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Frederick William Sunderman

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NEITHER NATCHEZ NOR TARA:
AN ENVIRONMENTAL HISTORICAL GEOGRAPHY OF
THE UPPER PEARL RIVER BASIN OF MISSISSIPPI,
PROTOHISTORIC PERIOD TO 1940

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 Geography and Anthropology

by
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May 2001
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ABSTRACT

This study examines the contrasting themes of land degradation and environmental stewardship of farming enterprises in the regional context of the Upper Pearl River Basin of Mississippi. Both the previous imagery and analysis of Southern Cotton Belt agriculture emphasize the profligate nature of farming practices. The contribution this study makes is to amend both the stock images and macro-analyses of Southern cotton culture. Analysis at the sub-regional level demonstrates that many farmers actually practiced sound land management techniques. Reconstructing the experiences of farmers in the Upper Pearl River Basin provides examples of ways in which regional distinctions amend widely conceived historical views of the monolithic nature of Southern agriculture.

The Upper Pearl River Basin of Mississippi provides the setting for an environmental historical geography of settlement, agriculture, and landscape modification. The Upper Basin is located in east central Mississippi, encompassing 12 counties in four sub-regions and the Pearl River itself. The Pearl River assumes an important role as an important means of transportation and as an environmental indicator. The time period spans from the protohistoric period (early 1700's) through 1940. In the protohistoric period, the Upper Basin was the core of the Choctaw nation. After the conclusion of major native land
cessions, a wave of Anglo settlers arrived before the Civil
War, and the Upper Basin became a busy part of the Southern
Cotton Kingdom. Cotton farmers rapidly transformed the
landscape into one based on production of a staple crop.
The Civil War caused considerable disruption to the cotton
economy of the region. Soil conservation measures were
alternately adopted or neglected in the struggle to
maintain high cotton output. Cotton culture endured a
setback at the turn-of-the-century with the appearance of
the boll weevil. This adversity encouraged a new round of
environmental adaptation, and cotton output recovered.
This study demonstrates the need for comparative work in
other Southern regions, to provide a regionally textured
alternative to the prevailing tide of depictions stressing
the benighted environmental consequences of land and life
in the South.
CHAPTER 1
INTRODUCTION

It is impossible to do justice to the appalling results of soil erosion in the south-eastern states. An exploitive and wasteful system of agriculture has ruined the soil and this, in its turn, is reflected in the terrible conditions under which the majority of the farmers, both white and negro, are living. The South has been described as 'a miserable panorama of unpainted shacks, rain-gullied fields, straggling fences, rattle-trap Fords, dirt, poverty, disease, drudgery, and monotony that stretches for 1000 miles across the Cotton Belt,' and no better description could be found. Cotton, it seems, is doomed and radical changes must be made in the economy of the south-east if any improvement in the standard of living is to take place (Morris 1937:368)

Prologue: Land degradation

Various lines of evidence suggest that poor soil conservation practices led to extensive and serious land degradation in the Southern 'cotton kingdom' (Daniel 1985; Earle 1988; Earle 1994; Lehman 1995; Morris 1937; National Resources Committee 1938; Trimble 1974; Trimble 1985; Vance 1929; Works Progress Administration 1938). Geographer Stanley Trimble disparagingly attributed Southern soil wastage to the pioneer mentality of waste, acceptance or even praise for mediocrity, and the attitude that make-do is good enough. Anyone who has lived and worked in the rural South knows these attitudes are still very much alive (Trimble 1985:163).

To proud Southerners these might constitute fighting words, a harsh and broad indictment of Southern farmers' relations with the land. Trimble's assertion criticizes Southern
cotton culture as a classic example of waste, ineptitude, greed, and other sins against the land. If heeded by scholars, Trimble's prescription for examining the problem should restrain further broad reproachments against the South, such as his own:

First, we need to know the magnitude and genesis of erosion and conservation. We need quantitative information when possible and qualitative when not. We need to know why the erosion and, likewise, conservation occurred - the relation to land use, conservation practices, physical factors, and any peculiar economic and social factors, especially land tenure (Trimble 1985:167).

Introduction to the Study

While there are numerous documented examples of wasteful agriculture and settlement in the South (Daniel 1985; Earle 1988; Jones 1937; Morris 1937; Taylor 1988; Trimble 1974; Trimble 1985), the idea of Southern environmental profligacy deserves investigation in specific sub-regions. This would result in a more comprehensive and accurate depiction of change in the Southern environment. To accomplish this requires measured and accurate historical assessments of land degradation and its pervasiveness, and judgments of how such behavior could be attributed to innate pioneer beliefs or other factors. One must also incorporate the socioeconomic and political circumstances that concurred with the regional cultural milieu. A well-defined scalar focus permits concentration
on human and natural processes to chronicle environmental and historical change.

In the spirit of this agenda, and not of Trimble's preceding condemnation, the Upper Pearl River Basin of Mississippi provides a historically appropriate study region. The Upper Basin is the setting for a survey from the eighteenth century, when it was the homeland of the Choctaw, until 1940, when the region's cotton economy declined from its paramount position in the regional economy. The Upper Pearl River Basin's regional identity makes it a compelling choice for investigations in Southern environmental historical geography. The sub-region has physical and cultural characteristics that are representative of the upland cotton South. However the Upper Basin also occupies a distinctive niche in Mississippi history, making it interesting in its own right. The distinctiveness of the Upper Basin derives in part from its environmental and culture-economic diversity. The Upper Basin encompasses a multitude of environmental contrasts, including broken and near-mountainous terrain, and near-flat expanses of rich prairie soils. Similarly, the Upper Basin was the forum for both small and expansive farms, which were managed by farmers of diverse racial and economic backgrounds. The latter characteristic contrasted with less diverse agricultural regions of Mississippi, such
as the large plantation dominated Natchez District, and the postbellum plantations of the Yazoo River Basin.

The interval between the protohistoric period of the mid-eighteenth century and 1940 is a suitable span for examining changes in the Upper Pearl River Basin. A progression from indigenous to external land use decisions, a pattern identified by one environmental historian (Bailes 1985) for many native-European interactions, coincided with economic and physical transitions in the basin itself. Over the period from 1800 to 1940, the region changed from a pattern of mainly indigenous land use to a vernacular pioneer culture, then through periods of increasingly complex professional (Worster 1985) authority in structuring the natural environment. This pattern, with commensurately important linkages to world markets, rose to a peak during the New Deal period of the 1930s, just prior to the terminal date of this study. The year 1940 marks the end of this study, by which time cotton culture in the basin had diminished from its paramount role in orchestrating changes in the land and life of the Upper Pearl River Basin to a lesser role.

Theory and Literature Review

The core concern of this dissertation is to present a chronicle of human and environmental change in the Upper Pearl River Basin. However, this discourse is more thematically complex than a simple accounting of events in
the Mississippi region. The study seeks to interpret the environmental historical geography of the Upper Pearl River Basin. This is partly accomplished by drawing on cognate research and theory from selected academic disciplines. These connections, in turn, have influenced the form and content of this investigation.

Environmental historical geography is a subfield of historical geography which concerns itself with examining and elucidating ties between human agency and change in the physical environment. One of the principal themes in the subfield is the analysis of land degradation. This study falls within a long tradition of regional studies that address the human and physical dimensions of land degradation.

The writings of George Perkins Marsh (1801-1882) helped to establish investigations of land degradation as a paramount theme in historical geography (Marsh, 1865). A native of Woodstock, Vermont, Marsh was a prominent diplomat and scholar who, early in his career, voiced alarm at the deleterious consequences of deforestation. He first profiled the resultant erosion in the mountains of his home state. In early nineteenth-century northern New England, an agro-pastoral land rush pushed the limits of pioneer farming from the expansive Connecticut and Champlain valleys onto mountain slopes, causing unprecedented stream sedimentation, erosion, and catastrophic freshets.
(Sunderman 1991). During his tenure in Turkey and Italy as a diplomatic attaché, Marsh gained perspective on the results of destructive erosion, where hillside deforestation had caused even more startling damage. Though not formally trained as a geographer, Marsh has been viewed as one of its prophets (Lowenthal, 1999). He cogently argued for greater attention and adaptation to regional environmental constraints, within the context of his era's unbridled imperatives toward pioneer and commercial agricultural expansion. Figures from geography's first academic generation following Marsh (ca. 1880-1920) such as Shaler (U.S.), Reclus and Brunhes (France) and Woeikof (Russia) carried forward his themes and concerns, but it was not until the 1930s that a sustained pursuit of these topics took hold in geography (Thomas 1956a).

The theme of land degradation in historical geography gained impetus in the first half of the twentieth century, principally through the work of Carl Sauer and his influence on successive generations of geographers (Speth 1977). Sauer achieved his stature on two fronts: through his advocacy of historical approaches in all branches of geographical research, and through his sustained call for attention to land degradation, especially soil erosion, as a recurrent geographical problem.

We may well consider whether the theme of soil erosion should not be moved up to the first
category of problems before the geographers of the world. It is very important for the future of mankind. It has critical significance for certain chapters of historical geography... Best of all the subject is suited to a 'hologeographic' approach in which the development of surface conditions of specific localization is examined as an interaction of identified physical and economic (i.e. Wirtschaft) processes (Sauer 1938:497).

Historical geographers working at the present still find Sauer's contributions and perspectives valuable even as new approaches and topics continue to unfold.

For example, historical geographers have recently questioned long-held assumptions concerning environmental degradation (Butzer 1990; Denevan 1992; Earle 1988). This research derives its strength from careful attention to the physical environment in response to human-induced modification. The work of the aforementioned geographers represents a rejuvenated environmental historical geography that advances innovations forged in the 1950s. Sauer and his associates, through publications and high-profile conferences, elevated geography and some geographers, for a time, to a promising level in the incipient environmental movement. Contributions by both physical and historical geographers were particularly notable in the milestone Man's Role in Changing the Face of the Earth (Thomas 1956b) conference volume (Clarke 1956; Darby 1956; Russell 1956; Sauer 1956; Strahler 1956; Thornthwaite 1956). The volume helped to establish this luminous period as a critical peak
Environmental historical geography, particularly that concerned with Anglo-American regions, has diminished since the late 1950's. Part of the reason for this lay in the general de-emphasis of regional geography that occurred in the 1960's, in the rush to develop geography as a nomothetic and quantitative field. Since environmental historical geography is an area of regional geography, its profile declined simultaneously. The revisionist tide has reversed a bit since the 1960's. Now there is ample evidence of renewed interest in places and qualitative sources. An invigorated regional geography, including environmental historical geography, has gained renewed respect (Applebome 1999; Pudup 1988).

Environmental History

Some of the most exciting recent research in human-environment relations is conducted within the field of environmental history, a disciplinary cousin of environmental historical geography. Much research in environmental history addresses subjects that were traditionally the purview of geographers, but the two disciplines have often worked without the collaboration that would be mutually beneficial. Petulla (Petulla 1985) identifies five core elements of environmental historical research: economics, politics, social structure,
technologies, and value systems. Environmental histories elucidate the ties between these variables and the physical environment, and the influence, in turn, of the environment on the core variables themselves.

Environmental historians seek to integrate historians' traditional concern for the 'social environment' with the natural environment. In environmental histories, the environment, especially the cultural landscape, assumes a central role both as habitat and as mirror of human existence:

environmental historians have earned their spurs by learning to look from the environment to the culture it supports, rather than vice versa (Bailes 1985:4)

In their work of the preceding two decades, environmental historians have minimized political issues, the traditional province of historians, in favor of ecology and ecological concepts (Taylor 1996). Environmental historians, while recognizing political institutions as critical to human cultures, have considered political decisions more for their impact on the land than for their wider roles in the fortunes of states and nations. By the same token, environmental historians typically regard natural regions as more appropriate units of inquiry than political regions (Worster 1985). One result of these preferences is 'history from the ground up'. To illustrate, biomes may be emphasized over nation-states, and tenant farmers may be regarded as more direct agents of
environmental and social change than politicians (Worster 1988).

While environmental historians seek a reorientation of historical research and greater interdisciplinary breadth, they also recognize the strengths of traditional historical methodology. This includes the ability to identify and elicit critical information from reams of documentary evidence. The environmental historian must then build a case for explaining change of a particular human interaction with the natural environment, or the lack of such change over time (Bailes 1985).

Environmental historians' efforts to articulate world socio-economic currents with regionally specific conditions complement the aims of political ecology. Political ecology is an extension of traditional political economy, employing a more explicit consideration of the physical environment as a foundation of human activity. This concurrent turn of attention to the environment marks an important tie between political ecology and environmental history (Blaikie and Brookfield 1987).

There are contrasts between the two approaches as well. Political ecology and environmental history diverge in their temporal emphases; much of current political ecology tends to focus on synchronic nature-society dynamics, while environmental history rests on a diachronic foundation. In terms of regional emphasis political
ecology has close ties to cultural ecology with its traditional focus on field research in developing countries. Environmental history and environmental historical geography typically concentrate on the realms of North America and Europe although the disciplines have become increasingly international in their regional foci (Worster 1985).

However, the aims of political ecology and environmental history are not so divergent as they may appear on the surface. Both disciplines may profit from a careful integration of their respective strengths. The ideal result is a mode of research with attention to temporal dynamics, but with a strong functional approach that places localized nature-society dynamics in pan-regional perspective. Geographers Peet and Watts (Peet and Watts 1993) recognize the complementarity of the two approaches:

The question of doing environmental history represents a fifth aspect of an invigorated political ecology. In providing much-needed historical depth to political ecology, environmental historians raise important theoretical and methodological questions for the study of long-term environmental change. The stark theoretical contrasts between Worster (1977), Merchant (1993), and Cronon (1992) point to an extraordinary heterogeneity within the field. Contained within each is the idea of writing alternative histories - of Chicago, imperialism, modes of production, early U.S. agriculture - from the perspective of long term ecosystemic change (Peet and Watts 1993:241).
In the past two decades many historians have developed an appreciation for the environmental historical mode of inquiry. Geographers, by contrast, have strayed from their former position at the hub of environmental historical research during the postwar period. A recent compendium of thirty-seven articles in environmental history contained only two contributions by geographers (Worster 1988).

While historians currently carry the torch for historical approaches in environmental research, they can benefit from the renewed contributions of geographers. Environmental history has benefited from historians' fundamental reliance on documentary sources, but geography's theoretical and methodological contributions can advance the interpretive capacity of this research. Many environmental histories are still impaired by insufficient attention to spatial relationships and oversimplified interpretations of relevant physical geography. Geographers can add needed weight in this area of research presentation. A renewed emphasis on the spatial characteristics of regions will enhance the interpretive power of this increasingly visible mode of inquiry.

In reconstructing environmental and cultural changes of Southern regions, the work of selected environmental historians and historical geographers offers important themes to incorporate. Some of these works touch upon
specifically Southern themes, and others address similar problems but in contrasting regional settings.

Richard White, a leading contemporary environmental historian, published a regional history of Island County, Washington (White 1980) that is commendable for the means by which he evokes a continuum between changes in the land wrought by indigenous peoples and Euro-American occupation. He effectively portrays a complex cultural landscape where subcultures occupy and influence specific natural and economic niches of Island County. White departs from the traditional purview of environmental history through his choice of study region: Island County Washington did not suffer the obvious and "ruthless" examples of resource exploitation that figure so prominently in the field. His work also departs from an earlier activist phase in the field, when environmental history was an arm of the nascent postwar environmental movement (Cronon 1993). In this regard, White's choice of study region contrasts nicely with other classic studies of land exploitation and its tragic results in American history, such as the Dust Bowl or soil depletion in the Tobacco belt (Trimble 1974; Worster 1979).

Rhys Isaac's The Transformation of Virginia (Isaac 1982) is an exemplar of historical research in which region of Virginia is a basic 'text' for uncovering the history of Virginia. While there are numerous books devoted to the
lives and letters of prominent Virginians, Isaac's work is laudable for his success at focussing on changes in Virginia while it evolved from a coastal settlement to a commercial agriculture. Isaac details the conversion of Virginia from indigenous to Europeanized forms, influenced by the productive requirements of tobacco, the dominant staple of the region. As such, Isaac's work serves as an inspiration and guide for eliciting the importance of staple agriculture in the history of other North American regions, such as the Upper Pearl River Basin.

This dissertation seeks to build upon previous research in several ways. The regional focus of the Upper Pearl River Basin augments the limited attention environmental historians and historical geographers have directed toward the American South. The transition from indigenous land use through yeomanry and slavery to postbellum labor arrangements and the intervention of government in Southern agricultural land use surely rank among the processes identified by Donald Worster for further inquiry by environmental historians:

...environmental historians need to focus on interrelated transitional processes that have taken place in recent centuries: 1) the transition from vernacular to professionalized authority in dealing with the natural environment, and 2) the shift from local subsistence economies to a world market order and the effects of that shift on human interaction with nature (Bailes 1985:19).
Excellent inroads have been made in the environmental history of early settlement in North America, particularly New England (Cronon 1983; Merchant 1989; Stilgoe 1982). These works provide stimulating models for formulating North American environmental histories of other regions and times. Calls have been made for increased research on the American South, rooted in the revered man-land tradition of cultural-historical geography (Blakie and Brookfield 1987; Mathewson 1987). To date, only a few 'environmental histories' of the South have been published (Clark 1944; Earle 1988; Earle 1975; Earle and Hoffman 1976; Kirby 1987; Silver 1990; Stewart 1996); the field is still open to further contributions, especially studies based on systematic attention to meso- and micro-scale regional analysis. Cronon issued a particularly compelling call for this type of research in the South:

Southern historiography is certainly rich with the materials for such an analysis, but a hypothetical environmental historian might too readily be tempted to ascribe environmental change to 'southern society' or 'tobacco and cotton agriculture' or the 'slave mode of production' (Cronon 1990:1129).

Cronon's work challenges simplistic theses of destructive occupancy as a morality play. Instead, he explicitly recognizes the benefits of eschewing such facile categorization. Continued and careful consideration of the environment as a dynamic and regionally distinct setting for human activity furthers the work of the few scholars.
engaged in Southern United States environmental historical research.

A primary theme in American environmental history is the adoption of ecology as a principal disciplinary tenet, wherein there is an implicit belief in the interdependence of human and natural action. Drawing upon ecology has proven to hold both pitfalls and opportunities that need to be considered in further research. Ecology, the science of interrelationships between all living organisms and the physical environment, provides an elegant and attractive structure to place humans in relation to plants, animals, and the soil. However, this invites errors when applied to humans, who exert free will and cultural conditioning in their relations with the environment. One of the most prominent environmental historians to stress the importance of ecological relations in environmental history is Donald Worster (Worster 1990).

Worster addresses ecology in environmental history in many contexts, but one of the most evocative (and controversial) is his advocacy for an 'agroecological' basis for environmental history. On the surface this appears to be a sound organizational concept--to place agriculture among the complete range of important natural ecological relations. After all, agriculture is at root a biological process guided by human decisions. Worster's
conception of limits to the land is an attractive concept too:

Whatever terrain the environmental historian chooses to investigate, he has to address the age-old predicament of how mankind can feed himself without degrading the primal source of life. Today as ever, that problem is the fundamental challenge in human ecology, and meeting it will require knowing the earth well—knowing its history and knowing its limits (Worster 1990:1106).

Evaluating limits to the land is a useful concept in studying agriculture in the highly erosive uplands of Mississippi. To do this, however, leads to the hazard of assuming that human ‘modes of production’, the core Worster emphasizes, are directed in strictly ecological terms. In addition to its Marxian overtones, Cronon rightly argues, to rely on modes of production as a means of conceiving human-environment relations invites neglect of the particularities which mark each mode in its own time and setting (Cronon 1990). Despite this criticism, an agroecological core with an emphasis on modes of production forms a useful heuristic structure to organize an environmental historical geography. The key is to maintain a keen sense of regional and cultural distinctions, a strength which cultural-historical geographers can bring to environmental history.

**Methodology**

In reconstructing the environmental historical geography of the Upper Pearl River Basin, this dissertation
utilizes a range of techniques. Some of the techniques are standard to the repertoire of historical and regional geographers. Others, such as the use of travel accounts and qualitative data, are less frequently employed, but they provide critical avenues for presenting the interactions between humans and the environment in the region.

Environmental history and historical geography present the past interactions of two essential components: nature and culture. This study of the Upper Pearl River Basin will necessarily include close attention to its regional social and cultural history. Since the start of European settlement in the watershed, the Pearl River Basin has always presented a complex cultural panoply. White elites, poor whites, indigenous Choctaws, and blacks have been important elements of this cultural mosaic of cotton farmers in the basin. Chronicling the dynamic relations among these groups benefits from the contributions of anthropological theory and practice. Results of archaeological investigations in and around the basin are used to clarify and verify the available ethnographic record. Consequently, calls have been made for greater cooperation between anthropologists, including archaeologists, and environmental historians (Simmons 1993).
Environmental history and its disciplinary cousin, social history, are sometimes grouped among 'alternative' histories. The distinction is made between them and traditional 'history', which envelops political and military history. The two sub-disciplines share some important characteristics: concern with previously inconspicuous subjects, empirical examination of unconventional sources, and engaged sympathy for the less powerful and most exploited (Taylor 1996). Utilization of unconventional resources offers a range of possibilities for examining the lives of people who lived outside the realm of American public life. Central Mississippi’s early farmers fall into this category; the sources used by environmental and social historians are useful for reconstructing their relations with the land. These sources include census returns, scientific surveys, survey notes, agricultural census returns, and field ecology studies (Taylor 1996).

