nature of *Chelonia* provided an essential and nutritious food source for early Europeans in the Caribbean basin, allowing piracy and commercial enterprises built upon the exploitation of human labor to take root. Notice of the indispensable subsidy from nature was made as early as 1954 by Archie Carr who opined that “All early activity in the new world tropics – exploration, colonization, buccaneering and the maneuverings of naval squadrons – was in some way dependent on the [sea] turtle. ... More than any other dietary factor the green turtle supported the opening up of the Caribbean” (1954, 17). Shortly thereafter, James Parsons (1962) sustained and reinforced this observation in his classic *The Green Turtle and Man* by highlighting the strong connection between piratical activity and the wide abundance of *Chelonia* throughout the western Caribbean. Taking mostly a cultural ecology approach, Bernard Nietschmann illustrated the pivotal role of *Chelonia* in bringing the Miskitu people into allied relations with buccaneers and early English settlers in the far western Caribbean, groups that decisively altered the human geography of that region for 200 years and helped explain the rise of non-Spanish colonies in the region during the seventeenth and eighteenth centuries (Nietschmann 1973, 1979a, 1979b). In spite of these compelling and prescient conjectures, only a few historians of the colonial Caribbean have engaged with this aspect of their work.

A recent article by historian Mary Draper (2017) illustrates how these earlier studies remain poorly known but also why they should be more widely appreciated. Draper examined the role of timber and green sea turtle acquired in the “maritime hinterlands” of early English Barbados and Jamaica respectively. She found that available surpluses of these off-island resources were essential for urban and capitalist development in the English West Indies. In the case of Jamaica, she illustrated how the harvesting of *Chelonia* from surrounding ecosystems

allowed for the rise of Port Royal as a critical entrepot for piracy and smuggling. Her work suggests but does not fully develop how *Chelonia* provisioned the range of services that provided the start-up capital necessary for commercial agriculture, sugar mills, and the purchase of enslaved labor in Jamaica (Draper 2017; see also Zahedieh 1986, 1990; Crawford and Márquez-Pérez 2016). Though fundamentally an ecological and geographic study, Draper does not reference the decades-long and wide-ranging work of Carr at all and cited only two geographers in perfunctory ways: David Watts (1987) for his work on Barbados and Parsons (1962) at the very end of her article. Still, Draper (2017) confirms the importance of *Chelonia* for early English Jamaica and, thus, how Jamaica rose to become the wealthiest and among the most oppressive jewels in the British Crown by the mid-eighteenth century.

The purpose of this paper is to reaffirm and draw attention to the foresight of the scholarly provocations of Carr, Parsons, and Nietschmann, and to suggest that others revisit similar provocations leveled by earlier geographers working in their areas of interest. I do this by reflecting upon how human exploitation of the green sea turtle subsidized developments across the colonial Caribbean. My brief account sustains earlier claims showing the importance of *Chelonia* to Jamaica specifically, but also how the green sea turtle provisioned other important Caribbean port cities, east-bound Atlantic vessels of multiple nations, and enabled mobile seamen to successfully attack Spanish ports throughout the circum-Caribbean.² Extending the implications of *Chelonia* in provisioning imperial expansion suggests that the meek, plodding, herbivorous, green sea turtle served as the natural capital buttressing the rise of plantation slavery and Atlantic capitalism. This gives *Chelonia* the ignominious distinction of being the grease that allowed the English Caribbean to emerge as the “hub of empire” (Beckles 1998).

Six genera of sea turtles are found in tropical and subtropical seas around the world. The greater Caribbean hosts five of these, but most common are the greens, hawksbills, and leatherbacks. As the only purely herbivorous genera, the greens or *Chelonia* were the only turtles sought for their meat and oil.³ As Carr eloquently put it, “*Chelonia* had all the qualities needed for a role in history. It was big, abundant, available, savory and remarkably tenacious of life. It was almost unique in being a marine herbivore – an air-breathing vertebrate that grazed submarine beds of seed plants.” Its vast abundance reflected its relatively simple ecology: “It ate one kind of plant that spread continuously over great areas and knew no season” (Carr 1954, 17).