Traveler's accounts of nature and culture form a vital source of qualitative information, and they provide some of the most vivid descriptions of the Upper Pearl River Basin. They are valuable first-hand descriptions that are frequently overlooked by geographers and historians alike. First-hand regional descriptions, especially travel accounts, are important sources of qualitative environmental data. They serve as valuable counterparts to
other data presented, which are often derived from
quantitative sources such as the agricultural census.
Travel accounts provide historical geographers with the
perspective of 'surrogate observers' and convey the
perspectives of individual's qualitative observations. The
most valuable travel accounts are the publications and
letters of scholarly observers, as exemplified by Charles
Lyell, Frederick Olmstead, and William Bartram. The
accounts of less known observers are often more
extemporaneous, but they can reveal important regional
particularities that are not available elsewhere. In this
study, careful utilization of travel accounts recorded
between 1750 and 1940 helps to illuminate changes in the
landscape and people of the Upper Basin. Moreover, the
travel accounts presented here will be the first such
assemblage of observations of the upper Pearl River Basin
and its environs.

The connection between farmers and the land is one of
the most direct means of cultural landscape modification.
Accordingly, a major component of this research is the
documentation of change in the cultural ecology of
agriculture in the Pearl River Basin. The regional
political ecological component concentrates on extra-
regional influences in the basin's ecology. The cultural
ecological component concentrates on the physical
connections between land managers and the physical earth in
the basin. Using available sources, this study chronicles the shifting dynamics of production and settlement. Some of the best sources for this information were the numerous agricultural publications produced throughout the study period. These accounts range in perspective from the writings of educated farmers of Mississippi and the Southeast to newspapers of the Upper Pearl River Basin to publications by Federal agencies engaged in disseminating agricultural information. Amassing this information is essential to portraying the practice of agriculture in the regions, and to making critical assessments of the degree of environmental adaptation that each mode of production presented.

Priority rests on correlating change in the physical environment with human agency. Close attention to the physical earth is one of the basic strengths that geographers can contribute to the improvement of environmental history. Establishing these connections requires strong interpretations of the physical environment in all phases of research.

Two principal avenues of inquiry document change in the physical environment. First, changes in the upper Pearl River itself are detailed through 1940. Changes to the landscape of the basin are also documented; the cultural landscape is the basic text for this element. The watershed and landscape studies use primary sources that
include US Army Corps of Engineers reports, earth science reports, navigation records, travelers' accounts, historical maps, scientific descriptions, and agricultural censuses.

An important methodological underpinning of this study is its integration of quantitative and non-quantitative sources to construct a chronicle of change in the Pearl River Basin. Agricultural records of the US Census are a primary source of quantitative data for the region. These are utilized to construct graphs of changes in agricultural production, agricultural yields, acreage by land use, and more. These records form a vital base of information which is augmented by the integration of non-quantitative data.

As recently as World War II, the Upper Pearl River Basin encompassed a large expanse of cotton acreage, often cultivated on uplands of high erosive potential. The bottomlands were also important components in the human landscape of the Upper Pearl River Basin. The lower Pearl Basin, while also a historically significant cotton-producing region, was settled earlier than the Upper Basin, and it developed somewhat independently from its upstream counterpart. After the Civil War, cattle and logging were the most important land uses in the lower basin. By 1920, cotton was no longer a major crop in the Lower Basin, while cotton and its associated acreage were still expanding elements of life, land, and commerce in the Upper Basin.
A substantial portion of the Upper Pearl River Basin was devoted to cotton production between 1840 and 1940. However, the region never attained the industrial-scale productivity of the 'Mississippi Delta', or more precisely, the bottomland of the Yazoo River, where postbellum largeholdings developed after the Civil War. While the Upper Pearl River Basin was not a region where large-scale plantation-based agriculture predominated, it was profoundly affected by the Civil War.

The process of emancipation unleashed forces that transformed the economy of the white upcountry, drawing that previously self-sufficient region into the cotton kingdom, and stimulating the rise of a new class of small-town merchants. Post-emancipation southern politics were shaped by conflicts, involving white yeomen, merchants, and an emerging industrial bourgeoisie; certainly it must be understood as more than a story of the blacks and their masters (Foner 1983:4).

While Foner's statement alludes to developments that did not directly transpire in the Upper Pearl River Basin, the account is indicative of radical changes that affected every corner of the postbellum South. While not a 'jewel' of the cotton kingdom in the same sense as the plantation-dominated Alabama Black Belt, the Upper Pearl River Basin offers opportunities to study landscape and social development in a region of the South where distinctive social and environmental interactions occurred.
Preview of the Dissertation

This dissertation conforms to the structure of many works in historical geography, wherein the chapters are chronologically sequenced. Chapter Two is an introductory portrait of the Upper Pearl River Basin, presenting essential information about its location and physical environment. The remaining six chapters encompass important intervals in the environmental historical geography of the Upper Pearl River Basin. Chapter Three surveys early human protohistoric and historic developments up to the 1840's in the region, with emphasis on Choctaw landscape development. Chapter Four covers the critical antebellum period between the 1840's and 1865, during which the region was settled by a wave of Euro-American settlement. Changes wrought in the immediate aftermath of the Civil War, the Reconstruction period of 1865 to 1880, are the subject of Chapter Five. Chapter Six surveys the years 1880 to 1910, a particularly tempestuous interval in the Upper Pearl River Basin. Chapter Seven surveys the period of 1910 to 1930, when cotton production overcame early obstacles and rebounded. The decade of the 1930's is the subject of the penultimate Chapter Eight, when the governmental involvement in agriculture, and cotton production, reached a concurrent zenith. Chapter Nine includes a summary and conclusion of the study, which concludes in 1940.
CHAPTER 2
REGIONAL GEOECOLOGY OF THE UPPER PEARL RIVER BASIN

Introduction

The landscape of the Upper Pearl River Basin changed profoundly over centuries of human occupation. Nonetheless, certain elements—its relative location, size, geomorphology, climate, and the Pearl River itself—endured over the human time span addressed in this study. A regional interpretation of the geoecology of the Upper Pearl River Basin helps to provide context for examining its environmental historical geography in the following chapters.

To eighteenth-century explorers, traders, adventurers, and naturalists, the minimally charted landscape of the Gulf Coastal Plain was an enticing expanse to explore and describe. As they fanned southwest across the plain, these travelers encountered topography graced by forests, fields, and rivers akin to those of the mid-Atlantic Coastal Plain. However, the land appeared much as it had a century earlier in Virginia, the Carolinas, and Maryland. Because Euro-Americans had not already settled them, the forests and grasslands of the Gulf Coastal Plain foretold great promise for the expansion of pioneer settlement and
agriculture. Much of this promise was apparent in the physical properties of the Upper Pearl River Basin, a small but important constituent of the Gulf Coastal Plain.

A remarkable aspect of the pre-Europeanized Gulf Coastal Plain was the abundance and exoticism of its natural resources. The pine trees grew so tall, and the hardwood trees so broadly, and the deer were so numerous, that they inspired wonder, especially in the minds of northeastern urbanites and Europeans. William Bartram, a prominent naturalist and Philadelphia gentleman, was a romantic and scholarly observer of the Southeastern region that abuts the Upper Pearl River Basin. Bartram traveled through the Southeastern coastal plains during the late eighteenth century and published his observations in 1791 (Van Doren 1955). Among the diversity of landscapes he effusively detailed were the forested hills of Choctaw territory in western Alabama. The forests and fields he described were allied in characteristics with the Upper Pearl River Basin, which lay only 100 miles to the west. In the following passage, Bartram expresses admiration for the grandeur of Gulf Coastal Plain forests that had, to date, avoided the ax:
Our road now for several miles led us near the Alabama [River], within two or three miles of its banks. The surface of the land is broken into hills and vales, some of them of considerable elevations, covered with forests of stately trees, such as already mentioned, but they are of a much larger growth than those of the same kind which grow in the Southern or inhabited parts of Georgia and Carolina (Van Doren 1955:321)

Throughout his narrative Bartram maintains an acute sense of the interactions among the minerals, climate, plants, animals, and humans that defined the exotic South that he encountered. Moreover, Bartram exhibited an integrative vision of landscapes that presaged the unifying concept of ‘regional geoecology’ and applied it to the Southern region that includes the Upper Pearl River Basin.

**Regional Geoecology**

Environmental scholars seldom employ the term geoecology in contemporary environmental parlance, but it merits wider usage. Geoecology encapsulates the ecologic and geologic processes that collectively define cultural and natural landscapes. The word is a union of geology and geography with ecology. It was first conceived by the German geomorphologist Carl Troll (Troll 1968), who wished to convey the dynamism inherent in mountain environments, but for which he lacked a requisite nomenclature and heuristic structure. Troll was best known for studying the world’s high mountain regions in a
geoecological framework. However, geoecology provides equally appropriate framework for interpreting the elements that comprise the entire world's landscapes.

Geoecology provides a more apt term for a regional interpretation than its more traditional cognate, physiography. It is less archaic as well. Physiography suffers from guilt by association with the traditional regional geography of the 1950's—a branch of geography that revisionists largely cast aside in the nomothetic revolution of the 1960's.

Although the physiographical sections of traditional regional and historical geographies contained vital regional information, they often merely described the attributes of landscapes, without linking factors such as climate and soils, or precipitation and erosion. It was also common, though not universal, for physiographic interpretations to omit consideration of human impact on the land. The intent of the omission was clear and laudable—to provide a basic physical introduction before elucidating a geographical problem. However, too often the result was a section that presented the environment as a static backdrop for subsequent human activity. Adoption of regional geoecology as a thematic stance allows historical geographers to integrate more
seamlessly the physical and biological elements that shape regional characteristics, and to provide details that help portray the interdependency of the physical environment.

**Geoecologic Zones of the Upper Pearl River Basin**

As prefaced above, the Upper Pearl River Basin lies within the realm of the Gulf Coastal Plain of North America. The plain occupies a 250-mile-wide band extending parallel to the Gulf Coast of southeastern North America from western Georgia to eastern Texas.

Readily observable macro-scale features define the appearance of the interior Gulf Coastal Plain. A series of lowlands and cuestas comprises the generalized topography. The uplands have maximum altitudes below 700 feet. Important meandering rivers in valleys of alluvial material, with attendant bottomlands, extend deep into the interior coastal plain. An abundance of upland pine forests and a sub-tropical moist climatic regime are other interrelated macro-factors that help to define the regional character. These broadly defined features are among the principal geoecologic elements that figure in the landscape chronicle of The Upper Pearl River Basin.

The Upper Pearl River Basin is sub-divisible into three east-west oriented geoecologic zones. These zones
Map 1. Geoecologic Regions of Mississippi

Cartography Source: (Cross, 1974) FWS

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encompass contrasting vegetative and terrain parameters, providing both linkages and contrasts to the general characteristics of the Gulf Coastal Plain. From north-to-south, the three divisions are the North Central Hills, the Jackson Prairie, and the Southern Pine Hills. The Pearl River unifies each of them, as it courses North-South through each zone, ultimately reaching its swampy deltaic union with the Gulf of Mexico.

The North Central Hills

The North Central Hills, where the headwaters of the Pearl River originate, is a composite of uplands and bottomlands, interleaved features formed principally by fluvial downcutting and meandering. The result is an accidented landscape formed from an antecedent relict peneplain. Some hills, artifacts of the peneplain surface, rise 200 feet and more above the streambeds, lending a rugged character to the division.

The principal Pearl River Basin headwaters, located in this zone, influence the topographic identity of the zone considerably, giving it a more rugged character than elsewhere in the Upper Pearl River Basin. These finger-shaped channels include the Yockanookany River, Lobutcha Creek, Tallahaga Creek, and Nanawaya Creek. Each of them terminates in a confluence with the Pearl River. These
headwater streams have generally steeper slopes and considerably narrower bottomlands than the middle Pearl River and its mid-basin tributaries.

Loblolly pine forests with an admixture of shortleaf pine and hardwoods are the primary forest cover of the uplands of the Upper Pearl River Basin. Nineteenth-century settlers recognized the economic value of the pine forest species in the region soon after their arrival, and they cut much of it for timber and field clearing over the ensuing two hundred years. The general trend in the post-contact period, and following subsequent significant land-clearing episodes, was the expansion of hardwood species among the loblolly pines. The hardwood trees continue to maintain a significant presence in the uplands of the upper basin (Ignatov 2000).

The moister bottomland soils of the North Central Hills region are the habitat of a wealth of mesophytic tree species characteristic to the Gulf Coastal Plain. Hardwood species are the predominant forest cover along the watercourses and associated ravines. This association is called the Southern Mixed Mesophytic Forest. Prominent trees of this association include sweetgum, water oak, cherrybark oak, willow oak, chestnut.
oak, white ash, and pecan. Magnolia is also present but occurs naturally with less frequency in the northern reaches of the North Central Hills. The decreased frequency of magnolia in the northern basin is partly due to the slightly shorter frost-free seasons that prevail away from the Gulf of Mexico’s moderating influence. The narrow floodplains of the Upper Pearl River Basin are different from their counterparts in the lower Mississippi River Valley. In the Pearl watershed, floods are episodic, mostly rain-related, and not strongly seasonal. Consequently, they are rather short in duration and extent. As a result, many mesic, upland hardwood species are able to survive in these forests along with more traditional bottomland species (Ignatov 2000).

The Jackson Prairie

Moving southward from the North Central Hills, the next important geoecologic zone of the Pearl River basin is the Jackson Prairie region. This zone affords a break between the principally forested zones of the upper and lower basin.

The Jackson Prairie is a narrow belt of undulating topography, interspersed with prominent patches of open land that partly account for its prairie designation.
The zone differs from the somewhat starker topographical contrasts of the hill country zones to its north and south. The undulating terrain results in part from smooth weathering of the underlying calcareous soils that are common to the zone. These include the limestone-rich marls and clays of the Vicksburg and Jackson soil groups.

The underlying soils governed the development of two major soil types found in the zone. Dark calcareous soils derive mainly from limestone and marl parent material. Other lighter-hued soils of the Jackson Prairie region generally have high clay content. Both soil groups have exceptional natural fertility. The dark calcareous soils are particularly noted for their fertility and ability to support good crops and pasture (Kelley 1973:9), in addition to the grass cover that nineteenth-century pioneer settlers encountered. Because of the high clay content, these soils are subject to relatively fast drying. Upon drying, these soils easily crack, as in arid regions.

Even a short rainless spell is enough to cause a minor drought (Ignatov 2000; Rostlund 1957). The dry ground encourages fire, which has helped to inhibit tree growth in the region, especially when the fires were not strictly controlled by human influences. Most of the
droughty conditions of the Jackson Prairie derive from the soil conditions; the mean annual precipitation of the southeastern black soil prairie regions does not differ significantly from the humid subtropic climatic regime of the Gulf Coastal Plain.

Unlike the midwestern prairies, the Jackson Prairie is a small belt of patchy open lands, with closer similarities to the Black Belt prairie regions of neighboring Alabama and northeastern Mississippi. These regions are not monolithic grasslands. Instead, they are expanses with significant patches of open land interspersed by forest. Adam Hodgson, a traveler who rode from Natchez, Mississippi, to Choctaw country in the Upper Pearl River Basin, provides one of the only primary accounts of the Jackson Prairie region before it was settled by cotton farmers. Hodgson found that the forest there was "delightful, open and interspersed with occasional small prairies, and had the appearance of an English park" (Hodgson 1823:273). First-hand accounts like Hodgson's consistently relay that much of the land cover of the interior Gulf Coastal Plain was open and parklike.

Sources on Mississippi geology and botany are incomplete in regard to the landscape evolution of the
black soil grasslands, and traditional theories on the zone are undergoing revision. There are numerous indications that, like the Alabama Black Belt, the Jackson Prairie zone formed through a convergence of geologic and anthropic factors common to the open lands of Gulf Coastal Plain. Erhard Rostlund, a historical geographer of the 1950's, wrote a survey that addresses the evolution of prairie environments in the Black Belt of Alabama and in neighboring territories (Rostlund 1957). His main point was that many vegetation maps incorrectly group the Southern Black Belt Prairies with the midwestern prairies. Instead, he argues via historiographic evidence, the Southern Black Belt grasslands emerged in response to conditions specific to the Gulf and Atlantic coastal plains. These conditions included recent anthropic disturbance, such as burning and shifting cultivation and field abandonment, combined with the prevalence of underlying calcareous soils. He shores his argument by noting that these lands evaded classification as distinctive 'prairie' regions by biogeographers and ecologists until the early twentieth century, when anthropic disturbances had thoroughly altered the look of the land from its pre-contact form.
The freshest view on the climax vegetation of the region is that the Jackson Prairie is indeed a true prairie (Deselm and Murdock 1993). The realization rests on a new interpretation of the importance of the calcareous clay soil composition of the region. The thick clay blanket acts as a shield that inhibits tree seedlings from taking root in the deeper and moister soil layers. Periodic fires that sweep across the landscape kill seeds that manage to germinate. Even those trees that survived in the prairie belt were unable to colonize it (Ignatov 2000). Now in many areas the forest is expanding because fires are suppressed, as is grazing. When the prairie grasses were pervasive across the belt, grazing was an important factor in maintaining it. Ant populations also helped to maintain the Jackson Prairie. Ants are known to remove and utilize tree seeds in grassland areas, particularly in the subtropics and tropics. Because of their predilection for clay as a nest building material, it is in clayish grassland areas where the density of ant populations is (and was) the highest - even before the migration of fire ants from Brazil (Ignatov 2000).
The Southern Pine Hills

To the south of the Jackson Prairie, occupying the southernmost geoecologic subdivision of the Upper Pearl River Basin, is the Southern Pine Hills zone. The region extends southward from the Jackson Prairie zone to within twenty miles of the Gulf of Mexico coastline (Kelley 1973). It is a zone of sloping uplands, but with less sharply defined relief than the North Central Hills. Nonetheless, the elevation contrasts between ridge tops and stream bottoms frequently approach 100 feet. The bottomland of the middle Pearl River channel is considerably wider in this zone, so that it forms a prominent flood plain that contrasts with the narrower floodplains in the North Central Hills. The contrast between upland, bottomland, and intervening terraces accounts for a considerable variety of soils and terrain.

The variety present within this region departs from the uniformity suggested by its Piney Woods moniker, which implies greater vegetation uniformity than one actually observes. These contrasts are largely the result of fluvial action, which produces the contrasting terrain characteristics of well-drained ridge tops and poorly drained bottomlands. In the northern hills of the sub-region, gravelly Citronelle deposits (Upland Complex)
cap the hilltops and cuestas. These deposits weather into vibrant red sandy clay soils, which frequently contain an important calcareous component. On the hillsides, the topsoils are primarily well-drained sandy clays of varying fertility. The bottomlands and other poorly drained moist down-slope areas often have clay soils of a yellowish tint.

The forest cover of the Southern Pine hills is close in composition to the North Central Hills, with a few variances. The differences derive mainly from the slightly greater moderating influence of the Gulf of Mexico, compared to the incrementally more continental climate of the Jackson Prairie and North Central Hills zones. Magnolia appears in moist soil environments with greater frequency than in the northern Pearl River Basin. Longleaf pine appears more frequently in uplands of the Southern Pine Hills than is the case in the northern extent of the basin. Fire is also critical to maintaining the pine forest, whether by natural or anthropic means. The indigenous peoples of the Pearl River basin, the Choctaw, maintained the longleaf pine by seasonal burning. Hilgard, the first Mississippi State Geologist, commented on this important practice:

The herbaceous vegetation and undergrowth of the Longleaf Pine Region is hardly less
characteristic than the timber. Whenever the regular burning of the woods, such as practiced by the Indians, has not been superseded by the irregular and wasteful practice of the settlers, the pine forest is almost destitute of shrubby undergrowth, and during the growing season appears like a park, whose long grass is often very beautifully interspersed with brilliantly tinted flowers (Hilgard in McDaniel, 1986:4).

The southern part of the region represents a transition from loblolly pine to longleaf pine forest, so both species are intermixed, although loblolly prevails in the region at present (Ignatov 2000).

**Origins of the Upper Pearl River Basin**

While one may trace the natural history of the Upper Pearl River Basin back to its Tertiary beginnings, most of its observable terrain attained its form during the Quaternary. The origins of the surficial geology of the Pearl River Basin extend at least back to the early Pleistocene (1.9 million years BP) and evolved further in the still-extant late Holocene epoch. During this interval, the parent material underlying the upper basin's landscape was deposited, then fluvial down-cutting initiated. Through this process, the landscape gradually assumed the form that the Choctaw and subsequent inhabitants modified into continually evolving cultural landscape.
Quaternary Legacy

The fundamental geomorphic process of the Quaternary in the Upper Pearl River Basin was sedimentary deposition. This process provided surficial material that subsequently changed and redistributed to form the surface of the Upper Pearl River Basin. Strata that presently underly the Pearl River basin were initially deposited during this period. Fluvial networks deposited the principal underlying stratum, the Citronelle formation, during this period. Earth scientists generally assert that the Citronelle deposition across the study region and much of the Gulf Coastal Plain of Mississippi, Alabama, and Louisiana, started in the Late Pliocene (5 to 2 million years BP), but others assert that the depositional process started much later, during the Early Pleistocene [Dunbar, 1988 #88]. This debate will persist, for datable fossils in the formation are rare. However, it is widely accepted that the Citronelle formation was deposited before subsequent processes further defined the surficial character of the basin (Dunbar 1988). The primary parent material of the Citronelle formation is weathered Mesozoic and Paleozoic rocks from the Tennessee River area, Missouri, Arkansas, and ancestral Mississippi River drainage. A braided
stream network (i.e. of infinitely dividing streamlets that deposit coarse material in a nearly uniform pattern) deposited the formation across much of the interior Gulf Coastal Plain, allowing expansive dissemination of the material.