While the first Europeans did not enter the Caribbean in search of *Chelonia*, they were struck by this plentiful and unique food source. Sailing around Cuba on his first voyage, Columbus’ ships were delayed as they passed through a sea choked with turtles (Sauer 1966, 82). A similar scene was encountered on Columbus’ fourth voyage. In waters off the Cayman Islands, Ferdinand witnessed the water “full of turtles, all the sea about there was so full of them that they looked like little rocks” (Smith 2001, 52; Sauer 1962, 140). It is thus not surprising that the green sea turtle was “without a doubt” the most important marine food taken by Native Americans of the circum-Caribbean (Watts 1987, 61). *Chelonia* soon played this role for Europeans and many Africans as well.

To my knowledge no study has explored the early Spanish relationship with *Chelonia*. Yet, during his circum-Caribbean travels in the 1630s, the Dominican Friar Thomas Gage highlighted the importance of *Chelonia* to Spanish activities on several occasions. Based on experiences in 1625-37 in Guatemala, Central America, Panama, Cartagena, and Havana, Gage noted that when corned with salt and hung to dry for a few days that the flesh of *Chelonia* tasted like “sea veal” (1985, 28). Among the Spaniards at Cartagena, Gage noted, that “All the ships

make their provision for Spain of tortoise meat” (334). He described how people cut the meat into long thin slices and dry them in the wind before being salted. In this way, he stated that turtle *tasajos* “serveth the mariners in all their voyage to Spain” (334). Thus, the Spanish fleet carrying the wealth of empire was provisioned largely with salt turtle.⁴ Gage also informs his readers that Spanish port cities received a steady stream of turtles to feed their majority *casta* populations. Chelonia’s market ubiquity is confirmed by Newson and Minchin (2007, 170) who found Chelonia to be among the daily foods in Cartagena in the sixteenth century, often provided by indigenous peoples as part of their forced labor requirements. Turtles were especially eaten Friday and Saturdays, as the reptile’s marine existence made it safe eating for the Catholic faithful.

The most important turtle rookery in the Caribbean was the three Cayman Islands sandwiched between Cuba and Jamaica.⁵ As scholars have long known, these islands provided turtle for rovers from England, France, and the Netherlands. Indeed, as an exercise in counterfactual history, it would be fascinating to imagine how American history would have been different had the Spaniards occupied and fortified this small but important rookery off the coast of southern Cuba. Caribbean interlopers learned early about the Caymans summer nesting season and headed there in droves, some literally followed the sounds of surfacing turtles as they zeroed in on what seafarers knew to be their target destination. In 1586, Francis Drake knew to stop at the Caymans to load up on turtles to provision his return voyage.⁶ Less well known are other early accounts. For example, during his privateering raids in the 1640s, William Jackson’s diarist wrote that about the Caymans: “Hither doe infinitt numbers of Sea Tortoises yearly resorte to lay their Eggs upon ye Sandy Bay, which at this swarmed so thicke.” He added, that “The Island is much frequented by English, Dutch, & French ships, that come purposely to salt up ye flesh of

these Tortoises” (Harlow 1923, 21). Sea turtles also sustained settlers at the ill-fated Puritan colony at Providence Island, the first English colony in the western Caribbean, the first to establish an outpost on Central America and the earliest slave-majority English colony in the world, developments not possible without the wide availability of *Chelonia* (Offen 2011).

Chelonia was similarly critical for the survival of early English Jamaica. Upon arrival in May of 1655 as part of Cromwell’s Western Design, near starving English troops gorged themselves on slaughtered Spanish cattle. But when this feast ended officers dispatched ships to the Caymans throughout the nesting season – finding French ships already there. When nesting season was over in September, officers feared that the troops would starve. The quick formation of an early consumer market at Jamaica, however, allowed entrepreneurial seamen to fill the need. By 1657, while Spanish and Afro-Jamaican resistance to the takeover continued, a Capt. James delivered 50,603 lbs. of salt turtle at Port Royal. Thus, while many of the earliest Spanish and English accounts emphasize the consumption of turtle meat, it quickly became clear to officials and ships’ captains – and should to us also – that a turtle meat economy was both possible and necessary to sustain the colonial enterprise (Lewis 1940, 57-8; Smith 2001, 61-2; Draper 2017, 788; Pestana 2017).

Before the 1692 earthquake, Jamaica’s Port Royal was the largest urban area in the English Caribbean. A 1680 census found 2,000 ‘whites’ and 850 ‘blacks’ in about 1,000 houses (Pawson and Buisseret 2000, 135; Draper 2017, 785; Zahedieh 1990). This rapidly expanding urban population before the rise of sugar on the island reminds us that the early colony maintained services for a large and primarily seafaring population (Zahedieh 1986, 1990). What did these residents eat? An anonymous Spanish visitor to Jamaica in 1668 stated emphatically that “the principal food source on the island [of Jamaica] was green turtle, which supplied the

meat market year-round” (Anon. 1952, 429). Jamaican resident and diarist John Taylor confirmed this twenty years later when he stated “the flesh of this creature is the great and cheife provition [sic] on Port Royall, and on most places on Jamaica” (Taylor 2008, 153). Taylor’s contemporary resident, Hans Sloane, likewise reported that abundant turtles supplied to Jamaica “furnish[ed] the inferior sort of people with good Food, at an easie and Moderate price.” He added that the “Female with Egg is reckoned the best” (Sloane 1707, vi, lxxxviii). The buccaneer William Dampier wrote that green turtles kept Port Royal “constantly supplied.” Sea grass harvesters kept live turtles in staked crawls at Port Royal, “and the Market [was thus] every day plentifully stored with Turtle, it being the common food there, chiefly for the ordinary sort of people” (Dampier 1697, 106; Taylor 2008, 236). By the last quarter of the seventeenth century some 60-100 sloops, up to half of those based at Jamaica, were involved in supplying the island with turtle (Sloane 1707, xvii; Smith 2001, 64; Draper 2017, 789).

The above statements point out that turtle meat (and eggs and oil) kept both free and enslaved urban residents well-fed and healthy and at moderate cost, but they also imply that turtle meat provisioned populations across the island. Turtle most certainly also revived Africans arriving on numerous slave ships, just as fresh and salt turtle meat provisioned the inter- and intra-imperial slave trade (O’Malley 2014). Sloane makes this point by mentioning how Spanish products passed through Jamaica in exchange for slaves (1707, v-vi). English turlers also provisioned Dutch Curaçao, a well-known entrepot that moved slaves to the Spanish mainland (1707, lvi; Rupert 2012). Thus, turtle from the western Caribbean not only furnished sustenance for urban and rural Afrodescendants in Jamaica, but it did so for enslaved peoples transported from Jamaica and Curaçao to other inter- and intra-imperial destinations as well.

The importance of healthy and fresh food should not be underestimated, and early Caribbean residents definitely attributed turtle meat, eggs, oil, and soup with healing properties (Taylor 2008, 154; Long 2002, II: 517). Englishmen learned a great deal about the revitalizing power of *Chelonia* from the Miskitu people of eastern Nicaragua and Honduras. The Miskitu considered green turtle “their best physick,” inspiring some Europeans to believe that “out of a hidden quality” the turtle was “very medicinall for the cure of the Diseases of the Droopsy and Fluxes gently purgeth their bodies thoroughly, and worketh a perfect cure” (W. 1732, 292). Oil from turtle fat was also desired for its therapeutic properties, and one writer found the oil “so inoffensive, that halfe a pint may be drunke at a draught” ([Gookin] 1645, 5). Turtle oil was also used for lighting, and a single turtle could produce up to eight gallons, furthering the demand for *Chelonia* while increasing its utility (Dampier 1697, 106). Carr (1954, 17) surmised that consumption of green turtle virtually ended scurvy in the Caribbean. Thus, the century-long misery of long-distance sea travelers was halted by eating the most abundant wild meat source in the Caribbean.