Citronelle, the lithic foundation of the Upper Pearl River Basin, is a stratum composed principally of coarse-grained sand and gravel, with a significant clay component (Moore 1969). This amalgam is notable for its dark red-to-rust color, readily observable on roadside embankments of east-central Mississippi. Abundant pea-sized gravel intersperses the sand. In the upper basin today, the most readily observable outcroppings of Citronelle formation are the interfluves, ridge tops that divide drainage divisions. Slight variations in the color and composition of these deposits are denoted by a number of regional names within the upper basin: Lafayette, Grover, Mounds Gravels, and Orange Sands, among others. Moore, a former Mississippi State geologist, suggests a restrictive classification for Citronelle which excludes terrace deposits, colluvium, and residuum commonly termed 'Citronelle' (Moore 1969). To correspond with the high visibility of this amalgam on ridge tops and in uplands generally, one geologist
suggests substituting the term ‘Upland Complex’ for Citronelle (Dunbar 1988).

**Pleistocene Changes**

The late Pleistocene was an interval of revolutionary change in the surficial geology of the Upper Pearl River Basin. Beginning two to three million years ago, the dominant geomorphic process in the region shifted from a depositional to an erosional regime. The exposed depositional plain underwent down-cutting by fluvial action, initiating the resultant hilly terrain—a network of meandering fluvial channels and interfluvial ridges. The Pearl River initiated its course through east-central Mississippi at this time, when it and its tributaries incised the Tertiary sediments. This process of down-cutting persisted. The Pearl River left a series of terraces as it cut further into the plain. By 25,000 BP the flood plain of the Pearl River incised to just above the current Pleistocene terrace level. By the late Pleistocene, about 11,0000 years ago, the Pearl had incised further to the approximate level of its present floodplain (Dunbar 1988).

**Holocene Changes**

From 10,000 years ago to the end of the study period in 1940, the Holocene wrought further changes to the
Upper Pearl River Basin. The Holocene (11,000 years BP to the present time) has been a time of relative stability in the Pearl River, in contrast with the massive climatic and geomorphic extremes of the Pleistocene. Nonetheless, the Holocene brought important incremental changes in the land, which defined its appearance markedly over the millennia.

In the late Holocene, up to the construction of dams in the 1960's, an important process shaping the Pearl River basin was the continued lateral and vertical fluvial migration of the Pearl River and its tributaries. There was important valley planation by lateral migration of the Pearl channel and its tributaries (Dunbar 1988). This process helped to define the planar bottomlands became critical elements of the cultural landscape of the middle part of the basin.

Since the river inclined toward sinuosity, there was a related pattern of lateral accretion on active point bars during the Holocene. Vertical accretion also occurred on point bar surfaces, forming bottomland surfaces from the sandy and silty deposition. In the bottomlands, pedogenesis, the development of soils by mixing organic matter and underlying mineral parent material, was active, especially on point bars overlain

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by swamp environments (Dunbar 1988). On the terraces, which were relicts of Pleistocene downcutting, pedogenesis also occurred. Bioturbation encouraged pedogenesis by mixing upper and lower soil horizons to create more complex soil profiles. Sheet wash erosion from precipitation, with related rill and gully formation, became important long before widespread settlement in the region. The effect of this was to supply sediment to the Pearl River for redistribution downstream. Rill and gully formation were also instrumental in dissecting the uplands into more complex terrain.

Important climatic changes influenced basin development during the early Holocene. The cooler conditions that prevailed during the late Pleistocene started to ameliorate as the continental glaciers retreated northward to polar latitudes. While these glaciers never extended as far south as the Upper Pearl River Basin, they did cover the northern half of North America and profoundly influenced the entire continental climate. During the early Holocene, as the late Pleistocene continental glaciation disappeared, conditions in the upper Pearl River basin became warmer, and precipitation increased. The milder, wetter climate
brought important changes in vegetation and fluvial action, as they did across the American South (Dunbar 1988). This change became partly evident 6500 to 5500 BP, when there was a regional transition from oak to pine dominance in upland forests (Dunbar 1988). This shift was emblematic of complex changes in the regional vegetation cover, which resulted partly from the transition from a cool dry climate to a moist subtropical one (Vankat 1979). Seral pine forests also depended on the recurrent presence of fire, by anthropic means or lightning strikes, to maintain dominance over deciduous species (Vankat 1979:153). The culmination of these combined changes is the considerable biodiversity evident in the vegetative cover of the Upper Pearl River Basin.

**Characteristics of the Upper Pearl River Basin**

The preceding overview of the Quaternary evolution of the region of the Upper Pearl River Basin helps to preface the consideration of human impacts on the land in the following chapters. Basic details about the region's characteristics and political organization also provide an important framework for consideration in each of the following chapters.

**Basin Area, Slope and Relief**

Over the past four hundred years, the Pearl River has coursed through a representative yet distinctive
cultural landscape of the Deep South. The Pearl River serves as a principal natural artery for this region of central and south-central Mississippi. Its entire basin occupies 18 percent of the state's land area: 9,130 square miles. The area of the basin upstream of Jackson, the capital city on the Pearl River, is 3,100 square miles. Total length of the river channel is 485 miles, draining a narrow basin with a maximum width of fifty miles and a maximum length of 240 miles. Along most intervals, the basin is approximately 25 miles wide. The upper Pearl River's principal tributary streams are the Lobutcha (55 miles long, 328 square miles), Tuscolameta Creek (38 miles long, 573 square miles), and the Yockanookany River (71 miles long and 495 square miles). The main channel of the Pearl extends northeast to its headwaters in Neshoba County.

Measurements of channel slope in the Pearl River Basin help to underscore subregional characteristics of the region. From its extreme headwaters in the North Central Hills to the Gulf of Mexico, the channel height drops a total of 400 feet. The overall slope of the Pearl River is gradual, with an average drop of 1.0 feet per mile. but the upper half of the river basin is steeper, at 1.2 feet of drop per mile. The headwater tributaries are considerably steeper, up to 7 feet per
mile in certain segments, but with an average slope of 2.5 feet per mile.

Altitude characteristics further underscore subregional contrasts. Elevations of the Pearl River basin range from a maximum of 500 feet on some of the headwater interfluval ridge tops down to an average elevation of 250 feet in Jackson. The river basin descends further to a minimum elevation of absolute sea level at the river’s deltaic outlet into the Gulf of Mexico.

**Climate Characteristics**

The present climate of the Pearl Basin is a humid subtropical regime, with strong seasonal contrasts. Summers are long, hot, and humid; winters are short and mild. The average seasonal temperatures are 82 degrees Fahrenheit in the summer and 50 degrees Fahrenheit in winter. The average annual precipitation is 52-57 inches. Precipitation is evenly distributed throughout the year, but floods occur most frequently in the winter and spring, in response to strong frontal storms.

**Political and Natural Boundaries**

Although the environmental historical geography of this study focuses on a region defined by terrain and hydrographic characteristics, a few macro-scale human geographic factors also figure in the selection of the Upper Pearl River Basin as a study region. While many of
these details will be introduced in the following chronological chapters, an overview of the upper basin's political organization provides a structure for considering the changes within its borders.

Between 1830 and 1940, the Upper Pearl River Basin encompassed a large expanse of cotton acreage, much of it cultivated on uplands of high erosive potential. The bottomlands were also important components in the human landscape, because of their importance to agriculture and settlement. The lower basin, while also a historically significant cotton region, attracted Euro-American settlement earlier than the upper basin and developed somewhat independently from its upstream counterpart. After the Civil War, cattle and logging became the most important land uses in the lower basin. By 1920, cotton was no longer a major crop in the lower basin, while cotton and its associated acreage were still expanding elements of life, land, and commerce in the upper basin.

Cotton culture between 1830 and 1940 occupied a substantial portion of the Upper Pearl River Basin. However, the region never attained the industrial-scale productivity of the "Mississippi Delta," or more precisely, the bottomland of the Yazoo River, where postbellum largeholdings developed after the Civil War. While the upper Pearl River Basin was not a region where
large-scale plantation-based agriculture predominated, it was profoundly affected by the Civil War.

The process of emancipation unleashed forces that transformed the economy of the white upcountry, drawing that previously self-sufficient region into the cotton kingdom, and stimulating the rise of a new class of small-town merchants. Post-emancipation southern politics were shaped by conflicts, involving white yeomen, merchants, and an emerging industrial bourgeoisie; certainly it must be understood as more than a story of the blacks and their masters (Foner 1983:4).

While the controversial notion of self-sufficiency, as advanced by Foner, is not universally accepted among historians, the passage correctly alludes to the socio-cultural complexity of cotton farming across the South. In this regard, the Upper Pearl River Basin was never a 'jewel' of the cotton kingdom in the same sense as the plantation-dominated Alabama blackbelt Mississippi's Natchez District. Instead, it was a region where a diverse socioeconomic and racial mix of cotton farmers settled and farmed. The Upper Pearl River Basin study region presents an opportunity to study landscape and cultural change in a region of the South where regionally distinctive social and environmental interactions transpired in the larger context of the American South.
Political Geography of the Upper Pearl River Basin

Some additional considerations of the human organization of the region are also important, particularly as they relate to its political geography. The Upper Pearl River Basin's constituent counties do not neatly conform to the boundaries of the Pearl River watershed. Consequently, the counties of Mississippi that most closely conform to the boundaries of the watershed itself are included as units of analysis in this study. This criterion of selection is particularly critical in the utilization of census data, which the US Census reports at the county level. The addition and redefinition of counties in the region between 1840 and 1880 complicates the situation somewhat. However, by 1880 the county outlines of the upper basin were effectively defined and remained the same through the remainder of the study period. The selected political sub-regions are Attalla, Choctaw, Neshoba, Winston, Leake, Madison, Newton, Hinds, Rankin, Scott, Copiah, and Simpson counties.

Regional Subdivisions

To facilitate a convenient means of intra-regional comparison and contrast, this study groups the constituent counties of the Upper Pearl River Basin into
four divisions. While the natural and cultural landscapes of each county exhibit variation, counties are grouped to reflect important physical and human distinctions within the Upper Pearl River Basin.

The first division, counties of the Pearl River headwaters, is termed Headwater Counties. These are Attala, Choctaw, Neshoba, and Winston counties. These counties encompass the upper headwaters of the Pearl River and vegetation characteristics of the North Central Hills.

The next division, in the Central Hills terrain but down-river of the headwaters, encompasses three counties termed Central Hill Counties. These counties are Leake, Madison, and Newton counties.

Because much of their surface is overlain by soils of the black prairie, Hinds, Rankin and Scott counties are classified as Prairie Counties. These counties occupy a large swath across the central Pearl River Basin.

The only included counties of the longleaf-loblolly piney woods landscape are Copiah and Simpson counties. They are included because of their proximity to the rest of the basin, and because they provide revealing contrasts to other land types founds within the basin.
Map 3. Historic Place Names of Mississippi

Cartography Source: (Cross, 1974)

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All these counties, grouped together, comprise the Upper Pearl River Basin study region. They provide a reasonably consistent means of addressing change in the upper basin, after the critical period when the Choctaw Indians were the primary actors in modifying the landscape in the protohistoric and early historic period.
CHAPTER 3
CHOCTAW PERSISTENCE AND LANDSCAPE MODIFICATION UP TO THE TERRITORIAL PERIOD (PRE-1830S)

Introduction

Recent research on human-environmental relations by historical scholars demonstrates that North American landscapes were rarely 'pristine' when first encountered by Europeans (Denevan 1992; Detwyler 1971; Worster 1990). Their findings suggest that numerous purportedly undisturbed natural landscapes of the Americas had been dynamic and productive cultural landscapes. Indigenous cultures shaped the landscapes to suit their productive and social requirements. These cultures were not static in the long prehistoric past, before they established contact with European explorers in the seventeenth century. Rather, the populations adapted to shifting ecological and demographic conditions, and these activities often resulted in profound landscape transformations. This generalization holds true for interior Southeastern landscapes. These landscapes included the region of Mississippi occupied by the protohistoric and historic Choctaw nation. The Choctaw were critical agents in the landscape development of the Upper Pearl River Basin. They were the first culture to farm, hunt, and settle the landscape in a concerted manner. When Anglo-American settlers migrated to east-central Mississippi in the nineteenth century, they became sequent
Map 4. The Choctaw Core Homeland

This was the Territorial Core of the Choctaw People

Base map from: (Cross, 1974); locations/delineation from: (White, 1983) FWS

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occupants of a landscape inscribed by centuries of Choctaw
inheritance (Kelley and Spillman 1976).

The protohistoric pre-Choctaw tribes, participants in
post-Mississippian culture, practiced distinctive patterns
of subsistence and social organization (Galloway 1994).
Culture changes resulting from interactions with Spanish
explorers, French and English traders, missionaries, and
white settlers resulted in gradual but profound changes in
their relationship with the land. The Choctaw resisted
European territorial and cultural domination but
selectively adopted introduced cultural elements over a
290-year time span (1540–1830) (Galloway 1994). This
protracted adaptation contrasted with the catastrophic
post-contact experiences of coastal Southeastern Indians,
including, for instance, the Apalachee and Yamassee (Hudson
1976; Martin 1995). European pathogens, technology,
ideology, and economy rapidly overwhelmed the latter
cultures (Galloway 1994).

Despite the recognition of a specifically "Choctaw"
pottery type early in the twentieth century (Collins 1927),
the Choctaw archaeological record remains incomplete. Most
archaeological investigations in the Choctaw homeland of
Mississippi's Upper Pearl River watershed have been limited
to surface collections and a few small-scale excavations.
(Galloway 1994; Haag 1953; Penman 1978). Until recently,
few major archaeological projects were completed in the
Choctaw homeland. The region remains predominantly rural and heavily forested, so there has been little legal imperative to conduct cultural resources surveys there (Blitz 1985). Much academic research in the Mississippian culture area has focused on spectacular mounds and other significant earthworks, elements lacking from most Choctaw sites with the exception of the important ceremonial site Nanih Wayih. Despite this paucity, archaeologists have made significant contributions to knowledge of Choctaw tribal development.

An ethnohistorical record, based on accounts of European travelers, military officers and traders, complements the archaeological record. A selective integration of the relevant ethnohistory and archaeology provides a chronicle of landscape change in Choctaw territory between the sixteenth and nineteenth centuries. Tracing Choctaw landscape development constitutes a critical step toward understanding the important changes that took place after 1830, when the Choctaw nation ceased to be the dominant cultural influence in the upper Pearl River Basin.

Scholars who have developed periodizations of the protohistoric through historic periods of Choctaw cultural development all divide early Choctaw history into three key stages: before direct and sustained contact, during colonial contact, and after prolonged contact (Cushman
1962; Debo 1961; McKee and Schlenken 1980; Reeves 1985; Searcy 1985). The first three of McKee and Schlenken's (McKee and Schlenken 1980) five intervals of Choctaw cultural history provide an effective periodization for the three hundred-years of culture change between 1530-1830:

1. The Protohistoric Period (1540-1698)
2. The Colonial Contact Period (1699-1785)
3. United States Government Treaties (1786-1830)

Their periodization also encompasses two later intervals, the post-removal period and the twentieth century, but these lie outside the scope of this study with its regional focus on east-central Mississippi. Although it does not explicitly acknowledge the multiple influences at play in each period, McKee and Schlenken's periodization serves as a useful heuristic device. The dates effectively demarcate major breaks in Choctaw cultural history and associated landscape change. For example, the U.S. Government Treaties period does not refer to the missionaries who were concurrently active among the Choctaw, but the title correctly denotes the atmosphere of heightened interaction between Anglo-Americans and Choctaws during that period. Thus McKee and Schlenken's periods are used to provide a structure for the following interpretation of Choctaw culture change in the Upper Pearl River Basin. However the term "aboriginal" is replaced with the "protohistoric" in the first period for clarity.
This chronicle begins with life in the Pearl River basin in the sixteenth century. It ends at a major break defined by the year 1830, when a majority of the Choctaw retreated to Oklahoma via the infamous ‘Trail of Tears’ (Wells and Tubby 1986). A smaller number of Choctaw relocated to Louisiana at that time, but a significant minority stayed in their homeland, where they have maintained a continuous presence in Mississippi (Wells and Tubby 1986). While the post-removal period is well documented, the pre-removal Choctaw experience in Mississippi has only recently come into sharper focus.

The Protohistoric Period

The Protohistoric Period encompasses the years in which the Choctaw culture was distilled from the coalescence of a number of discrete pre- and protohistoric cultures, until the time of their first sustained encounters with Euro-Americans in 1698. Synthesizing archaeological and ethnohistoric evidence permits partial reconstruction of proto-Choctaw lifeways and landscapes before and after their earliest encounters with European explorers in the sixteenth century. These sources support a consensus that the simple chiefdoms that emerged in the area after the Mississippian decline – the proto-Choctaw – were remarkable in their ability to develop and sustain a complex culture. This is especially true in light of their decision to occupy regions of the interior Southeastern
coastal plain which had not been inhabited intensively by previous cultures. They accomplished this with a decentralized settlement pattern and a diversified subsistence base of hunting, gathering, fishing, and agriculture (Blitz 1985). This pattern enabled the historic Choctaw to achieve a remarkable level of cultural complexity within the limits of the physical environment. Unfortunately, for this period the archaeological record is especially incomplete (Johnson and Sparks 1986; Marshall 1986). Thus, and despite their tendency toward subjectivity, religiosity, colonial zeal and Eurocentrism, ethnohistoric accounts form the best available records of pre-contact proto-Choctaw life. The key to their successful implementation is a critical approach and an integration with the available archaeological sources (Galloway 1983).

**Choctaw Origins**

The Choctaw emerged as a distinct ethnological and archaeological culture in the early eighteenth century. The culture formed in a core region of interior Mississippi and Alabama that was bounded by the Upper Pearl River Basin on the west, the Tombigbee River on the East and the Leaf River in the south (Galloway 1995).

Several other works present evidence supporting competing hypotheses of Choctaw origins. Most of these are referenced in Kidwell and Charles’ critical bibliography
and Galloway's definitive tome (Kidwell and Charles 1980; Galloway 1995). These accounts vary considerably, ranging from the explanation that the Choctaw migrated from the west to more allegorical accounts that the original Choctaws spontaneously emerged from the earth at the core of their homeland, Nanih Wayih (Halbert 1899).

Despite wide variances among the accounts, a consensus emerges that Nanih Wayih, a sacred mound located near present-day Philadelphia, Mississippi, was adopted quite early in the protohistoric period as a sacred Choctaw emblem (Halbert 1899). Halbert wrote,

> It may be sufficient to say that Nanih Waiya is very old and was built by the Choctaws themselves, or possibly, granting it a very remote antiquity [sic], by the primordial stock, from which, by subsequent differentiation, the various branches of the Choctaw-Muscogee family were formed (Halbert 1899:233).

Halbert was probably right in suggesting a pre-Choctaw origin for the mound. Despite its pre-Choctaw origins, the site has been and remains the spiritual and territorial core of the Choctaw nation (Galloway 1994; Galloway 1995; Hudson 1976; Swanton, 1931; USDA, 1971). The mound is situated on the west side of Nanih Waiya Creek (a tributary of the Pearl River) in Winston County, four hundred yards from the Neshoba County line. Nanih Wayih has a special significance to this study of human-nature relations in the upper Pearl River Basin: the spiritual center of the
Choctaw nation also marks the upper headwaters of the Pearl River basin.

Social Structure

The social structure of the protohistoric pre-Choctaw chiefdoms reflected their connection with the Mississippian tradition. The Mississippian peoples were horticulturists, many of whom lived in densely populated towns. While hunting formed a vital part of their subsistence base, the Mississippian's primary emphasis was on intensive agriculture (Hudson 1976). This high agricultural productivity permitted segments of Mississippian societies to devote effort toward activities associated with cultural complexity, such as mound building and to create full-time specialists for crafts and spiritual leadership (Hudson 1976). There are several examples of Mississippian mound complexes—ceremonial centers with plazas enclosed by mounds—in the lower Mississippi River valley and in Alabama (Galloway 1994). Moundville, a settlement situated on a bluff above the Black Warrior Creek near Tuscaloosa, Alabama, is one of the best preserved of these classic Mississippian settlements and ceremonial complexes (Galloway 1994). None of these sites, however, are within the Upper Pearl River Basin, which was not occupied during the late prehistoric period.

The Classic Mississippian cultural lifestyle declined between the 14th and 15th centuries, leaving behind simple
chiefdoms unallied with more powerful chiefdoms like the one at Moundville. Thus the proto-Choctaw tribes exhibited a less stratified social hierarchy than the Mississippians (Blitz 1985). Concomitantly, a decentralized settlement pattern was adopted in the post-Mississippian period, which contrasted with the Mississippian tendency toward concentrated settlement (Hudson 1976). Thus, when they emerged as a distinct ethnic entity in the 18th century, the Choctaw were more of a confederation of tribes than a unified state (Galloway 1994). The Choctaw defined themselves as a people through common kinship and cultural connections, rather than as a sharply defined political unit. However, the tribes were defined in part by territorial subdivisions within the Choctaw homeland (Searcy 1985).

Ethnohistoric accounts suggest that the foundation of proto-Choctaw society was the family household. Families in turn formed the basis of clans, and clans divided into two principal moieties, named the Inholahta and Imoklasha (Galloway 1994). While the former was composed of "native" Choctaw, the latter often had ancestral ties to outside peoples who assimilated into the Choctaw after their formation in the early 18th century (Galloway 1994). Marriages took place between moieties during the Protohistoric period, and residence patterns were matrilocal (Eggan 1975; Swanton 1932). Galloway (Galloway
argues that inter-moietal marriage was an important means of assimilating outsiders into the Choctaw culture, simultaneously assuring national cohesion and robust populations. This may partly explain why the Choctaw were able to maintain high populations, around 15,000, from pre-contact times through removal (Hudson 1976). Newly married adult males moved to territory farmed and settled by their wives' clans, but returned to their own clans' territory to participate in hunting expeditions at appropriate points in the seasonal round (Searcy 1985).

**Settlement Pattern**

The settlement pattern of the proto-Choctaw peoples differed from that of their Mississippian predecessors in location and density; this is a manifestation of their structural transition prior to sustained contact. A diagnostic element of Mississippian settlements was their location near expansive river bottomlands, where they practiced intensive agriculture on the fertile alluvial soils (Hudson 1976; Johnson and Sparks 1986). These bottomlands benefited from seasonal re-deposition of silt material, boosting soil fertility considerably. The proto-Choctaw, by contrast, chose settlement in the hills, particularly the North Central Hills of the Upper Pearl River Basin (Blitz 1985).

The Mississippian sites differed from proto-Choctaw and early Choctaw sites in another important way; many
Mississippian towns were densely populated nuclear settlements, in contrast to the generally dispersed settlement characteristic of the upland proto-Choctaw and later. This shift took place in the transition between Mississippian to post-Mississippian traditions (Johnson and Sparks 1986).

Richard White (1983) persuasively asserts that this process of movement to higher ground accompanied an adaptive decentralization of Choctaw settlement. This pattern entailed a moderate de-emphasis on agriculture with a corresponding increased reliance on hunting and gathering in the process of creating a distinct Choctaw cultural profile. Contrary to unilinear notions of cultural progression from hunter-gatherer to planter, the proto-Choctaw adaptation provided strength through diversification in the early 1600's (White 1983). Mississippian borderlands became Choctaw croplands, and croplands similarly reverted to borderlands. The proto-Choctaw did not discard all Mississippian cultural elements; they adapted them and transplanted them to a fresh setting.

The archaeological record supports the thesis of decentralization and relocation to uplands during the transition from Mississippian to post-Mississippian settlement and subsistence patterns. In the material record, this is reflected in the decline in mound
construction as well as in indications of decreasing settlement density. The most complete survey of known proto-Choctaw sites demonstrated a higher frequency of Choctaw site locations on rolling uplands and a lower frequency on steep uplands or alluvial bottomlands (Blitz 1985). A further indication of shifts in settlement away from the bottomlands is the observation that prehistoric Choctaw sites are seldom found in the same locations as Mississippian ones (Johnson and Sparks 1986; White 1983).

**Subsistence Base**

The protohistoric Choctaw subsistence base approximated that of the Mississippian's Woodland period forbears. They moved toward a more diversified subsistence base than that of the Mississippian. Early European travelers' accounts of the region indicate that the forests were replete with game (Van Doren 1955; Searcy 1985; Hudson, 1978). While the core of native settlement had moved to the upper reaches of basins, hunters maintained access to the bottomlands that lay downslope from their upland settlements and fields (Blitz 1985). The diverse hardwood bottomland forests yielded plant resources that formed a vital part of native subsistence. These included nuts, fruits, and herbiferous plants (White 1983). Increased abundance of game coincided with the development of the decentralized settlement pattern (Galloway 1995). Since the Mississippian abandonment, the bottomland forests
were no longer farmed intensively; they became superior habitat for game. From their ecotonal position between upland and bottomland forests, hunters were able to access the developing game reserves. Particularly prized were the numerous canebrakes of the bottomlands (Cushman 1962; Searcy 1985; Swanton 1931). Natives constructed trails through the reedy expanses to provide more efficient access to the bear and deer that congregated there (Cushman 1962).

The proto-Choctaw (and later, historic Choctaw) maintained the productivity of upland pine forests and bottomland forests as game habitat through periodic burning of undergrowth (McDaniel 1986). This worked to their advantage by promoting deer habitat in most landscapes except the longleaf pine forest of the southern territory. There, periodic burning tended to promote longleaf pine over oak-hickory forests. The natives regarded oak-hickory forests as superior deer habitat (White 1983). Elsewhere burning kept the oak-hickory forests relatively open, and permitted sufficient light to allow for the growth of browsing plants favorable to deer.

The Protohistoric peoples who migrated into the Upper Pearl River Basin and adjacent areas, unlike Classic Mississippians, sited their principal croplands on river and stream terraces, upriver and upslope from the depositional floodplains which had been the setting of Mississippian agriculture. Proto-Choctaw and later
settlements were located in the upper reaches of major drainage basins, of which the Pearl River was a major artery. Generally less fertile, the upland soils were mainly sandy loams. Such soils were friable and lent themselves to use of the digging stick (Searcy 1985). Clearing these lands by girdling the trees and burning the underbrush furnished adequate soil fertility, particularly in the first few growing seasons. This clearing process was less laborious than it would have been in the poorly drained and densely vegetated bottomlands of the principal streams and rivers.

Despite the decentralization of population and attendant de-emphasis on intensive agriculture on alluvial soils, farming remained a vital component of the protohistoric subsistence basis. While hunting, fishing, and warfare were the primary occupations of males, women oversaw the cultivation of crops typical of the post-Mississippian tradition. Corn was the principal food crop, but squash and beans complemented the variety and productivity of fields (Searcy 1985; Swanton 1931). Crop fields were cleared and fallowed in a swidden system (Searcy 1985).

The light sandy loam soils of the terrace uplands were easier to cultivate using digging sticks and flint hoes as the primary implements (Hudson 1976). Water availability was seldom a consideration in siting fields, even on the
permeable and sandy upland soils (Lincecum 1904; Swanton 1918). The sandy upland soils of interior Mississippi were less droughty before Euro-American settlement, because the water table was generally higher and natural springs were more numerous before the Civil War (USDA 1912).

A paucity of protohistoric and historic Choctaw artifacts on steep uplands indicates that they were seldom used for permanent agriculture (Blitz 1985). As Euro-American farmers of the mid-nineteenth century also quickly ascertained, the steep uplands were often removed from permanent water sources: a distinct disadvantage. The uplands were also subject to severe erosion. No available sources suggest that native farming methods or site selection led to erosion on a scale approaching that observed on cotton farms in the nineteenth century.

**First Contact with Europeans**

The Choctaws' initial encounter with Europeans was brief and tragic, yet it set a precedent for later Choctaw resistance to European cultural domination. The first documented evidence of contact between precursors of the Choctaw in Mississippi and white Europeans comes from the deSoto expedition in 1540 (Hudson 1994). A scribe for the deSoto expedition recorded a limited account of this encounter, and subsequent Choctaw oral tradition supplements the scribe's accounts (Noley 1985). The primary encounter was cordial, but the proto-Choctaw
warriors subsequently attacked the Spanish. The Spanish response was draconian, resulting in considerable casualties among the indigenous people. After this short battle, deSoto and his men skirted north along the eastern edge of proto-Choctaw territory, enduring continued attack until they were safely away from what was is now recognized as the core territory of the Choctaw (Hudson 1994). This episode signaled the beginning and the end of direct contact between Europeans and proto-Choctaw for the next 150 years, until the beginning of the eighteenth century.

Despite conflict and casualties, the cultural impact of the deSoto encounter was not catastrophic for the proto-Choctaw population. The casualties suffered in battle were inconsiderable compared to the depredations other Southeastern Indian peoples suffered because of introduced disease. Indeed, there are no firm indications that epidemics devastated the Choctaw population (Galloway 1995). The Choctaw numbered among the peoples whom Silver regards as "one step removed":

West and south of the mountains, the natives were well within range of English traders and their native slave raiders, but "one step removed" from the South Atlantic settlements. Like the Cherokees, the more populous interior groups were partly able to recover from diseases introduced by the early explorers. The Creeks may have numbered about 15,000 in 1685; farther west in the lands of the Choctaws and Chickasaws, the total native population was probably around 35,000 (Silver 1990:82)
Because of their considerable distance from English settlements on the Atlantic coast, the Choctaw were perhaps 'two steps removed'. While the record of disease and native depopulation in the Southeast still merits considerable amplification, it appears that the Choctaw were able to withstand the early waves of disease that struck native populations of the coastal and interior Southeast (Wood 1989). Early direct contact between the proto-Choctaw and Europeans was sparse, and their inland territorial core helped them to remain isolated for a long segment of the protohistoric period. Their decentralized settlement patterns apparently attenuated the effects of epidemics, which diffuse more effectively in concentrated settlements (Galloway 1994). Swanton suggests that the Choctaw were initially able to extend their territorial range to the east, south, and west as they assumed the lands of native peoples who had succumbed to disease (Swanton 1931; White 1983). In this way, the Choctaw were apparently able to benefit from the losses of neighboring indigenous groups with less robust populations.

Diseases, or the threat of disease, likely played a role in encouraging the aboriginal proto-Choctaw to complete their withdrawal from Mississippian bottomland settings. During the seventeenth century, epidemics easily migrated along the course of significant waterways. Among these, the lower Pearl River presented a viable corridor
for pathogens (Galloway 1994). The Mobile Bay, Lower Pearl River and Natchez groups inhabiting major river courses were more susceptible to diseases such as malaria than their kin and neighbors with an inland/upriver settlement pattern; as noted previously, these are precisely the groups that formed the original Choctaw core. Slave raiding along the lower courses of Gulf Coastal rivers by early English settlers was another factor that discouraged continued permanent settlement in the lower courses of river basins (Martin 1995).

Indicators presented here suggest that post-Mississippian peoples in central and southern Mississippi, southeastern Louisiana, and in the Mobile Bay area initiated important cultural adaptations a full century before they engaged in sustained direct contact with Europeans. These proto-Choctaw peoples redefined their social organization to a less centralized form, and they manifested this redefinition in the landscape through their new, dispersed settlement pattern. Decentralization was concomitant with changing subsistence strategies and adaptations to an environment that had been sparsely settled before the sixteenth century. These changes were integral to the emerging Choctaw tribal identity of the 18th century.
Colonial Contact Period

The nature of Choctaw and European relations changed fundamentally when the colonial French and English entered the upper Pearl River basin to establish trade relations. This began the Colonial Contact Period of 1699-1785. While the Choctaw were able to maintain a notable degree of autonomy from direct colonial rule, the extension of limited but permanent colonial influence in the region transformed Choctaw life-ways, particularly subsistence strategies. These early changes in production signaled decreasing autarky and the initial participation of the Choctaw in the world economic system. By the end of this period, in 1800, the Choctaw confederacy was completely transformed from its pre-contact organization.

This second wave of contact exacted harsher consequences on the Choctaw much more so than that experienced by their forbears in 1540. In the last decade of the seventeenth century, English slavers from the Carolinas, aided by native Creek and Chickasaw raiders, moved into northeastern Choctaw territory, including land just to the north of the Pearl River headwaters. Slavers destroyed settlements in this sub-region and ultimately captured several thousand Choctaw for servitude (White 1983). In reaction, French colonial officials sent an emissary named Tonti to this region in 1700 to gauge the situation and provide aid to the Choctaw. He succeeded in
securing the freedom of one enslaved Choctaw and returned to Mobile to report on the dire situation faced by the French-backed Choctaw in interior Mississippi (Galloway 1995:196). These episodes signaled the beginning of sustained conflict between the Choctaw and the English-allied Chickasaw that was to persist through the first half of the eighteenth century.

**Impact on Subsistence Economy**

Enduring connections between the Choctaw subsistence economy and the wider world were established through increasing trade with European colonists of the Gulf Coast. These relations were initiated in 1698 when the first French traders ventured into Choctaw country (McKee 1971). Within two decades the Choctaw had formed alliances with the French. The Choctaw traded with the French for guns, metal tools, horses, and other imported goods. The French provided a measure of protection for the Choctaw against continuing slave raids by British-supported Indians (Wailes 1854). These protective measures were in the French colonists' self-interest, for the French were partly dependent upon Choctaw agricultural surpluses. This was especially true in the earliest decades of their presence along the Gulf Coast. They also traded guns and other critical supplies for game and deerskins, in addition to agricultural surpluses. This change in the Choctaw economy
encouraged increased hunting activity (Searcy 1985; White 1983).

As their concentration on hunting became more pronounced, the Choctaw gradually de-emphasized agriculture. The ethnologist John Swanton and a few travelers' accounts indicate that this fundamental change led the Choctaw further afield, into the borderlands, to furnish surplus deerskins to the colonists (Reeves 1985; Swanton 1918; White 1983). Armed with guns, the Choctaw became efficient at hunting game on an unprecedented scale. After one generation, most Choctaw hunters no longer knew how to effectively hunt using bows (Swanton 1918). The quest for territorial expansion brought increased risk to hunters as the Choctaw competed for hunting lands with the Chickasaw, and among themselves.

Through all this strife over territory and game the Choctaw quietly maintained a reputation as productive farmers. William Bartram remarked in 1777 that the Choctaw were the most productive farmers he had encountered in his travels through the Southeast (Van Doren, 1955). The Choctaw were often able to produce surpluses beyond their subsistence needs (White 1983). They traded these surpluses with neighboring native groups, particularly the Natchez, and colonists (Galloway 1995).

After the cessation of hostilities at mid-century, which resulted partly from declining colonial influence in
the interior, the Choctaw faced a crisis of depleting game populations. With intertribal hostilities essentially over because, but bearing modern European weapons gained from colonial involvement, the Choctaw were devastating in their ability to cull the forests of deer (Searcy 1985). They used European livestock to fill, at least in part, the ecological niche previously occupied by deer. Important changes in Choctaw modes of production emerged early in the nineteenth century. They developed a dependence on horses and livestock (Searcy 1985). Like the new settlers in Mississippi Territory, the Choctaw determined that their fire-maintained forestlands and prairies were well-suited to livestock production. The Choctaw ultimately rejected pigs but valued horses for transport, trade, and food. The Choctaw developed their own breed of horse, the Choctaw pony, which became a standard element of Choctaw culture, to the point that they were regarded as the “camels of the Mississippi forest” (Cushman 1962). The horses were particularly helpful in aiding hunting expeditions, which had to range further and further afield as the efficiency of hunters was bolstered by firearms (Campbell 1959). Even the addition of ponies, however, was insufficient in surmounting the growing problem of diminishing game populations in the late eighteenth century.
Political and Social Impacts

As noted above, warfare emerged in the early eighteenth century, first against the Chickasaw to the north, then in the mid eighteenth century against the Creek to the east and the Natchez to the west (Rowland and Sanders 1927). The continuing effect of intertribal warfare had two important dimensions, one ecological and the other political. As deer populations in their homeland diminished from hunting pressure in the first half of the eighteenth century, Choctaw hunters had to venture further afield from their core settlements to the borderlands. This inevitably brought them into conflict with adjacent indigenous peoples (Martin 1995; McKee 1971; White 1983). A political dimension underscoring this was the respective European alliances of the Choctaw and Chickasaw. The French encouraged the persistence of their alliance with the Choctaw, for the union furnished a buffer zone between their urban settlements on the Gulf Coast and the English-controlled Natchez, Creek, and Chickasaw territories (McKee 1971). To maintain relations with the chiefs, the French meddled with the internal hierarchy of the Choctaw. Before the establishment of French influence, the Choctaw were divided into localized tribes, but the leaders themselves did not wield centralized power that the French could effectively manipulate (Wailes 1854). The French found it difficult to control the non-hierarchical Choctaw, and they
exerted pressure to centralize political power among them. They were only partly successful in their attempts. Chiefs who entered into close relations with the French, such as Mingo Chitto, were not able to influence the entire nation, but only important sub-regional divisions within it. A Big Man, whom the French initially regarded as a powerful hegemonic ruler, Mingo Chitto actually exerted direct influence only over the northeastern district of Choctaw country (Romans 1775). This de-centralization helped, almost paradoxically, to maintain a measure of cultural cohesion in spite of strong colonial influence.

Nevertheless, internal warfare among Choctaw factions during the mid-eighteenth century further eroded Choctaw autonomy. By mid-century, the French had succeeded in establishing strong relations with Choctaw in the territory closest to Mobile, Alabama. These were settlements accessible by bateaux paddled up the Pearl and Tombigbee rivers. The Choctaw in the northern districts, however, gradually developed closer alliances with the English, and this strife diminished unity within the Choctaw confederacy (Blitz 1985). During the mid-eighteenth century, Choctaw factions fought bitterly with each other, spurred by the competing interests and influence of the European powers. These tensions were exacerbated by continued competition for borderland hunting regions where the Choctaw could obtain skins and furs for colonial trade (Blitz 1985).
The inter-tribal strife and competition for resources exerted centrifugal influences on other connected elements of the Choctaw economy and landscape. One of the most important effects was the dissolution of Choctaw moieties, which had been the primary basis of aboriginal Choctaw society during the eighteenth century (Galloway 1994). Intermoietal marriage had been one of the primary means of ensuring national cohesion and vitality. During the colonial period, clans instead acquired added importance, assuming the functions of exogamy and related customs (Eggan 1975; Swanton 1932). This was one of the most tangible signs that Choctaw unity was eroding.

Despite strong centrifugal pressures, the Choctaw were able to exert a remarkable degree of hegemony over their homeland well into the eighteenth century. While the frontier of Anglo-American settlement had long since moved west of the Mississippi River, concentrated white settlement in the northeastern quadrant of Mississippi was slowed by continued native land tenure (Otto 1989). Armed resistance countered the prevailing sentiment that Indian enclaves of the Southeast should open to white settlement. This sentiment held especially true for lands occupied by the Chickasaw, Creek, and Cherokee peoples. The Upper Pearl Basin remained in Choctaw hands well into the early nineteenth century.
Another centripetal force was the continued vitality of Choctaw populations. Until the late eighteenth century, the Choctaw vastly outnumbered European colonists in the interior. White accounts of attacks suffered while traveling remote trails attested to the active resistance of Indians in this region against white encroachment (Hudson 1976).

Settlement Archaeology

Archaeological investigations of colonial period Choctaw sites help to clarify ethnohistorians' accounts of the era. Penman (1978) correlated information on historic Choctaw towns present on Roman's 1775 map with known Choctaw archaeological sites (Penman 1978). Penman's work represented a partially successful extension of Swanton's earlier efforts to locate Choctaw villages on the basis of Roman's map (Penman 1978). The product of this work was a limited image of historic settlement in the Southern Division of Choctaw territory. Penman asserts that he found the site of one southern settlement, Chickasawhay village, partly based on Roman's map. As Penman acknowledges, however, further results are inconclusive and await additional investigations on the sites of Choctaw towns that have escaped discovery. Some recent efforts have partly fulfilled this need; additional research on historic Chickasaw village locations has been conducted by Atkinson (Atkinson 1985, 1987) and Johnson et al (1991).
During the late protohistoric and early colonial periods, Choctaw village settlement had two important components, both intimately related to subsistence land use and to the need for defense. According to Adair (Adair 1968), an itinerant Irish trader who traveled among the Choctaw during the mid-1700's, villages on the Choctaw territorial borderlands were typically compact, oriented toward defending their territory against neighboring peoples (Adair 1968). Interior villages were generally more dispersed settlements, called 'scattered plantations'. This dispersed settlement in the interior of Choctaw country may have enabled households to live in closer proximity to their fields (Searcy 1985).

Artifacts recovered by Swanton from numerous Choctaw sites substantiate the important French and English influences on Choctaw colonial life (Swanton 1918; Swanton 1931). Gunflints of British and French origin were recovered, as were ceramic sherds. Collins' archaeological research on the historic Choctaw provides material evidence of continued Choctaw cultural adaptation in the historic period (Collins 1927). On the basis of his investigations, Collins was the first to identify a distinctive Choctaw pottery type, Chickachae Combed (see also Ford 1936). Other pottery of this type was found in surface investigations of Nanih Wayih and other known Choctaw sites, further supporting the hypothesis that this pottery
type was a distinctive colonial period Choctaw style (Galloway 1994). A glass fragment recovered from the Nanih Wayih site demonstrated evidence of flaking and Choctaw adoption of European materials (Haag 1953). These findings do not indicate that the Choctaw had wholeheartedly adopted European technology; they demonstrate that the Choctaw selectively adopted and adapted it.