English outposts on the mainland – an important fault line for over 200 years of intra-imperial rivalry in the western Caribbean – also relied on green sea turtle, both as a food source and as an economic activity provisioning Jamaica. The English logwood colony at Laguna de Terminos in the Bay of Campeche, for example, relied significantly on *Chelonia* (Dampier 1697, 105; 1699, 73, 107). *Chelonia* sustained logwooders at Belize, with some of their harvest finding its “way to the London market” (Henderson 1809, 33-4). At the Mosquito Shore, residents of all ethnic backgrounds dined regularly on the green turtle. Superintendent Hodgson wrote that *Chelonia* passed regularly from “the latter end of March to the middle of June” on their way to Costa Rica. While the bulk of captured turtle was for local consumption, the surplus sold “in

Jamaica at the price of salt beef.” Hodgson concluded that “Such an advantage as this is equaled in no other colony” (1822[1757], 34-5). Sea turtles allowed English outposts on the Central American mainland to carry on their other activities of wood cutting, illicit trade, Indian slaving, and their periodic conflict with the Spaniards. This subsidy from nature provisioned and capitalized several other activities with far-reaching implications for the history of both Central America and the Caribbean (Offen 2010; 2015; 2018, 490; n.d.).⁷

Privateers and pirates relied heavily on the turtle and sought to careen their ships where *Chelonia* passed or nested, and this often meant locations along eastern Central America. In this way, the Miskitu people became integrated into and integral for the success of piratical activities (Parsons 1962; Nietschmann 1973). As Dampier put it, the Miskitu “are esteemed and coveted by all Privateers; for one or two of them in a Ship, will maintain 100 Men: ... it is very rare to find Privateers destitute of one or more of them (1697, 8). For the French buccaneer, Alexandre Exquemelin, the Miskitu “are a great asset to the rovers, ... extremely skillful in spearing turtles, manatees and fish.” A single Miskitu man was “capable of keeping a whole ship's company of 100 men supplied with food” (2000, 220). *Chelonia* was perfect for the pirate on the go: they stayed alive on deck or in ship’s bilges for up to two months. As a result, an extraordinary abundance of turtle contributed to an excess of pirates and privateers, among the largest thorns in proverbial side of the Spanish Empire until the early eighteenth century (Lane 1998; Galvin 1999).

The effects of unchecked harvesting of *Chelonia* were felt differentially across the region, but the impact appeared first in the eastern Caribbean. As a conservationist measure, English Bermuda famously passed a law in 1620 that prohibited the killing of any turtle in surrounding waters less than 18 inches in diameter (Carr 1986). Watts found that turtles were already

depleted in the Leewards by the early seventeenth century, such that early settlers at Nevis and St. Kitts ate few if any turtles (1987, 164-6, 228). Between 1676 and 1750, *Chelonia* virtually disappeared from the northern Leewards, and even the great herds of the Cayman Islands and Cuban Keys were gone by the early nineteenth century (Lewis 1940; Watts 1987, 439).

Like many common pool resources harvested to near extinction from the oceans, *Chelonia* contributed to the realization of the colonial enterprise in the Caribbean and, by extension, the accumulation of Atlantic capital in the early modern period. The specific links between the colonial dependence on green turtle, including the economy and trade routes that developed around supplying turtle products, the importance of fresh turtle for pirate mobility and successes, the relative importance of turtle to the healthful-provisioning of enslaved labor, and the magnitude of turtle in supplying the intercolonial and intracolony slave trade remain unclear. Clear, though, is that the generous availability of *Chelonia* around much of the West Indies helped lay the foundation for these and other wealth-generating activities that fostered and nurtured larger imperial designs. Clear, however, is that research by Archie Carr, James Parsons, and Bernard Nietschmann had long intimated this underlying role for *Chelonia*. This pithy sketch advocates for the historical-field nexus of society-nature geography that this trio of scholars specialized in, but also suggests that forgotten insights by other geographers are likely waiting to be rediscovered and brought into contemporary focus through our own research questions and political commitments.