Fundamental changes in Choctaw political ecology late in the eighteenth century further engaged the Choctaw with the world economic system. While the Choctaw still maintained a measure of control over their land, they had adjusted their subsistence base to accommodate European demands and desires. By 1790, the western frontier of Anglo-American settlement expansion was in mid-Georgia (Otto and Anderson 1982; Owsley 1949). Jumping ahead to the 1820's, white settlers in large numbers started to occupy the Mississippi Territory, home to the Choctaw. No longer were the Choctaw at liberty to range freely across their homeland in east-central Mississippi. The consequences of selective alteration to the Choctaw subsistence base and landscapes became starkly apparent in the nineteenth century. The foundations of this transition, however, extend back to the eighteenth century when European colonists initiated a century of sustained interaction with the Choctaw.
United States Treaty Period

The next period in Choctaw history, the United States Treaty Period of 1786 to 1930, marked a critical period in Choctaw relations with the Upper Pearl River Basin. During this time, increasing trade ties with Euro-Americans resulted in diminished autonomy. The protohistoric and early historic social structure of native families and clans permanently changed into a more patrilineal system. The increased involvement of Christian missionaries with the Choctaw cemented this social change. Furthermore, the introduction of the cotton economy to the region in the early nineteenth century meant that enormous expanses of land were no longer subject to Choctaw landscape modifications.

Diminishing Territory and Autonomy

The Choctaw saw the boundaries of their territory shrink dramatically with the signing of the Treaty of Fort Adams in 1801 (Ladd 1973). As a result the Choctaw lost 2.5 million acres of their southwestern territory. This treaty heralded what is called, under the rubric of dependency theory, “The Collapse of the Traditional Economy”, wherein many vestiges of protohistoric Choctaw lifeways diminished (White 1983). Subsequent treaties further diminished the size of Choctaw country and their self-sufficiency.

Signs of diminished self-reliance quickly appeared during the Treaty Period. Accounts of Choctaw stealing
cattle from European settlements increased in the early nineteenth century (Martin 1995; McKee and Schlenken 1980). The Choctaw also resorted to raiding European crops. Reliance on purchased European foodstuffs and their inextricable involvement in the diminishing deerskin trade placed them in a greater state of dependency on the outside world. In response to further wildlife declines, the Choctaw introduced more pigs and cattle to the forests, further altering the landscape ecology of the region. For a while, some Choctaw tried to re-establish their protohistoric lifeways west of the Mississippi River, but these efforts were inevitably doomed to failure (Cushman 1962; Searcy 1985; White 1983). White settlers had already occupied the most productive lands west of the Mississippi, and the higher aridity of western territories, in Texas and Oklahoma, was less conducive to the scattered plantation mode of production that the protohistoric Choctaw had favored.

**Missionization**

Another important development transpired during this period: the growth of missionary activity in Choctaw territory. At first, the American government supported missionization. The government viewed Christianization as a favorable means of encouraging the Choctaw to relinquish their lands and completely relocate westward to Oklahoma (DeRosier, 1959). Major Christian denominations
established Presbyterian, Baptist, and Methodist missions in Mississippi Territory. Of the three denominations, the Presbyterians were the most successful in converting the Choctaw. The mission schools became important institutions in the education of Choctaws in Anglo-American ways. This was particularly true of agriculture; the missions were an important source of information on livestock husbandry and cropping techniques (DeRosier 1959; Kidwell 1986; Kidwell 1995).

One centrifugal effect of missionization among the Choctaw was the decline of matrilineages in favor of reckoning descent through males (Kidwell 1995). Thus, missionization further disrupted the Choctaw kinship system, serving as a strong indicator of profound culture change. By 1810, the Choctaw had largely adopted the Christian/Euro-American norm of patrilineal descent. This changed Choctaw culture in numerous ways, one of which was the alignment of land tenure with Europeanized norms. Henceforth, land passed from male Choctaw elders to their eldest sons. By this measure, Choctaw land partly conformed to the imposed Anglo-American cultural landscape form that was rapidly diffusing southwestward.

Despite the acculturative effects of missionization, the missions produced some incidental results the government did not envision; these served to aid Choctaw cultural autonomy (Carson 1997; Kidwell 1995). Some
missionaries encouraged the Choctaw to fight for their land and taught Choctaw leaders to use legal knowledge to their advantage (DeRosier, 1959).

In a less than favorable review of the missionaries, White argues that the strength of the missionaries was bolstered by the growth of a compliant Choctaw "middle class":

This dual assault on Choctaw customs and Choctaw dependency was possible because of the continuing threat of removal but also because of what might be called an incipient Choctaw middle class in the borderlands—families with small herds, increasing amounts of land under cultivation, and a growing concern for producing surpluses for the market. These groups arose from the continuing migration of Choctaws outward from the old town core (White 1983:).

The old town core to which White referred was a concentration of early nineteenth century villages that was concentrated just east of the Pearl River headwaters of Mississippi. The largest concentrations were in Neshoba, Kemper, and Newton Counties.

Cotton Farming

During the 1820's, the Mississippi Choctaw began growing cotton on a limited scale (Searcy 1985). After this time, Choctaw involvement in cotton production increased. Adherence to traditional life-ways diminished correspondingly. By 1820 there was a significant population of mixed-bloods with shared Anglo-American and Choctaw characteristics. Their propensity to engage in cotton farming on increasingly larger tracts further
engaged the Choctaw in the incipient agricultural economy (Martin 1995; White 1983). Archaeological and documentary investigations of Choctaw sites in Lowndes and Oktibbeha Counties from this period indicate that the Choctaw had adopted a material basis akin to those of their contemporary white pioneer farmers (Ward 1986). Ward summarized the results:

During this period (the 1830's) the Choctaw lived in log or frame houses, raised livestock, farmed, used English-made dishes, and often enjoyed economic states that were equal to, if not higher than, that of the early white settlers in the area (Ward 1986:44).

The diminution of Choctaw territory crested with the Treaty of Dancing Rabbit Creek of 1830. Signed at Nanih Wayih, the sacred mound and Choctaw spiritual core at the headwaters of the Pearl River, this treaty reduced Choctaw territory to a small fraction of its former territorial extent. The transformation of Choctaw native lands from autarky to dependency was nearly complete and another chapter in their culture history began: removal to Oklahoma. The indigenous landscape of the upper Pearl River Basin had been transformed from a decentralized yet productive landscape to an outpost at the periphery of the world market system. This reduced the autonomy of the Choctaw who inhabited the landscape, yet their adaptability to Europeanization was commendable. These changes in nature and culture set the stage for further modifications of the north-central Mississippi landscape by a great wave
of Anglo-American settlement and rapidly expanding cotton production.
CHAPTER 4
THE ANTEBELLUM PERIOD (1830 to 1865)

Introduction

In 1875 a correspondent to the Jackson (Mississippi) Gazette nostalgically recalled the challenges posed to pioneer settlers by 'New Purchase' lands of east-central Mississippi during the three decades before the Civil War (Faucette 1978). The New Purchase was a group of counties that the federal and state governments surveyed and opened to pioneer settlement, after finalization of the Choctaw and Chickasaw land cessions. A considerable portion of the New Purchase was the Upper Pearl River Basin. The correspondent's intention was to accentuate the radical changes in the region's land and people that transpired during the critical decades that preceded the Civil War. He accomplished this by highlighting the exoticism of the unfamiliar region.

The sub-division of the 'purchase', as we in our boyhood used to call the territory, into counties, towns, etc. was not very rapid ... For a while it seemed that the inhabitants of the older states waited to see how long the first adventurers could live before they followed in their steps. The sluggishness and mirkey hew [sic] of the water courses, and the mournful looking drapery of moss, which hung upon the forest, bode disease and death to the pioneer. So the people thought, and said, for a time. Anon some wanderer would return from his perilous journey through the wilderness, and get back to see his friends once more, notwithstanding the Indians and wild beasts and sojourn for a season in this region. The glowing account of the new country soon awakened the desire to see it. (Faucette 1978:216)
Such tentative incursions gained added impetus in the early nineteenth century. Farmers looking to stake claims to agricultural prosperity overcame their qualms over isolation and pestilence, and settled the region in increasing numbers. This movement initiated a new chapter in the environmental historical geography of the Upper Pearl River Basin.

The New Purchase encompassed a vast expanse of Mississippi that became available for agricultural settlement after the last of the Choctaw and Chickasaw land cessions. The conclusion of Choctaw land cessions officially opened the New Purchase lands of the Upper Pearl River Basin to pioneer settlement and agriculture (Ladd 1973). The last of these treaties, the Treaty of Dancing Rabbit Creek in 1830, marked a pivotal transformation in the cultural landscape of the upper Pearl River Basin. After terms of the treaty were codified, the interior of east-central Mississippi opened to an influx of agricultural settlers.

Many of the settlers migrated from previously settled regions of the southeastern and mid-Atlantic United States. Other pioneers arrived from previously settled regions of Mississippi, such as the Natchez District and the lower Piney Woods of the Lower Pearl River Basin. Much as the Choctaw carried and adapted post-Mississippian ideas and technology to the Upper Pearl River Basin, the newcomers
imported their own designs and techniques for modifying the landscape to suit their economic and cultural imperatives.

However, the chronology of change altered drastically in the new era. The Choctaw had adapted their relations with the land over centuries of escalating contact with Euro-Americans. By contrast, the migration of agricultural settlers into the Upper Pearl River Basin triggered a momentous shift in human-landscape relations. As 'bearers of civilization' (White 1980) from earlier-settled regions of Anglo-America, they imported pre-established cultural preferences and technology. This portended important cultural landscape transformations, especially for the pivotal decades before the Civil War. By the 1840's, pioneer farmers and a smaller number of large-scale plantation owners had stamped distinctive cultural imprints upon the sandy hills, black prairies, and the densely-forested bottomlands.

While cultural pre-conditioning guided settlers, an important macroeconomic conjunction further influenced settlement and agriculture in the Upper Pearl River Basin. The opening of Mississippi's New Purchase lands coincided with an unprecedented expansion of international demand for cotton lint. Between 1820 and 1860, demand for cotton increased steeply, at an annual rate of five percent (Moore 1958; Merchant 1993). Consequently, cotton cultivation
rapidly became the primary occupation of the Mississippi's farmers.

After much experimentation in Georgia, Alabama and western Mississippi, Gulf Coastal Plain cotton farmers developed the capacity to generate impressive yields of the staple, especially in recently established fields (Moore 1958). It was not uncommon to hear of yields of 1000 pounds of cotton per acre in this early stage. Recognition of these yields spurred demand for lands upon which cotton culture could flourish, and the Upper Pearl River Basin partly fulfilled this need.

Cotton culture arrived in the Upper Pearl River Basin of Mississippi midway through its diffusion across the Southern Cotton Belt. The cotton staple system took root in coastal South Carolina in the late eighteenth century, then in Georgia and the Alabama Black Belt, and in the Natchez District of the lower Mississippi River Valley. Cotton culture subsequently in-filled the newly opened hill lands of Mississippi and western Alabama (Otto 1989; Otto and Anderson 1982).

Two elements combined significantly in the upper Pearl River Basin for the first time: Anglo-American settlers and a modest complement of black slaves and the upper Pearl River Basin itself. Through this convergence the regional cultural landscape sustained radical transformations. Of equivalent importance, the limitations and possibilities of
the land as a medium for staple-based agriculture were first revealed in this critical period. Foremost among these was the strong propensity of the region's soils to erode when converted to cropland.

**Frontier Diffusion and the Yeoman Farmer**

Across the South, the Anglo American Backcountrymen migrated southwestward from their 'Lancaster (Pennsylvania) to Augusta (Georgia)' culture hearth (Otto and Anderson 1982). They moved southwestward until they reached the edge of forests in eastern Texas and the Midwestern prairies. Beyond those geologic boundaries the Backcountrymen no longer encountered pre-settlement landscapes amenable to their repertoire of familiar agricultural and settlement lifeways. But in the undulating landscape of the Gulf Coastal Plain they encountered a setting that met their initial requirements. The region had abundant forests where they could fell trees by the traditional frontier methods of girdling and burning. Light soils capable of cultivation by simple hand hoes and light plows aided their cause, as did a climate amenable to growing corn - their principal food crop for humans and livestock alike (Otto and Anderson 1982).

Most importantly, the forested Gulf Hills were deemed an amenable landscape for cotton cultivation. In cotton they had a commercial crop which could support large populations of dispersed settlement where suitable land and
200 annual frost-free days coincided (Otto and Anderson 1982). Choctaw County, a Headwater County of the Upper Pearl River Basin, generally experienced its first killing frost no sooner than November 1, and the last was experienced no later than March, 25, providing a growing season of 215 days (Coleman 1973). Further south in the basin, where the moderating effect of the Gulf of Mexico inhibits frosts, the growing season was often considerably longer.

As indicated above, the transformation of the cultural landscape in the Upper Pearl River Basin took place during an important second wave of settlement and farm establishment in Mississippi. Before settling the interior, farmers settled two other contrasting regions of Mississippi: the Natchez District and the southern Piney Woods. The Works Progress Administration guide to Mississippi provides a sobering and concise synopsis of the migration of farmers into the newly available hill lands of central Mississippi, and of the resulting problem of soil erosion:

The geography of cotton culture before the war saw first southwestern Mississippi marked off and tilled, then the Pearl and the Tombigbee River Valleys. As long as farming was confined to the fairly level second bottom lands of these valleys, erosion was not a serious problem. However, after the land boom of the 1830's and with railroads to help solve the problem of transportation, new cotton farmers moved into the hills and basins of northern and central Mississippi (Works Progress Administration 1938:99).
The WPA account accentuates the benighted consequences of unbridled cotton expansion (on soil erosion, see "Environmental Limitations and Opportunities," below). It also delineates the diffusion process dispassionately. Because of these two points, the passage provides a concise context for an exploration of the various conditions that influenced the pioneer advance into the Upper Pearl River Basin. The passage is also indicative of the important but less prosperous tradition of small farms that emerged on lands of southern Mississippi. These were generally accessible by numerous pericoastal waterways that included the lower Pearl River.

The cultural characteristics of the settlers who migrated into the Upper Pearl River Basin serve as a critical guide to the advance of pioneer farmers into the area. The Anglo-American newcomers to the upper Pearl River basin were primarily of Scottish and Irish ancestry, with British, German, or French admixtures. In this regard they shared a common ancestry with the Backcountry Woodsmen (Otto and Anderson 1982). The backcountrymen were "pre-adapted" to the southern woodlands by a number of cultural traits (Jordan and Kaups 1989). These included: a diffuse settlement pattern of farmsteads and rural neighborhoods, shared techniques of horizontal log construction that permitted quick erections of buildings, a generalized stockman-hunter-farmer economy, and extreme adaptability.
with regard to commercial crop (Otto and Anderson 1982). Of course their selection of a principal crop in the Upper Pearl River Basin was cotton.

The majority of the earliest landowning settlers to the region were white, of poor-to-modest means. Most of them migrated from earlier settled regions of the South. They were, in many instances, representative of the 'pre-adapted' pioneer frontiersmen. These farmers were an important element, albeit a belatedly recognized one, in Southern culture history (Newton 1971a; Newton 1971b; Otto and Anderson 1982; Owsley 1949). The modest prosperity of these settlers contrasted with popular conceptions of cotton planters as an elite class who did little physical labor themselves and relied on slave labor to accomplish their designs. The continued durability and conspicuousness of plantation great houses across Mississippi reifies the relative importance of wealthy planters in the minds of scholars and laymen alike. The presence of detailed plantation records further enhances their conspicuous profile. By contrast, the vernacular structures of small cotton farms were functional ones, and they rapidly became workaday landscape elements. The relative dearth of detailed farm records or journals penned by small-scale farmers further diminishes their profile.
Accounts of the Yeomenry and the Region

Despite these impediments to scholarship, the actions of unheralded Southern farmers garnered the attention of one influential historian, Frank Owsley. In his landmark study, *Plain Folk of the Old South*, he demonstrated that the neglected core of Southern agrarian society was the yeomanry—white planters and farmers of modest means or renown (Owsley 1949). A large part of his study is a characterization of Southern yeomenry of the Gulf Coastal Plain, in which he developed a socio-cultural portrait of the yeomanry and their traditional relations with the land.

By advancing the yeomenry as the foundation of Southern farming and society, Owsley twisted traditional conceptions of the primacy of Plantation agriculture in the South, and of aspersions levied against Southern whites of modest means. He particularly indicted Frederick Law Olmsted, the eminent American landscape architect, who traveled through Mississippi and elsewhere in the cotton South during the 1850s (Olmsted 1907). Owsley took particular umbrage at Olmsted's overarching opinion that the Southern white farmer was unsophisticated in relation to his northern counterpart.

Olmsted passed through part of the Upper Pearl River basin, noting a trend of decreasing prosperity as he traveled a route east from Natchez, across Mississippi, toward Tuscaloosa, Alabama (Olmsted 1907). Owsley
objected to Olmsted's condescending portrayal of small scale cotton planters (defined by Olmsted as holders of 0-10 slaves) as lacking innovation, initiative or environmental stewardship (Olmsted 1907). While traveling near the young city of Jackson, Mississippi, Olmsted lightly derided these planters, in a manner illustrative of the tone that so offended Owsley.

The majority of them possess more dignity of bearing and manner, that they give a stranger an impression of greater 'respectability than the middle class of farmers of the North and in England, while they have less general information and less active and inquiring minds (Olmsted 1907:177).

Despite Frank Owsley's objection to Olmsted's anti-Southern tone, Olmsted's observations of lifeways actually serve to advance the cause of Southern agrarian pride. Olmsted was among the first widely published writers to recognize the cultural and sub-cultural importance of middle-class and poor cotton planters. Furthermore, Olmsted asserted that it would have been easy, even as a first-hand observer in the difficult travelling conditions 1853, to overlook the significance of the yeomanry, and to overstress the importance of large plantations in the antebellum South.

Arthur Schlesinger, emphasizes the social historical importance of Olmsted's writings, in a prologue to a 1953 reprint of Olmsted's travelogue. Schlesinger argues that readers are fortunate that Olmsted elected to pursue an
inland traverse through the Deep South, in addition to the more commonly traveled Gulf Coastal route (Schlesinger 1953). This decision provided unique views of lifeways and the landscape in the Gulf Coastal Plain' antebellum backcountry.

Early nineteenth-century travel literature generally avoided the remote districts that Olmsted sought to explore, such as interior Mississippi. More typical of the genre, aside from its female authorship, was the travel account of Lady Emmeline Stuart Wortley (Wortley 1851). She penned an account of Mississippi as she observed from a steamship from Saint Louis to New Orleans. They made a few significant stops en route. One was Natchez, where she observed the operation of a large plantation, and remarked affirmatively on the utility of slave labor in that setting (Wortley 1851:120). Olmsted convincingly argued that one must travel to remote districts to develop a more expansive image of cotton culture as it developed in the decades before the Civil War:

The number of whites (not of negroes), living upon plantations of the class chiefly described thus far in this volume, is, of course, small. The more common set of plantations and the common middle-class planter, can hardly be seen by a tourist in any other way than that I now pursued, travelling in the interior, away from the rivers and the ordinary lines of communication, and independently of public conveyances; there is consequently less general knowledge of them, I apprehend, than of any other portion of the population of the South, yet of the class properly termed 'the planters' they constitute probably nine-tenths (Olmsted 1907:175).
Owsley did not defend Southern planters purely from nostalgic concern; he built a case partly on the basis of enumerative evidence. To bolster his cause, Owsley conducted a careful study of tax lists, census returns, and other available data to develop a picture of the Southern farmer. Owsley included historical surveys of representative counties in the South. Two Mississippi counties (Hinds and Lowndes) numbered among the constituent counties, providing a portrait of central Mississippi agrarian characteristics. In these surveys, Owsley depicted Lowndes County as a semi-fertile region, where meso-scale slave-owning white plantations took hold with greater frequency than the large-scale plantation complex. The other, Hinds County, which is a component of this study's Prairie County sub-region, had significant expanses of fertile prairie soils. Hinds County was farmed to a larger extent than Lowndes County by the macro-scale plantation complex of slave labor (more than 10 slaves) and large landholding (more than 100 acres) (Owsley 1949).

Among the most widely consulted sources of information, for prospective immigrants to new lands of frontier America, was the considerable array of regional primers. These were written for each of the nation's important pioneer settlement regions. The best of these guidebooks provided pioneers with invaluable information on obtaining land claims and critical environmental
information for prospective farmers. William S. Darby published one of the best of the genre, *The Emigrants Guide to the Western and Southwestern States and Territories* (Darby 1818). Darby's guide provided some of the most pointed information on the environmental and social milieu for prospective settlers in the Southern region that encompassed the Upper Pearl River Basin (Darby 1818). In keeping with the standard choice of crop in the region, Darby advocated cotton as the principal crop to sustain new farms and farmers:

To new settlers, and to persons of moderate property, cotton presents a more facile source of revenue, even in places where the soil and climate will admit the culture of (Darby 1818:10).

Darby also indicated the adaptability of cotton to the diverse soils and terrain of the region. This information was especially appropriate to the variety of soils and terrain encountered in the Upper Pearl River Basin.

But though cotton succeeds best on the deep alluvion of the rivers, it is extremely profitable on the prairie land, distant from any considerable streams of water. On second rate land, which occurs on the smaller water courses in the pine tracts, there are considerable bodies of land very favorable to cotton (Darby 1818:10).

To balance his enthusiasm for cotton's prospects he adopted a measured tone, by advocating that new farmers continue to grow corn. Don't neglect corn, Darby urged, for it provided the other all-important element of the successful emigrant farmer. While cotton could be successfully
cultivated in a wide variety of soils and terrain, corn was even more adaptable to wet or droughty soils, forming a vital component of Southern cotton culture.

The Natchez District Cotton Culture

Not all the important ideas for successful cotton culture originated outside Mississippi. New cotton farmers of the Upper Pearl River Basin were also strongly guided and influenced by cotton planters of Mississippi's venerable Natchez District. Centered on Natchez, a town perched on a Mississippi River bluff, the district was the oldest and most influential permanent agricultural settlement in colonial Mississippi. Natchez planters sought to develop a form of staple agriculture adapted to the climate, soils, and regional political economy of late eighteenth-century Mississippi. After experimentation with tobacco and indigo in the late eighteenth century, Natchez planters turned to cotton. Cotton, they found, grew well in the sandy soils of the Natchez District (Ingraham 1966 originally 1835; Moore 1958; Wailes 1854). At first they employed the widely-utilized roller-type cotton gin, which facilitated a means of separating cotton lint from the seeds. When the superior Whitney-type cotton gin became available after its 1795 invention, Natchez planters developed a greater incentive to rely on cotton as the staple crop of Mississippi (Moore 1958).
By 1800 the Natchez District attained status as an important net exporter of cotton. The location of the city of Natchez on a bluff overlooking the Mississippi River accounted for much of this prosperity. Cotton factors in New Orleans provided a ready market for cotton bales. Pork, mules, horses, and grains arrived by flatboat and steamship at Natchez's 'Under the Hill' dockside from the Upper Mississippi Valley. When the Whitney gin was first implemented in Mississippi in 1807 (Wailes 1854), cotton production received the impetus necessary to spark a transformation of the District. A subsequent expansion of cotton planting gave rise to a level of prosperity remarkable by the standards of any age. The grand antebellum mansions of Natchez attest to the prosperity of the district in its antebellum apogee. The houses were located in the town of Natchez, while the plantations themselves were in the hinterlands. To young farmers these in-town monuments undoubtedly provided powerful visual markers of the wealth that was attainable through cotton.

Marketing and Merchants

In the years leading up to the Civil War in 1860, small farmers in the interior Hills (encompassing the Upper Pearl River Basin) region grew to account for 85 percent of farmers in the state (Adkins 1979). Unlike large planters, this bulk of farmers, even slave-owning ones, could not rely on centrally-located cotton 'factors' for marketing.
their cotton, as had been the case for Natchez planters. Factors were cotton brokers, chiefly stationed in New Orleans, who bought cotton directly from the large-scale planters. In regions of dispersed small farms, the farmers required a more direct means of marketing cotton, and of obtaining necessary supplies in return. Smaller farms, by contrast, tended to circulate farm expenditures more locally, contributing more to town development (Adkins 1979).

Smaller merchants largely met the needs of the yeomanry. Merchants arrived in the Hills region and established stores in strategic locations. Small town nuclei formed when two or three merchants located within a day's travel to a community of 100 to 150 farmers (Adkins 1979). The merchants purchased cotton from planters, and they also furnished agricultural implements, imported foodstuffs, and other supplies necessary for life in the rolling hills of the upper Pearl River basin. Eventually the existence of merchants attracted other services, such as banks and blacksmiths, to locate nearby and the settlements evolved into towns in several cases. The Upper Pearl River Basin of Ackerman, Mississippi, in Choctaw County, conformed to this pattern. After white settlers moved into the county in 1833, the town developed into a center for cotton ginning; several gins were located there by 1860 (Coleman 1973). Other towns of the Hills
region would exist for a long time, particularly if they became county seats. Occasionally a town would die if it was a county seat and the seat was relocated to the center of the county. Small river towns were susceptible to disruption by river course changes, and were also abandoned because of malarial conditions (Adkins 1979).

**Settlement and Agriculture**

The influx of settlers to the Upper Pearl River Basin began in 1833. Sixteen counties, encompassing the part of central Mississippi that includes the Pearl River Basin, were established that year on land ceded to the United States Government under the terms of the Treaty of Dancing Rabbit (Ladd 1973). The establishment of the counties heightened cotton mania among Mississippi's citizenry, particularly in the Natchez District, which Ingraham noted in the course of his travels:

...they [planters] are spreading over it like a cloud, and occupying the vast tracts called 'the Purchase,' recently obtained from the Indians, previous to their removal to the west. The tide of emigration is rapidly setting to the north and east portions of the state. Planters, who have exhausted their old lands in this vicinity, are settling and removing to these new lands, which will soon become the richest cotton growing part of Mississippi. Parents do not now think of settling their children on plantations near Natchez, but purchase for them in the upper part of the state. Small towns, with 'mighty names,' plucked from the ruins of some long since mouldered city of classic fame and memory, are springing up here and there, like mushrooms, amidst the affrighted forests. Sixteen new counties have lately been created in this portion of the state, where so recently the Indian tracked his game and shrieked his war-whoop; and
as an agricultural state, the strength and sinew of Mississippi must be hereafter concentrated in this fresher and younger portion of her territory (Ingraham 1966 originally 1835:98).

The passage further explains the critical relationship between the Natchez District and the Upper Pearl River Basin that existed during this early stage of agricultural settlement. The humorous allusion to ancient smoldering alluded to a few towns in the Upper Pearl River Basin, whose magnanimous names contrasted with their humble beginnings. The Upper Pearl River towns of Kosciusko and Carthage were probably in Ingraham's mind as he penned his interpretation of settlement in the New Purchase.

Upper Basin Settlement

Settlement by the first wave of farmers in the Upper Pearl River Basin closely approximated the pattern outlined for the larger Hills Region of Mississippi by the geographer H.G. Adkins. He described the variety of settlers who traveled to the Hills, the largest region of agricultural settlement in the state, consisting of rolling terrain and variable soils:

Large plantations dominated an area thirty miles wide that lay east of the Delta in the Black Belt, a narrow crescent-shaped area west of the Tombigbee River. Otherwise there was a fairly even mix of large planters, small planters, and yeomen farmers throughout the Hills. The potential markets proved encouraging to merchants, who opened stores in settlement and surveyed town lots around them (Adkins 1979:134-135).
The dispersed distribution of farms contrasted with settlement in other regions of the state. The settlement pattern around Natchez was oriented to the primacy of the city of Natchez as a hub of commerce and crop transshipment. Wealthy plantation owners built trophy homes in the city’s residential neighborhoods to solidify their position within the local hierarchy. Their plantations were typically more functional and less pretentious operations in the outlying hinterlands.

By contrast, the southern Piney Woods region, near the Gulf Coast, was avoided by the 'moneyed class of settlers' (Adkins 1979) partly because of difficulty in locating and maintaining adequate soil fertility. The development of well-defined towns was limited by the relative self-sufficiency of farmers there (Adkins 1979).

The Piney Woods Region

Opportunities in the New Purchase also created a stir in the Piney Woods region of southern Mississippi, a district with a decidedly grittier socio-cultural complexion than the Natchez District in the early nineteenth century. Farmers of the Piney Woods perceived the Purchase as holding greater potential for prosperity through cotton culture than their district with its decidedly inferior croplands. Consequently, the opening of the Upper Pearl River Basin resulted in an ancillary depopulation of the Lower Pearl River Basin, and other
counties with similar geoecologic characteristics (Ladd 1973).

This Southern region, south of the core Choctaw homeland and in closer proximity to the Gulf of Mexico than the Upper Pearl River Basin, had experienced considerable population growth in the first two decades of the nineteenth century. During this interval, farmers established themselves in the lower Piney Woods of the Pearl River Basin. While cotton was a staple crop of many farms in the lower Basin, raising cattle was the principal agricultural pursuit. Cattle ranged the open park-like stands of fire-maintained pine forest. Moore summarized the importance of cattle to this region that bordered the Upper Pearl River Basin:

Indeed, cattle raising was the principal industry in Southeastern Mississippi for many years. This comparatively unknown and unsettled part of the state was a region of pine forests and sandy soil totally unsuited to the growing of cotton and corn except for occasional fertile alluvial soils along the banks of rivers. A profusion of wild grasses covered the floors of the great pine forests, and there were vast canebreaks in hollows and along the many streams flowing through the region. Here cattle had roamed the woods and grazed upon the open range since the latter days of the French occupation of the Mississippi Gulf Coast. When the Indians were driven from this part of the state in the 1790s (the southern coastal counties) and the early years of the nineteenth century, they were followed by whites whose occupation was raising cattle for export to overseas markets. (Moore 1958:62).

Patches of upland and terrace soil were important for cropping, but with a greater emphasis on food cropping for
local consumption than for market production. Cotton cropping there never reached the near-mythic prominence it achieved in the Natchez District. Nonetheless, the southern Piney Woods provided an important forum for white small-holders to develop a regional approach to farming that they extended to the upper basin after 1830.

In deference to the New Purchase's comparably superior cropping soils and promise for greater prosperity, many farmers departed the lower basin for the Upper Pearl River Basin once it opened to settlement (Riley 1902). One lower Pearl River Basin county, Jones County, experienced such a precipitous decline that whole communities within its borders disappeared, and the county government collapsed temporarily in 1836 (Ladd 1973). This intra-state migration caught the attention of the Natchez journalist J.H. Claiborne, who noted with some consternation that the source of many immigrants to the upper Pearl River basin came from the southern Piney Woods.

...the treaty of 1830 with the Choctaw, that threw open such an immense extent of productive territory in the center of our State, drew off her population by the hundreds. Next to Lawrence, Wayne has given the largest number of settlers to the new counties. The majority of those that remained are intelligent farmers, raising their own supplies, and ever ready to welcome the wayfarer to their hospitable firesides (Claiborne 1906:529).

There was little mystery to the exodus from the coastal regions once the Choctaw lands opened to white settlement. Farmers of the Mississippi and Louisiana Gulf coast had
managed to cultivate modestly successful cotton harvests, in addition to a retinue of food crops. Claiborne repeated a widely-held perception that farmers of the Lower Pearl River Basin were more autarkic and less concerned with producing cotton surpluses than in developing enterprises suited to the local geoecology and available markets. However, soils of the Piney Woods coastal region were also perceived to be inferior for cotton in comparison with the newly opened lands of the upper Pearl River basin, and farmers were keenly aware of cotton's potential for wealth creations. New lands of the upper basin promised initial soil fertility that would provide for excellent crop returns. This presented a considerably more enticing prospect than clearing bottomland forests in the lower basin, with the added necessity of providing for adequate drainage in the fertile but swampy bottomland soils.

**Simpson County**

One of the southernmost counties of the Upper Pearl River Basin study region, Simpson County, represented the Piney Woods environment during the critical period of the 1830's. A summary of early events there helps to underscore the inter-regional dynamics between early pioneer farming and settlement in the lower basin, and post-1830 developments in the upper basin.

The earliest soil surveys of Mississippi serve as one of the most relevant sources for outlining this sequence, in
Simpson County as in other counties of the basin. The southernmost part of Simpson County was settled in 1813, by pioneers who arrived from the east and northeast (USDA 1919). These settlers preceded significant pioneer settlement and agriculture in the upper basin by 20 years. At first, farmers regarded the uplands of Simpson County as unproductive for crops; they were used primarily as free range for the cattle that formed the basis of the Piney Woods pioneer herding/farming economy (USDA 1919). Many farmers in the county raised cattle in scattered settlements. A few farmers did cultivate cotton, lured by new demand for the crop in the early nineteenth century. Cotton was preferentially grown on the 'flattish' ridge tops of the county (USDA 1919). While they were sandy and relatively infertile, these ridge tops were preferable for cotton. They had superior drainage characteristics to bottomland soils, which were much later brought in to production after critical drainage improvements were completed (USDA 1919).

Early nineteenth century Simpson County farmers' extensive cattle raising methods precluded efficient manure recovery, while their proximity to the middle reaches of the Pearl River provided a means of transporting fertilizer to county farms (USDA 1919). However, the perceived intrinsic infertility of the uplands inhibited development of the cotton economy to a degree approaching that of the
early Natchez District, or that of the Upper Pearl River Basin after the territory opened (Adkins 1979).

Pioneer farmers avoided cultivating the wide bottomlands of Simpson County in many cases for the flooding problems they experienced (USDA 1919). While soil fertility in the bottomlands generally exceeded that of the uplands, periodic inundation could destroy bottomland crops with seasonal regularity. The persistent swampiness of bottomland soils provided another disadvantage, especially for rust and rot-prone cotton crops, and corn as well.

The swampy bottomlands of Simpson County also harbored an affliction that inhibited early settlement there and elsewhere in interior Mississippi. In addition to discouraging cotton cropping, the persistent standing water conditions of bottomlands encouraged mosquito breeding and heightened the fear of yellow fever and malaria. Malarial conditions were not effectively controlled in the Pearl River basin, as in the rest of the Deep South, until the early twentieth century. The anopheles mosquito was not positively identified as the vector of malaria until the twentieth century, but there was longstanding folkloric avoidance of low swampy spots by pioneer farmers across the eastern United States, especially in the South (Meade 1980). Miasmatic conditions were a particular concern for new settlers from northerly climate. William Darby, in his primer for emigrant farmers in the Deep South, cautioned of
the special danger of moving from more temperate climes to lowlands of the humid subtropics:

Living near swamps or low ground, in summer, exposes one to disease in all countries, but that liability to contract sickness will be increased extremely when a healthy person, leaving a cool and pure atmosphere, is at once transported into a warm climate and near large bodies of fresh water (Darby 1818:38).

Instead of explicitly avoiding mosquitoes, settlers tried to avoid bottomlands, especially during the initial settlement period, on account of the ague-causing "vapors" (Chaplin 1993; Owsley 1949; USDA 1912).

**Farm Site Preference and Selection**

Owsley's study (1949) provides a guide to the role cultural conditioning played in farm site selection and settlement in Southern regions such as the Pearl River Basin. Since the settlers were the first large group to occupy the new lands, they had relatively unencumbered selections of land to claim. The settlers had opportunities to occupy land that suited their requirements—one of the primary benefits of pioneer settlement and one of the challenges faced by those who followed (White 1980).

The pioneer farmers elected to settle in a range of arable lands. Swamps and river bottoms were, however, avoided for two principal reasons: fear of miasmatic ailments and to preclude the considerable investments in "landesque capital" (Blaikie and Brookfield 1987) required
to bring them into production. These are labor and capital improvements to land for the purposes of ensuring long-term productivity (Blaikie and Brookfield 1987). Such investments as drainage and raised fields require considerable labor input, limiting their appeal to pioneer farmers hoping to elicit immediate benefits from new lands.

As was the case of other pioneer agricultural migrations in American history, these farmers settled available lands that most closely resembled their homelands. As Owsley asserted, “Farmers accustomed to sandy loams and even poor sandy soils would not usually pre-empt or purchase a homestead in regions of stiff clay or ‘gumbo’ soils” (Owsley 1949:53). While gumbo soils certainly prevailed in bottomlands of the Upper Pearl River Basin, the uplands and second terrace soils of the region met this criterion of selection.

The preference for upland cropland extended to other counties of the Upper Pearl River Basin. In Newton County, Mississippi, one of the Central Hill counties, this pattern held true. A local Newton County historian, A.J. Brown, recorded that the level sandy uplands of Newton County were much preferred by pioneer farmers to the ridges and even to the small tracts of prairie soils (Brown 1902). Apart from an emotional and cultural attachment to familiar landscapes, soils, and vegetation, friability was an important consideration, for it helped to ensure a modicum
of crop productivity during the critical early phase of farm establishment.

It was important for settlers to choose a region where they could apply familiar technology from their previous farms to new ones. A large number of early settlers of the Upper Pearl River Basin of Mississippi were from South Carolina, a state that bears a close resemblance to the hilly landscape northeast of Jackson, Mississippi. Both regions are within the Gulf Atlantic Coastal Plain and share similar climate and vegetation characteristics. The terrain undulates and similar types of sandy red soil, which allowed farming techniques and technology to be transferred between the two regions, overlay the ridge tops.

Some of the affinity for migrating between Mississippi and the Mid-Southern states was rooted in climatic similarities. The author of a primer for pioneer farmers in early nineteenth century North America, William Darby, noted this pattern in 1818 (Darby 1818). Darby observed that New Englanders went west to Ohio, farmers from Maryland and Virginia settled in Missouri and Tennessee, and those from Carolina and Georgia removed to Mississippi, Louisiana and Alabama. This observation agrees with Owsley's determination that many of interior Mississippi's earliest white farmers originated from up-country South Carolina (Owsley 1949).
Winston County

The early settlement chronology of Winston County approximated the patterns delineated above, with a few distinctions. The county is a particularly apt one to consider first, since the county encompasses Nanih Wayih - center of the Choctaw Nation and site of the Treaty of Dancing Rabbit Creek. Situated at the headwaters (in the Headwaters sub-region) of the Pearl River basin, on Nanne Warrior Creek, the county officially opened for settlement in 1833 (USDA 1912). The Mississippi government adjusted and reduced the borders of the county in 1835, a common occurrence among Mississippi's counties in the nineteenth century. Settlers from Mississippi, Georgia, Alabama, Tennessee, Virginia, North Carolina, and South Carolina settled the new county (USDA 1912).

The county encompassed two principal landform types endemic to the Headwater sub-region: uplands and bottomlands. The pre-agricultural vegetation of the uplands was short-leaf pine, oak, cedar, and walnut. Mesophytic species such as Magnolia, beech, cypress, swamp maple, and persimmon predominated in the bottomlands (USDA 1912). A small population of Choctaw continued cultivating lands along Nanne Warrior Creek, primarily on the terraces/second bottoms; they continued doing so until at least 1910 (USDA 1912). The white newcomers settled the uplands first, then
occupied the bottomlands in a second stage of agricultural improvement and continued settlement (USDA 1912).

The influx into Winston County was precipitous; by the end of 1837 there were 4650 people living in the new county (USDA 1912). Cotton, of course, was the principal crop and it was first grown on the uplands in well-drained sandy loams. While cotton was the principal crop, and corn a vital complement, the early settlers grew considerable quantities of oats (USDA 1912). The cultivation of oats indicated the necessity of maintaining self-sufficiency under what were difficult conditions, compounded by limited access to supplies purchased from outside the region.

Agricultural Practices

Upper Pearl River Basin planters elected to farm the undulating landscape in a fashion similar to the manner of planters in the mid-Southern states of South Carolina and Georgia. In doing this, they adopted the techniques of a group that quickly embraced the cotton crop as a means of sustaining small and large upcountry farms alike. In late eighteenth-century South Carolina, significant agricultural innovation emerged from upland planters' efforts to adapt traditional techniques of farming to the new crop of cotton (Chaplin 1993). These innovations contrasted with the slower pace of innovation on the quasi-feudal large rice plantations of the lower coastal plain, a complex that had matured in the mid eighteenth century. As Chaplin notes of
the coastal plantation complex, "Agricultural experiments [there] depended on a system of power and patronage revolving around the efforts of wealthy planters, and they saw fruition only when a crisis jeopardized existing agricultural activities" (Chaplin 1993:19).

The pace of innovation was considerably quicker in the expanding cotton economy of upland South Carolina. Cotton planters there benefited from an influx of northern settlers and a revolution in early-nineteenth century modern economic systems, in which staple agriculture was intimately connected with northern industry. These innovative ways traveled southwest to east-central Mississippi with the tide of settlers of South Carolina origin.

The influences discussed above underscore the critical role that cultural diffusion played in the pioneer settlement and agriculture of the Upper Pearl River Basin. Settling the Upper Pearl River Basin was strongly influenced by experience gained in farming other staple farming regions of the American South. As farmers streamed into the Upper Pearl River Basin, they increasingly turned their attention to an important physical element of the region and adapted it to their needs - the Pearl River itself.
River Navigation and Transit

From the very beginning, riverine transport was integral to the success of cotton culture in pioneer Mississippi. The Mississippi River provided a mighty conduit by which Natchez District planters shipped their cotton and unloaded supplies. This was a paramount factor in encouraging early settlement and agriculture in the Natchez District. As lands of the Mississippi interior opened to settlement, navigation on the Magnolia State’s other navigable waterways became an increasingly visible priority. This was especially true of the Pearl River.

The Pearl River assumed a level of importance commensurate with the pace of new settlement in the region. Even fifteen years before the Upper Pearl River Basin opened to settlement, the lower river gained the attention of those with an eye for its anticipated role in the future agricultural economy of the region:

The settlements on these rivers are already respectable, and are increasing in strength and wealth. The navigation of the Pearl is obstructed by shoals and timber, but it is probable that without any very considerable expense its navigation might be improved to a great degree.

At the time when Darby recorded his prospects for the Pearl River, agricultural settlement in the Pearl River Basin was limited to the lower Piney Woods division. Navigational improvements on the Pearl River subsequently took place in response to the second wave of settlement in Mississippi.
The Pearl and Tombigbee Rivers were two of the most important rivers available to settlers of 'New Purchase' farmlands. They presented the best option for moving heavy supplies upriver and cotton downriver. The preeminent Mississippi agricultural historian, John Hebron Moore, stressed the mounting importance of these two waterways to antebellum settlement in interior Mississippi:

Cheap and convenient water transportation exerted a profound influence upon the economic development of Mississippi during most of the ante-bellum period. In the southern and eastern portions of Mississippi the Pearl and Tombigbee rivers opened water highways to the Gulf of Mexico (Moore 1958:56).