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References

- Anonymous, (1952). Descripción anónima de la isla de Jamaica [1668]. In F. Morales Padrón (Ed.), *Jamaica Española* (pp. 423-433). Sevilla: Publicaciones de la Escuela de Estudios Hispano-Americanos de Sevilla.
- Beckles, H. M. (1998). The 'Hub of Empire': The Caribbean and Britain in the Seventeenth Century. In N. Canny (Ed.), *The Oxford History of the British Empire. Volume 1: The Origins of Empire: British Overseas Enterprise to the Close of the Seventeenth Century* (pp. 218-240). Oxford: Oxford University Press.
- Carr, A. F., Jr. (1954). The Passing of the Fleet. *American Institute of Biological Studies Bulletin*, 4(5), 17-19.
- Carr, A. (1986[1967]). *The Sea Turtle: So Excellente a Fishe* (Revised ed.). Austin: University of Texas Press.
- Crawford, S. D., & Márquez-Pérez, A. I. (2016). A contact zone: The turtle commons of the Western Caribbean. *The International Journal of Maritime History*, 28(1), 64-80.
- Dampier, W. (1697). *A new voyage round the world* London: James Knapton.
- Dampier, W. (1699). Two voyages to Campeachy.... In *Voyages and Descriptions* (Vol. II). London: James Knapton.
- Draper, M. (2017). Timbering and Turtling: The Maritime Hinterlands of Early Modern British Caribbean Cities. *Early American Studies* 15(4), 769-800.
- Exquemelin, A. O. (2000[1678]). *The Buccaneers of America*. A. Brown (Trans.). Mineola, NY: Dover Publications.

- Gage, T. (1985). *Thomas Gage's Travels in the New World* (Third ed.). T.S. Thompson (Ed.) Norman: University of Oklahoma Press.
- Galvin, P. R. (1999). *Patterns of Pillage: A Geography of Caribbean-Based Piracy in Spanish America, 1536-1718*. New York: Peter Lang Publishing.
- [Gookin, D.] (1645). *Certaine Inducements to Well Minded People* [London]: University Microfilms International.
- Harlow, V. T., ed. (1923). The Voyages of Captain William Jackson (1642-1645). *Camden Miscellany*, 13, v-xxvi, 1-39.
- Henderson, G. (1809). *An Account of the British Settlement of Honduras* London: C. & R. Baldwin.
- Hodgson, R. (1822[1757]). *Some Account of the Mosquito Territory, Contained in a Memoir Written in 1757*. Edinburgh.
- Lane, K. E. (1998). *Pillaging the Empire: Piracy in the Americas 1500-1750*. New York: M.E. Sharpe.
- Lewis, C. B. (1940). The Cayman Islands and Marine Turtle. *Bulletin of Institute of Jamaica*, 2, 55-65.
- Long, E. (2002[1774]). *The History of Jamaica* 3 vols., Facsimile ed. Montreal and London: McGill-Queen's University Press.
- Newson, L. A., & Minchin, S. (2007). *From Capture to Sale: The Portuguese Slave Trade to Spanish South America in the Early Seventeenth Century*. Boston: Brill.
- Nietschmann, B. (1973). *Between Land and Water: The Subsistence Ecology of the Miskito Indians, Eastern Nicaragua*. New York: Seminar Press.

- Nietschmann, B. (1979a). Ecological Change, Inflation, and Migration in the Far Western Caribbean. *The Geographical Review*, 69(1), 1-24.
- Nietschmann, B. (1979b). *Caribbean Edge: The Coming of Modern Times to Isolated People and Wildlife*. Indianapolis: The Bobbs-Merrill Company, Inc.
- Offen, K. H. (2010). Race and Place in Colonial Mosquitia, 1600-1787. In L. Gudmundson & J. Wolfe (Eds.), *Between Race and Place: Blacks and Blackness in Central America and the Mainland Caribbean* (pp. 92-129). Durham: Duke University Press.
- Offen, K. (2011). Puritan Bioprospecting in the West Indies and Central America. *Itinerario*, 35(1), 15-47.
- Offen, K. (2015). Mapping Amerindian captivity in colonial Mosquitia. *Journal of Latin American Geography*, 14(3), 35-65.
- Offen, K. (2018). Environment, Space and Place: Cultural Geographies of Colonial Afro-Latin America. In A. de la Fuente & G. R. Andrews (Eds.), *Afro-Latin American Studies: An Introduction* (pp. 486-533). New York: Cambridge University Press.
- Offen, K. (n.d.). English Designs on Central America: Geographic Knowledge and Imaginative Geographies in the Seventeenth Century, article under review.
- O'Malley, G. E. (2014). *Final Passages: The Intercolonial Slave Trade of British America, 1619–1807*. Chapel Hill: University of North Carolina Press.
- Parsons, J. J. (1962). *The Green Turtle and Man*. Gainesville: University of Florida Press.
- Parsons, J. J. (1972). The hawksbill turtle and the tortoise shell trade. In P. Gourou (Ed.), *Études de géographie tropicale offertes à Pierre Gourou* (pp. 45-60). Paris: Mouton.
- Pawson, M., & Buisseret, D. (2000). *Port Royal, Jamaica*. Barbados: University of the West Indies Press.

- Pestana, C. G. (2017). *The English Conquest of Jamaica: Oliver Cromwell's Bid for Empire*. Cambridge: Harvard University Press.
- Rieser, A. (2012). *The Case of the Green Turtle: An Uncensored History of a Conservation Icon*. Baltimore, MD: The Johns Hopkins University Press.
- Romero Vargas, G. (1995). *Las sociedades del Atlántico de Nicaragua en los siglos XVII y XVIII*. Managua: Fondo de Promoción Cultural-BANIC.
- Rupert, L. M. (2012). *Creolization and Contraband: Curaçao in the Early Modern Atlantic World*. Athens: University of Georgia Press.
- Sauer, C. O. (1966). *The Early Spanish Main*. Berkeley: University of California Press.
- Sloane, H. (1707). *A Voyage to the Islands of Madera, Barbados, S. Christophers and Jamaica ...* (Vol. 1). London.
- Smith, R. C. (2001). *The Maritime Heritage of the Cayman Islands*. Gainesville: University Press of Florida.
- Taylor, J. (2008). *Jamaica in 1687: The Taylor Manuscript at the National Library of Jamaica*. D. Buisseret (Ed.). Kingston, Jamaica: The University of West Indies Press.
- W., M. (1732). The Mosquito Indian and his Golden River In A. a. J. Churchill (Ed.), *A Collection of Voyages and Travels ...* (Vol. 6, pp. 285-298). London.
- Watts, D. (1987). *The West Indies: Patterns of Development, Culture and Environmental Change since 1492*. Cambridge: Cambridge University Press.
- Williams, G. (1997). *The Great South Sea: English Voyages and Encounters, 1570-1750*. New Haven: Yale University Press.
- Zahedieh, N. (1986). Trade, Plunder, and Economic Development in Early English Jamaica. *Economic History Review*, 39(2), 205-222.

Zahedieh, N. (1990). 'A Frugal, Prudential and Hopeful Trade'. Privateering in Jamaica, 1655-89. *Journal of Imperial and Commonwealth History*, 18(2), 145-168.

¹ Archie Carr (1909-1987) was a herpetologist who specialized in marine reptiles and not a geographer, but he worked closely with geographers, publicly admired their work, and influenced theirs in turn (Rieser 2012).

² Chelonia also facilitated the expansion of piracy into the Pacific littoral of Spanish America from the sixteenth through the early eighteenth centuries (Dampier 1697; Williams 1997; Lane 1998).

³ People hunted hawksbills for their translucent shell but this marine reptile did not provide any meaningful sustenance for humans (Parsons 1972).

⁴ Salt was, of course, the limiting factor in the preservation of many resources culled from the land and sea alike, and its production also contributed to the development of the colonial Caribbean. Lane (1998) shows how the Dutch need for salt to maintain their north Atlantic herring trade was a primary factor pushing them to enter the Caribbean in the 1580s.

⁵ The Cayman rookery was known to the Spaniards no later than 1534 because the three islands known as the Caymans were visible on the Ramusio map based off the Padrón Real, the master map of the Spanish Indies.

⁶ After loading up on turtles at the Caymans, Drake refreshed starving Roanoke settlers with turtle meat upon his return. He created space for them on his ship by leaving several hundred people he had taken during his Caribbean raids behind, including African slaves, South American Indians, and galley slaves that included Europeans and Moors. This early example North American human diversity is largely forgotten, just as the importance of the sea turtle to the voyage itself is overlooked.

⁷ Shell from the hawksbill turtle, likewise, provided Mosquito Shore residents with a currency to swap for needed goods. To put the volume of the hawksbill turtle trade into perspective, Nicaraguan historian German Romero Vargas (1995, 154), argues that the British hawksbill shell trade with just the Miskitu in the eighteenth century generated annual revenues greater than the Nicaraguan government received in tribute from its subjects.