In the earliest stages of pioneer settlement in the cotton South, when the roads were at their most primitive stages of development, these waterways were the sole practical means of transporting heavy cargoes through interior Mississippi. They were also the most comfortable means of transporting passengers into interior Mississippi. Nonetheless, commercial riverboat travel was a relatively costly expense for pioneers moving into the Upper Pearl River basin. In his primer for pioneer settlement, Darby recommended that the easiest and most cost-efficient means of early travel was by horseback (Darby 1818). Horses were available in Mobile, New Orleans, and Natchez, for around $80.00 in 1817 (Darby 1818). The availability of horses declined when they were most needed, though. After the New Purchase opened in the 1830's, the price of good horses in
Mississippi increased considerably, as noted by Olmsted in his mid-century transect through the region (Olmsted 1907). Riverine transport remained a critical means of reaching the Mississippi interior.

**Riverboats**

The earliest riverboats to serve incipient farms of central Mississippi were non-powered keelboats and flat boats. Upon reaching their upriver destination and taking on cargo, the boats were floated downstream. After 1820, when steamboats became an important means of river transport in the Deep South, keelboats and flatboats were still necessary, particularly in shallow headwater reaches of smaller rivers (Quick and Quick 1926). One example of such a waterway was the Yockanookany River, a major tributary of the Pearl River. Such craft were able to go far upriver, beyond the heads of steamship navigation to serve more remote farms and settlements, where snags and shallow depths precluded steamboat passage. Their necessity increased during the earliest stages of settlement, for the river course improvements of the time did not move the heads of steamboat navigation appreciably further upstream.

By 1845 flatboat traffic on the Pearl River could proceed as far upriver as Leake County (a Central Hill county of the Upper Pearl River Basin), over a hundred miles upstream from the growing town of Jackson (Lory and
McCardle 1891). This was important because an important railhead in Jackson, of the Jackson to Vicksburg line, terminated there, while no rail lines ran directly to Leake County before the 1890s. The Jackson rail head allowed for transshipment between the Mississippi River and the Upper Pearl River Basin, providing an important link for antebellum farmers of the upper basin (Napier 1985). After discharging their cargo of supplies at upstream landings, the keelboats could take on loads of cotton, which had been transported by the wagonload to the stream banks. These small riverboats then were guided downstream to the head of steamboat navigation, of which the highest recorded upstream point was Carthage (Way 1994), where the cotton could be transferred onto larger steamboats to complete the journey downriver to Jackson, or even further downstream to the Gulf of Mexico. The completion of the Brandon-Vicksburgh Railroad in the 1830s provided a critical link between cotton floated to Jackson, on the Pearl River, and the Mississippi River (Moore 1958).

**Pearl River Navigability**

To use the upper Pearl River for riverborne commerce, it had to be rendered navigable by more substantial craft than pole-driven flatboats or keelboats. However, the Pearl River offered considerable impediments to smooth cruising through its sinuosity and innumerable snags. Early in the pioneer farming stage of the Upper Pearl River
Basin, improvements to the river were proposed. Among the sources concerned with the issue was The *South-western Farmer*, a leading journal of Mississippi agriculture that was published in the Hinds County town of Raymond. The journal noted, with concern, the condition of the Pearl River in 1842. The low-water conditions common to the Pearl River in midsummer obviously colored the observer's perceptions:

A worthy correspondent whose communication appears in our paper today lately crossed Pearl River at Jackson; and finding it so low that some fishermen were obliged to carry their bateaux he concludes that the project, formerly entertained, of making that stream navigable, was a manifest absurdity (North 1842:201).

However, such pessimism was not universal, nor was it entirely warranted, because the winter levels of the river were consistently higher, at a time when cotton harvests were ready for shipment.

Some of the pessimism regarding Pearl River improvements was rooted in regional political competition. Influential citizens of Natchez District sometimes called for restricting development of the Pearl River channel. One might reasonably suspect the *Southwestern Farmer* of pro-Natchez inclinations. Theirs was a thinly veiled attempt at maintaining the diminishing political power of the district as the New Purchase gained population. Claiborne, of the *Natchez Gazette*, took note of this and decried the lack of legislative commitment to early river
improvements during a visit to the Lower Pearl River town of Monticello:

It is situated on a beautiful bluff or plateau on the west bank of Pearl River, which is a fine, bold stream, affording steamboat navigations [sic] many months in the year. No river has been more neglected by the Legislature than the Pearl. Rising in the very heart of our State, in the counties of Winston and Neshoba, and sweeping along through a fine cotton region by the capital of Mississippi, it might easily be made navigable almost its whole extent. But an extraordinary indifference to practical internal improvements has too long characterized our Legislature, and the resources we should have applied to such objects have been squandered in the vain attempt to make bank paper supply the place of gold and silver. Although Monticello has felt heavily the hand of time, it is still a charming little place (Claiborne 1906:510).

Such improvements threatened to dilute the Natchez District's political and territorial hegemony within the state. The elite of Natchez were sufficiently alarmed by the decision to establish the first state capitol in Columbia, on the lower Pearl in 1821, and their fears were doubled by the subsequent establishment of Jackson as the state capital in 1822 (Ladd 1973). This represented a tremendous shift in geographic center of governmental power; the Natchez District town of Washington had been the territorial capitol since 1801 (McLemore 1973).

Others maintained awareness of the Pearl River's potential for contributing to the prosperity of the New Purchase. A contributor to the South-Western Farmer extolled the Pearl River's potential for navigation in a gush of prose that contradicts his earlier prognostication:
The resources of this great artery, leading from the very heart of our State, have not been properly appreciated and the mineral treasures, which now lie hidden in almost utter obscurity in our quarries and mines, may yet give employment to the commerces of the Pearl river, to an extent of which we, in the present age, can have no conception (North 1842:202).

Considerable resources were expended in pursuit of the ideal of inland steamboat navigation on the upper Pearl River. Bends and obstructive trees were the main problem, especially upstream of Jackson. The bends of the rivers were more accurately described as elbows, for they were acute angles instead of curves. The curves made for exciting steamboat navigation in the 1840s and later, as recorded by this traveler on the Pearl River.

The bow of the boat has to be kept as near as may be in the centre or near up to the trees on the point, while the stern swings away into the corner under the boughs of the trees on the opposite side, the cotton of course being lashed fast to the deck to keep it from being swept off. The headway of the boat is of course checked on nearing the bends—and, while rounding them, the wheels work reversed, the inside one backing, and the outside turning. When she gets fairly turned parallel with the course of the stream, the steam is again let on to both wheels, and away she goes to the next elbow, which is sure to occur, on an average, at least one in every half mile. In this way, we will make about 60 to 80 miles per day, and then tie up, never attempting to run in the night. The chief difficulty in the upper parts of the river consists of the timber on the banks, which renders the turning of the points so arduous. As the country settles up this timber will gradually disappear, thus rendering the passage of the boats more easy (North 1842:201).
The author also surmised that there might be some incentive for Congress to appropriate funds for improvement of the lower river, to furnish smoother trade between the Pearl River and the West Indies (North 1842:202).

**Pearl River Navigation: Upper, Middle, and Lower**

Despite the obstacles posed by snags and bends in the Pearl River channel, the distances steamboats could travel upstream in high-water conditions were impressive. The capital city of Jackson, in 1842, was on a section of the Pearl that was typically quite shallow in the dry month of August (North 1842:201). However, in the winter, when the bulk of heavy commerce on the river transpired, there was often sufficient depth to allow steamboats to ply the channel successfully above Jackson. During winter high-water conditions it was possible, in 1842, for a steamboat with a seven-foot draft to travel fifty miles upstream of Jackson to Leake County (North 1842). Even when points upriver were unreachable by steamboat, there was generally good access to Jackson itself from points downstream. The 'Yankee Traveler' Ingraham determined that the Pearl River was navigable two hundred miles from its mouth, in 1835, only shortly after the territory was opened to settlement and few improvements had yet been made to the river (Ingraham 1966 originally 1835:174).

While steamboat travel upriver from Jackson was fraught with seasonal variables, navigation on the river's
middle section was considerably more predictable. As North noted, the capabilities for transport on the Pearl River were evident:

After getting through the thick woods which lie along the bank as far as Georgetown and a little farther, we come to a fine open country, with well cultivated fields, in the counties of Copiah and Lawrence, and some in Simpson and Marion. Here the navigation is fine and almost uninterrupted for more than a hundred miles. The steamboat we were on had nearly 700 bales of cotton and we glided along at a beautiful gait, making in the course of one forenoon, some sixty-odd miles. From Georgetown to some distance below Columbia, the navigation was as fine as could be desired. We were really delighted with it—passing in the mean time, the ancient town of Monticello, a very pretty village, handsomely situated on a high bank of the Western side of the river (North 1842:202).

North's account draws a connection between the powerful example of the middle stretch of the Pearl and future prospects for settlement, agriculture, and trade on its upper reaches. The picturesque quality of the river's banks and the signs of human existence they encountered along it most appealed to observers who advocated further development of the Pearl channel for riverine transport.

The villages and plantations along the middle river struck Ingraham as pleasant visually and socially (Ingraham 1966 originally 1835:174). Claiborne, in the 1840s, noted that the Pearl swept through a fine cotton region by the capital of Mississippi, but that the channel itself lacked the necessary improvements to realize the full potential of the river for the developing agricultural economy.
(Claiborne 1906). Through navigational improvements, he and others aspired for the fortunes of Pearl River villages and towns to approach the importance of similar settlements on the 'Father of Waters' - the neighboring Mississippi River. In this sense, the Piney Woods section of the Pearl River served as an important exemplar of what could be accomplished partly through improvement of the Pearl channel to accommodate regular steamboat traffic.

Surprisingly, some of the greatest hazards to shipping lay in the lower Pearl, where the river had a number of treacherous obstacles:

But, after getting some distance below Columbia, comes the tug of war—when come the rafts, the shoals, the cats, and the cart-wheels. They form a series of obstructions for some thirty miles; and they are the terror of all Pearl-River navigators. We believe, however that a very moderate sum would suffice to clear away these obstructions (North 1842:201).

To the Pearl River's boosters, the troubles of securing a navigable upper Pearl River channel were comparatively minor. The problems of the upper Pearl were chiefly concerned with bank caving. Bank caving had the undesirable consequence of unleashing large quantities of timber into the river channel, where it posed an obvious threat to steamboats. While certainly a burden, the timber 'problem' was viewed as something that would largely clear itself over time:

Thus, it will be seen, as before intimated, that the chief difficulty in the upper parts of the river consists of the timber on the banks, which
renders the tuning of the points so arduous. As the country settles up, this timber will gradually disappear, thus rendering the passage of the boats more easy (North 1842:202).

**Improvement Issues and Projects**

A factor weighing against the appropriation of significant state and Federal expenditures to improve navigation on the Pearl was the early construction of railroads, enabling cotton and other goods to be brought from the interior to the Mississippi River. This was the case in Jackson, the capitol city of Mississippi, which was a stop on the Brandon-Vicksburg Railroad. However, the railroad was a relatively expensive means of transporting cotton (Moore 1958). Farmers were forced to transport goods over primitive roads to the railhead at Jackson. To them, the existence of a “stream running by their feet into the sea” (North 1842:201) provided an enticing, albeit challenging, prospect for supporting the cotton economy of the upper Pearl River basin.

The competitive advantage of moving goods on the lower Pearl River diminished by 1860, when the Illinois Central Railroad between New Orleans and Jackson was completed. This culminated the lack of a meaningful antebellum effort to improve and maintain a channel in the Pearl River from Neshoba and Winston Counties to its outlet in the Gulf of Mexico. The existence of rail connections compounded the persistent and successful efforts of powerful interests in
the Natchez District to restrict development of the Upper Pearl River channel (McLemore 1973:268).

Before the Civil War, Congress initiated and financed a series of modest campaigns to straighten bends in the Pearl River and render it navigable by steamboats (Howell 1879). The process involved creating straight cut-throughs to bypass sinuous curves of the Pearl. Straightening was usually accomplished by burning the groundcover vegetation of bends during low-water dry spells. Trenching the resultant bare earth created a path for the river to assume when water levels rose again, creating a direct route of considerably shorter length.

The efforts of government-financed straightening were aided in a less official capacity by boatmen, for whom straightening and de-snagging were integral parts of their daily activities on the river (Quick and Quick 1926). Planters and farmers along the Pearl blessed straightening river bends as an economic boost, for the effect it had on increasing accessibility to the Upper Pearl River Basin.

However, as in many other efforts to modify channels, the physical laws of fluvial geomorphology were frequently ignored when straightening the Pearl, resulting in undesirable consequences. Straightening increased the depth and flow for a while, but increased bottomland flooding ensued (National Resources Committee 1938). Flooding drove many farmers along the lower Pearl River up
and away from the rich alluvial first and second bottomland terraces, especially in the middle Pearl River basin (Napier 1985:63). Hence, one solution exacerbated another problem.

Actions to improve navigation of the Pearl continued through 1860, but regular steamboat navigation on the Pearl halted until the end of the war in 1865. During the beginning of hostilities in the Civil War, Confederate forces placed a series of obstructions in the lower Pearl River below Jackson, to prevent waterborne Union attacks on the capital city and elsewhere in interior Mississippi (McLemore 1973). During the Civil War, navigating the Pearl River necessitated a return to the flatboats and bateaux of the preceding decades.

River Clarity and Environmental Change

The increased muddiness of the river from modifications stood in stark contrast with the Pearl River as it was encountered by the new wave of settlers. In the 1830's, boatmen plying the upper Pearl River noted water clarity that was astonishing by present standards, and even by late-antebellum ones too. By all accounts the Pearl River was so-named on account of its notable clarity. French explorers, struck by its clarity had named it La Riviere aux Perles in the early eighteenth century (Roullet 1732).
A travel account by J.F.H. Claiborne, of the Natchez Free Trader and Gazette, effusively proclaimed the Pearl’s clarity to readers back in comparatively cosmopolitan Natchez. He traveled with a party across the mid-Pearl River basin on to the Black Belt of Alabama in the early 1840’s. As his account makes abundantly clear, he was enchanted by the region:

The moment the traveler going eastward crosses the Pearl he will see the marked change in the water. There are clear creeks and springs in Pike, Franklin and Amite, but none that compare with Silver Creek and Whitesand, and the thousand rills and rivers that flow to the south on the eastern side of Pearl and mingle their crystal floods with the chafing waters of the Gulf. The traveler rides into one of these, supposing it to be only a few inches deep and soon finds the water washing his saddle skirts, and the silver-sided perch playing around his stirrups. The fabled fountains of Arethusa or Egeria were not more beautiful than these transparent streams (Claiborne 1906:511).

Claiborne’s intent was to portray the Piney Woods of the Lower Pearl River Basin favorably. Even discounting for Claiborne’s florid style, his description provides a strong indicator that the Pearl ran clear at this point early in the region’s settlement history. Considering that the reports originated in the Lower Pearl River Basin, where settlement and agriculture prevailed prior to 1830, the report carries importance in dating modifications to the river after settlement in the upper basin accelerated.

Indicators of stream clarity are the factor Carl Sauer regarded as critical to establishing reference points for
reconstructing the magnitude of environmental change that hilly cotton growing regions of the American South endured over the next century. Sauer, a staunch advocate of historical approaches in all forms of geography, stated that one can judge environmental stewardship in the South partly on indicators of stream clarity (Mooris 1937). As a counterpoint, the success of remedial work can be measured, Sauer remarked, in a study of soil erosion of the cotton South: "When your rivers run clear again, your problems will be solved" (Morris 1937:369). By such a criterion of determination, the upper Pearl River sediment load was largely unaffected by settlement, agriculture, and navigational improvements before pioneer farmers arrived in the 1830s.

Observers in similar geoecologic regions of the American South also noted the issue of stream clarity before and after pioneer settlement. Silver (1990) asserts that stream clarity was an indicator that Indian agriculture exerted a minimal erosive effect on soils of a region he terms the 'South Atlantic Forests'. He marshals examples of early explorers who were struck by the clarity of various streams and rivers of the Atlantic Coastal Plain, which apparently carried little sediment even under high water conditions (Silver 1990).

One of the greatest scientific chroniclers of the South, the geologist Charles Lyell, also drew connections
between stream clarity and settlement. Consider his observations on the post-settlement condition of South Carolina's Altamaha River, for they were of a river in a geoeconomic and cultural setting with similarities to the Upper Pearl River Basin:

We returned from St. Simon's to Hopeton, much pleased with our expedition. As our canoe was scudding through the clear waters of the Altamaha, Mr. Couper mentioned a fact which shows the effect of herbage, shrubs, and trees in protecting the soil from the wasting action of rain and torrents. Formerly, even during floods, the Altamaha was transparent, or only stained of a darker color by decayed vegetable matter, like some streams in Europe which flow out of peat mosses. So late as 1841, a resident here could distinguish on which of the two branches of the Altamaha, the Oconee or Ocmulgee, a freshet had occurred, for the lands in the upper country, drained by one of these (the Oconee) had already been partially cleared and cultivated, so that that tributary sent down a copious supply of red mud, while the other (the Ocmulgee) remained clear, though swollen. But no sooner had the Indians been driven out, and the woods of their old hunting-grounds begun to give way before the ax of the new settler, than the Ocmulgee also became turbid (Lyell 1849:256).

Lyell's travels to the Pearl River Basin were more cursory, consisting of a short journey to Jackson from the Mississippi River (Lyell 1849). His observations in the similar Altamaha basin, red soils included, aids in illuminating a process that repeated across the antebellum South. The noticeably sharp changes in suspended sediment loads of streams in newly cleared lands of the Gulf Atlantic Coastal Plain provide some of the starkest markers

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of the changes that took place after the Indians were displaced from the region.

Environmental Limitations and Opportunities

While the future for cotton culture appeared bright to Natchez Planters, some ominous problems appeared during the earliest days of Mississippi cotton culture. Before there were any significant cotton farms in the hill country of the Upper Pearl River Basin, Natchez planters had already encountered destructive soil erosion. This problem would later plague cotton farmers across Mississippi and the rest of the Cotton South.

The Problem of Soil Erosion

The problem of soil erosion certainly attracted the attention of travel writers who observed the Natchez District.

By degrees, acre after acre, of what was a few years previous beautifully undulating ground, waving with the dark green, snow-crested cotton, presents a wild scene of frightful precipices, and yawning chasms, which are increased in depth and destructively enlarged after every rain. There are many thousand acres within twenty miles of the city of Natchez, being the earliest cultivated portions of the country, which are now lying in this condition, presenting an appearance of wild desolation, and not unfrequently, of sublimity. This peculiar feature of the country intrudes itself into every rural prospect, painfully marring the loveliest country that ever came from the hand of nature (Ingraham 1966 originally 1835:87).

This realization, and the efforts of Natchez planters to mitigate the problem, had major implications for the extension of cotton culture to the Upper Pearl River Basin.
Even the earliest planters of Natchez noted the strong propensity of sandy soils to erode, especially when cotton was cultivated on slight inclines (Moore 1958; Wailes 1854). The practice of turn-of-the-(19th) century Natchez planters was to clean-till the soil, according to which practice the rows were hoed into hills. Weeds were hoed, usually by slaves on the larger farms, from between the rows to optimize cotton growth, and the soil was kept as bare as possible.

Clean tilling helped the cotton plants to thrive free from competition by weeds, but it exposed the soils to sheet and gully erosion (Wailes 1854). This was particularly true in the sloping fields of loess-derived soils that prevail around Natchez. To counter this widely-perceived land degradation, Natchez planters had their slaves clear new fields in the wintertime, so cotton could thrive in new fields each year (Wailes 1854). Of course this pattern persisted only as long as new fields were available in close proximity to the riverside economic node of Natchez city.

Clearly some more innovative solutions were necessary if cotton culture was to continue prospering in Natchez and elsewhere in Mississippi. William Dunbar, a prominent Natchez District planter, stood apart for his scientific approach in adapting the new cotton economy to the landscape of Mississippi. Toward this goal he led the
first organized efforts to confront soil erosion in the nascent Mississippi cotton economy (Moore 1958). A friend and correspondent of Thomas Jefferson, Dunbar was one of the most prominent citizens of the Natchez District during its zenith of economic power. He was nationally renowned for his exploration of the upper Red River at the behest of President Jefferson, but some of his most lasting contributions transpired in the cotton fields of Mississippi.

Dunbar introduced and promoted the then-important technique of "horizontalling" or "circling," as he sometimes called it, to Mississippi in 1810 (Moore 1958). Benjamin Wailes, an early chronicler of Mississippi historical geology and agriculture, reported that Dunbar initially apprised himself of the technique from President Jefferson, who observed it in his numerous travels through the diverse agricultural districts of France (Wailes 1854). On his own plantation, Dunbar established cotton rows parallel to the contours of hillsides. The rows were ditched for drainage, in a manner that encouraged rainfall to flow parallel to the elevation contours, rather than straight down-slope. The results proved to be partly effective at checking the sheet-wash erosion that resulted from light rainfall events. The contoured rows successfully helped to prevent topsoil from washing down-slope. However, the success of horizontalling depended
entirely on the commitment of planters to ensure that they, or work parties of slaves, meticulously re-graded and repaired the earthen embankments throughout the growing season.

Horizontalling was not the comprehensive cure for erosion that Dunbar and other Natchez planters had desired; the practice actually exacerbated gully formation in many cases. The horizontal rows typically withheld rainfall until it accumulated sufficiently to overrun the row edges. This threshold condition created the requisite conditions for gully formation, particularly during episodes of high rainfall - a weather pattern common in Mississippi summers. Sudden breaches tended to cause rapid down-cutting of the loose soil, forming rills. If left unchecked, the small rills could develop into much larger gullies, with the capacity to destroy entire fields, and to consequently choke streams with suspended sediment.

Horizontalling thus appeared to alleviate sheet erosion, but at the expense of increased gullying. Dunbar died in 1810, precluding his further involvement in Mississippi agricultural innovation during its expansion into the Gulf Hills region. His contribution to soil conservation had some shortcomings related the difficulties of allocating sufficient labor. Nonetheless, he was the first prominent Mississippi planter to address soil erosion publicly. His advocacy of addressing erosion
systematically and precisely was an important step toward recognizing and addressing a problem that would persist over the ensuing 150 years of Mississippi cotton culture.

In the decades following the death of Dunbar "horizontalling," or "contouring" as it was more widely known across the South, was alternately supported or castigated for its influence on soil conservation across the Cotton Belt (Moore 1958). This dialectic is a primary example from Mississippi of a dominant theme in historical cultural ecology. Some influential planters, like Dunbar, viewed the technique as a viable means for adapting cotton culture in soils with high erosive potential. Dunbar exhibited the perspective of a planter hoping to make an existing (and profitable) system more tenable, without the resource allocation of extensive fallow-field rotations.

Advocacy for the technique continued in antebellum Southern agricultural periodicals, including the high-profile, Georgia-published, Southern Cultivator. The Southern Cultivator enjoyed wide circulation in early nineteenth-century Mississippi. Some of the articles relayed within its pages relayed the results of continued experimentation, aimed at improving the effectiveness of contouring.

One prescription in the Southern Cultivator, by a prominent Georgia planter, stressed the importance of precisely surveying the rows to ensure proper runoff
characteristics (Colonus 1858). From experience on his hilly Georgia farm, Colonus became keenly aware of the ineffectiveness of ditches laid out by eye or with crude instruments. He identified three major sources of failure in contouring that he worked to overcome: improper instruments; improper or irregular grades to the rows; and ditches deficient in number or size, faulty in location, uniformity of width, etc (Colonus 1858). He offered instructions for constructing proper and inexpensive leveling instruments, that could be employed with minimal cash outlay. He listed parameters for selecting appropriate grades for ditches, relative to the anticipated volume and intensity of rainfall in specific locations.

The frequency and extent by which small-scale planters of the Upper Pearl River Basin adopted these technologies is not known. However, the information was widely available to planters of the region through the Cultivator and other important sources of agricultural technical reports. An article in the Southern Cultivator chronicled the success of improved instruments for constructing contoured cotton fields in Hinds County, of the Prairie County sub-region of the Upper Pearl River Basin (Harmon, 1858). The article is testimonial by local officials of the effectiveness of a ditching device that was invented by a farmer/inventor named Gray of Hinds County.
There continued to be a number of significant efforts by farmers in the Upper Pearl River Basin and adjacent farming regions to address the problems of soil erosion and gullying, as the erosive qualities of soil in the upper Pearl River basin were recognized as a problem plaguing most farms of the region. Conditions by 1850 had deteriorated to the point that the Mississippi State Geologist, Eugene Hilgard, cast a pessimistic eye over his state:

Even the present generation is rife with complaints about the exhaustion of the soils—in a region which, thirty years ago, had but just received the first scratch of the plowshare. In some parts of the State, the deserted homesteads and fields of broomsedge, lone groves of peach and China trees by the roadside, amid a young growth of forest trees, might well remind the traveler of the descriptions given of the aspect of Europe after the Thirty Years’ War (National Resources Committee 1938).

Scholars of Mississippi environmental history benefit greatly from the work of Eugene Hilgard. His careful scientific work as the Mississippi Geologist in mid-nineteenth century forms an invaluable contribution to environmental knowledge of Mississippi and other cotton growing regions of the United States. He numbered among the cadre of careful observers whose work was shaped by the scientific enlightenment between 1830 and 1860.

Hilgard conducted a survey of agriculture and geology in Mississippi (Hilgard 1860). An important part of the survey was a series of county profiles, including counties
of the upper Pearl River basin. These county-by-county descriptions aid environmental reconstruction of the region in several ways: they provide observations on settlement and agriculture on specific landforms; they note investments in 'landesque capital' to develop lands for cropping; and they note, in general terms, the severity and extent of land degradation therein. Hilgard's collected observations provide the most complete image of erosion and cotton culture in counties of the Upper Pearl River Basin, in addition to the rest of Mississippi.

In Winston County, at the extreme upper headwaters of the Pearl River basin, there were two varieties of uplands that figured in antebellum cotton culture. The extreme headlands of the Pearl River contained 'redland' uplands soils, noted by Hilgard for their particular suitability for cotton cropping. However, the bottom lands of Winston County formed the bulk of the agricultural lands by 1860, the year of publication of Hilgard's survey. This planting in the bottomlands was an early move, coming less than two decades after the county first opened to settlement. The bottomlands of this county, at the northern limit of the basin, were distinct from the expansive bottomlands of the middle and lower Pearl River basin. The Headwaters bottomlands were narrow bottomlands of the Pearl River and its small tributaries at their origin. In these locations the soils were less prone to seasonal inundation and were
consequently more amenable for cropland development at such an early point in the regional chronology (Hilgard 1860).

Hilgard noted that the sandy slopes of Winston County experienced problematic erosion, primarily by washing (sheet erosion) and gullying. Depths of gullies exceeded 20 feet in some cases, one of the surest indications that hillside agriculture caused significant erosion before the Civil War. There were numerous signs that farmers recognized the problem and instituted measures of varying success to combat erosion. Timber felling checked gullies, a process of cutting trees to fall across gullies to impede their continued growth. Hillside ditching was another soil conservation measure observed by Hilgard in Winston County, although he had little to say about the success of ditching in this particular county (Hilgard 1860).

Neshoba County, another headwater county of the upper Pearl River Basin, had similar farming conditions to Winston County, except that the ridge tops were steeper. In Neshoba County, steep ridge tops restricted interfluve cropping, except in pockets of 'redland' soil. Accordingly, much cotton cropping was concentrated in the narrow bottomlands. The bottomlands of the Pearl River itself were avoided for cotton cropping in most of Neshoba County, but the black soils of tributary streams were prized for agriculture. This was especially true after the completion of drainage improvements. These improved
bottomlands were better suited to corn than cotton, at least at the time of writing (Hilgard 1860). Products of Neshoba County farms were hauled from the region by railroad, as this county lay above the generally accepted head of navigation (Hilgard 1860).

In Leake County, bottomlands of tributary streams were also the preferred lands for cropping. Canebrake swamps were drained and placed in cotton, corn, and oats primarily. Artificial drainage was necessary in the constriction of viable fields in the abundantly fertile but swampy black canebrake soils. The sandy loam uplands were also planted in cotton. These soils were well-drained, often to the point of droughtiness. Washing and gullying were again cited as major problems, choking valleys with sand. Lands of the Pearl River bottomlands in Leake County were not frequently utilized for croplands at the time of Hilgard’s survey. (Hilgard 1860)

Scott County encompassed two principal soil and terrain division. The northern sub-region was sandy uplands, much like adjacent Leake county, with similar attendant pitfalls and advantages. While the sandy soils were well-drained for good cotton cropping, the soils were generally plagued by insufficient native fertility and excessive erosive potential. A greater part of the county was black prairie upland soils. These soils were well adapted to cotton culture (Hilgard 1860). However, washing
and gullying seriously affected them. Erosion was countered to some extent by ditching and 'horizontalling'. Some bottomlands of the Pearl River in Scott County were improved for cropping, but they were liable to flooding and associated clay deposition (Hilgard 1860).

Rankin County contained perhaps the most diverse assortment of geoecologic divisions in the upper Pearl River Basin. The county is a constituent of the Prairie County sub-region. As Hilgard noted, the county encompassed wide bottomlands of the Pearl River, prairie uplands, and 'redsoil' uplands. The Pearl River bottomlands were largely avoided for cropping cotton, despite their recognized fertility, because they were subject to destructive episodic flooding (Hilgard 1860). The highest quality cotton of the county was grown in the light, sandy upland soils. They were either naturally or manually marled from resident tertiary marl formations.

Interestingly, Hilgard's observer for this county expressed the belief that upland erosion worked to the benefit of valley soils, by washing valuable marl outwash in to the valleys, where it replenished the soil fertility of heavily-cultivated corn fields (Hilgard 1860).

Simpson County, as described by Hilgard, was a Piney Woods county with a number of contrasts to its neighboring upstream counties. As noted previously, this county occupies a geoecologic continuum between the Gulf Hills and
the deep Piney Woods regions of Mississippi and Louisiana. In this division, cotton was planted in valley bottoms, but above the high-water elevation of seasonal flooding (Hilgard 1860). Less cotton was planted on slopes in this county than in neighboring upland counties to the north. Where cotton and corn were planted on slopes, gullying and washing were again serious problems to be countered by appropriate soil conservation measures. Cotton was hauled out of the region by ox wagon at the time of Hilgard's study. This observation is surprising, for Simpson County was situated on an eminently navigable section of the Pearl River.

Copiah County was an early-settled county, in the Piney Woods division. Considering this, a remarkable quantity of cotton grew there in the late antebellum era. In this county the sandy-loam and plain sand uplands were used for cropping on a small scale, as they were easily improved. As Simpson County the valley second bottoms were the preferred zones for cropping (Hilgard 1860). The second-bottoms were cultivated the most intensively, as the primary bottoms were often narrow, flood prone and choked with sand (Hilgard 1860).

By 1860 when the whispers of war were becoming louder, a pattern was observable in the cultural landscape of the Upper Pearl River Basin. Toward the headwaters of the region, cotton planting was concentrated on the sandy loam
uplands. While yields were generally good (one bale of cotton per acre or more), the inclines of these fields, combined with rainfall on erosive soil, created a serious soil conservation problem shortly after they were first cleared for cropping. Bottomlands of tributary streams were found to be of excellent fertility for cropping, especially corn, and they were pressed into service early in the settlement history of the basin. Further downstream, in the middle Pearl River basin, farmers had a greater propensity to farm bottomlands of the Pearl River. However in this portion of the Pearl River watershed, there is a pronounced second-bottom terrace, above the level of the principal floodplain. While these soils required considerable investments in labor to render sufficient drainage, they were important croplands. By contrast, the ridges in the middle basin were sandy and markedly less fertile than uplands further upstream.

Hilgard's survey and other sources demonstrated that soil erosion had become a serious problem in the Upper Pearl River basin. Only thirty years after the Treaty of Dancing Rabbit Creek, the hillsides were so incised with gullies, and the valley bottoms so choked with sand, that the problem merited the consternation of the State Geologist. Despite notable attempts to address land degradation in the region, the cultural landscape of the Upper Pearl River Basin had assumed a form that would
undergo important transformations in the vital decades after the Civil War.

**Stewardship in the Basin**

Pre-saging the words of Hilgard, but with a sharp edge of social criticism the 1835 traveler J.H. Ingraham surveyed the problem of "cotton mania" as he encountered it just before it engulfed the upper Pearl River basin:

Cotton and negroes are the constant theme—the ever harped upon, never worn out subject of conversation among all classes. But a small portion of the broad rich lands of this thriving state is yet appropriated. Not till every acre is purchased and cultivated—not till Mississippi becomes one vast cotton field, will this mania, which has entered into the very marrow, bone and sinew of a Mississippian's system, pass away. Not then, till the lands become exhausted and wholly unfit for farther cultivation. The rich loam which forms the upland soil of this state is of a very slight depth—and after a few years is worn away by constant culture and the actions of the winds and rain. The fields are then 'thrown out' as useless (Ingraham 1966 originally 1835:87).

It is important to understand Ingraham's perspective, which is explicit in the title of the volume in which he published his observations, *South-West: By a Yankee*. As a northern farmer travelling through the South during the 1830s, Ingraham was infused with a healthy measure of anti-austral bias. There must have been a wealth of evidence for him to cast such damning aspersions on the Mississippi upland farming scene. Ingraham's disapproval of poor soil management was through the eyes of a Yankee independent farmer, and he was horrified by what he saw:
Every plough-furrow becomes the bed of a rivulet after heavy rains—these uniting are increased into torrents, before which the impalpable soil dissolves like ice under a summer’s sun. By degrees, acre after acre, of what was a few years previous beautifully undulating ground, waving with the dark green snow-crested cotton, present a wild scene of frightful precipices, and yawning chasms, which are increased in depth and destructively enlarged after every rain. There are many thousand acres within twenty miles of the city of Natchez, being the earliest cultivated portions of the country, which are now lying in this condition, presenting an appearance of wild desolation, and not unfrequently, of sublimity. This particular feature of the country intrudes itself into every rural prospect, painfully marring the loveliest country that ever came from the hand of nature (Ingraham 1966 originally 1835:87).

To complete this critique of greed and poor stewardship, Ingraham drew comparisons between Northern and Southern farmers. Northern farmers, independent Yankees, could not hire help or the farm would not be profitable. Hard labor and frugal economy are the rule for success. The Southern planter works a plantation with slaves, and can make from fifteen to thirty percent by his farm, depending on market and other variables. On the role of planters in the development of Mississippi, Ingraham’s observation is dramatic but correct, in light of the landscape as the protohistoric Choctaw left it:

Without planters, there could be no cotton; without cotton not wealth. Without them Mississippi would be a wilderness, and revert to the aboriginal possessors. Annihilate them tomorrow and this state and every southern state might be bought for a song (Ingraham 1966 originally 1835:92).
The is one of the most concise and terse depictions of Mississippi before the great land rush which began in the Natchez District, but continued in earnest in the Hills of which the upper Pearl River basin constitutes a large portion.

Despite his strong consternation toward what he perceived as the rapacious quality of cotton culture, he did have a few compliments, which illuminate the Upper Pearl River basin in its elemental stage of agricultural development. He could not do that without a sharp dig at agricultural commerce in the regions however:

If the satirical maxim, 'man was made two make money', is true, of which there can be mot a question--the mint of his operations lies most temptingly between the 'father of waters and the arrowy Pearl (Ingraham 1966 originally :1835:95).

On the spread of settlers through the Choctaw country, he observed:

...they (planters) are spreading over itt like a cloud, and occupying the vast tracts called 'the Purchase', recently obtained from the Indians, previous to their removal to the west. The tide of emigration is rapidly settling to the north and east portions of the state. Planters, who have exhausted their old lands in this vicinity, are settling and removing to these new lands, which will soon become the richest cotton growing part of Mississippi. Parents doo not now think of settling their children on plantations near Natchez, but purchase for them in the upper part of the state. Small towns, with 'mighty names', plucked from the ruins of some long since mouldered city of classic fame and memory, are springing up here and there, like mushrooms, amidst the affrighted forests. Sixteen new counties have lately been created in this portion of the state, where so recently the Indian tracked his game and shrieked his war-
whoop; and as an agricultural state, the strength and sinew of Mississippi must be hereafter concentrated in this fresher and younger portion of her territory (Ingraham 1966 originally 1835:95).

Despite his pithy tone, Ingraham's observations on the Mississippi cotton farming are helpful in several ways. First, he clarifies the continuum between the first stage of settlement in Natchez and subsequent settlement in the newly opened 'Purchase'. The connection between planters of Natchez and their children in the new lands demonstrates one important source of newcomers to the regions, particularly of plantation holders.

The Antebellum Upper Pearl River Basin

The years between 1830 and the Civil War years witnessed revolutionary changes in the cultural landscape of interior Mississippi. During that interval, the population center of the state shifted from the Natchez District and the Piney Woods to the interior hills. The population shift resulted from the rapid influx of pioneer settlers in the New Purchase. These pioneers cleared the land, erected structures, and participated in the cotton boom that peaked in 1860. Many of these changes were observable in the Upper Pearl River Basin. However, the expansion abruptly reversed during the war years of 1860 to 1865. While the Upper Pearl River Basin was not the setting of momentous battles, many of the yeomanry there were pressed into military service. The cotton economy,
and corresponding environmental changes, slowed considerably. This change poised the Upper Pearl River Basin for a significant new chapter in its environmental historical chronology, the postbellum decades.
CHAPTER 5
RECONSTRUCTION (1865 TO 1880)

Introduction

The end of the Civil War in 1865 established a prodigious break in Southern history. The breach affected nearly every aspect of life, as Southerners restored their lives after five terrible years of the Lost Cause. Although the Upper Pearl River Basin was never the setting of any Homeric battles, the broad effect of the war was to influence changes in settlement and agriculture in its constituent counties. These changes came about during the fifteen years that followed the cessation of hostilities.

Changes spurred by the war and its aftermath have provided a source of expansive and complex debates in Southern historiography, following the overarching themes of cultural and social continuity versus discontinuity in response to Civil War disruptions. C. Vann Woodward, a prominent historian who defined the New South-Old South thesis, argued that the Civil War caused a fundamental disjunction in Southern history. The Old South was redefined into a wholly different New South, and the only commonality between the two was the physical region itself (Woodward 1951). Another historian, Harold D. Woodman, developed this theme in his analysis of the postbellum cotton economy - a theme with obvious relevance to events in the Upper Pearl River Basin. Woodman argued that the war brought an abrupt end to the Old South cotton economy.
(Woodman 1982). In Woodman's view, subsequent agriculture and settlement operated under an entirely different set of governing conditions.

A countervailing viewpoint concedes the significance of the Civil War but contends that essential antebellum social, agricultural, and economic structures persisted in the postbellum era. The concise but momentous essay by W.J. Cash, *The Mind of the South*, exemplifies this perspective (Cash 1941). Cash argues that Southerners manifested a distinctly Southern mentality that remained undeterred by disruptions caused by the Civil War, a mentality that originated in the conditions of the early frontier settlement era. It endured, fostered in part by frontier-like conditions that persisted long after the end of Civil War hostilities. The postbellum South's low level of urbanization, which never exceeded 15 percent of the population before 1880 (Woodman 1968), helped to maintain the postbellum "mind of the South." The counterpart to low urbanization was the continued pursuit of agricultural livelihoods by most Southerners after the war, in a settlement pattern that remained dispersed (Degler 1977). Moreover, the enduring influence of Southern aristocracy provided a powerful force of continuity across the postbellum South. W.J. Cash was particularly recognizant of Virginians in this role, but the "clumps of colonial aristocracy in the lowlands" served similar roles in other
regions of the Deep South (Cash 1941:19). One of these clumps was the Natchez planters, whose enduring influence in the agricultural, intellectual and political life of Mississippi held sway long after the centroid of the Mississippi cotton economy had shifted outside the Natchez District (McLemore 1973).

Emancipation of black slaves across the South was one of the most significant changes wrought by the defeat of the Confederacy, partly because it altered the complexion of agricultural labor and land use across the defeated South. However, Emancipation was more than simply "a story of the blacks and their masters" (Foner 1983:4). Emancipation also broadly affected the conditions influencing agricultural labor in all regions of Mississippi, whether they had a majority black population or not. This is an important consideration in the context of the Upper Pearl River Basin, where large plantations were not the primary mode of cotton production.

One issue that traditional historical analyses of the postbellum South do not explicitly address is environmental change in the South, particularly cultural landscape change. Until recently, recognition of postbellum Southern cultural landscape change remained an iconoclastic province outside the realm of traditional geographical scholarship. J.B. Jackson, a scholar of American cultural landscape studies, was among the few scholars to stress the
importance of examining the Civil War's role in Southern cultural landscape development (Jackson 1972). In Jackson's view, the American South in 1865 stood on the cusp of tremendous expansion and internal structural adjustments. This situation resulted in transformations of the regional cultural landscape that transpired during the pivotal years 1865-1876 (Jackson 1972).

Observing such changes during this approximate interval in the Upper Pearl River Basin helps provide a regional portrait for future integration with other regional environmental historical investigations of the postbellum South. These changes include: an incremental shift from the pioneer/antebellum model of upland cotton culture; modifications to the cultural landscape and the Pearl River; and changes in agricultural output in macrohistorical perspective.

Back to the Farm

After the Civil war, demand for cotton re-intensified, increasing the call across the Cotton South for greater yields, and more acreage was devoted to the crop (Ransom and Sutch 1977). Drawn by elevated prices right after the war, this led to re-newed agricultural activity in cotton regions where the Southern staple had been cultivated before the Civil War (Merchant 1993; Earle 1993). The hills and river bottoms of the Upper Pearl River Basin
numbered among the cotton-growing regions of the South called upon to fill this need.

In the Reconstruction era Upper Pearl River Basin, the cotton economy entered a phase with some pronounced distinctions that were unique to the region and time. After the Civil War, the Upper Pearl River basin was no longer a region of inchoate pioneer farms. While many pioneer modes of production and settlement persisted, the search for new regions to raise cotton had moved westward within the South to Texas by 1870, and then to California (Hilgard 1884). Farmers of the Upper Pearl River basin worked to maximize agricultural utility of land available to them, including land that had not been improved for cropping before the war. The cultural landscape consequently matured during this important phase in its environmental history. Some of the most important opportunities lay in lands of the Upper Basin that had not been cultivated during the antebellum cotton land rush. Cotton productivity within interior Mississippi was still constrained by the propensity of cotton fields to erode when cultivated using the clean-till techniques that prevailed. Furthermore, continued transportation difficulties also enhanced the challenge posed to farmers of the upper basin in their desire to fully participate in the cotton economy.
While it was no longer a pioneer outpost, the Upper Pearl River Basin was far from a completely structured political region. The borders of the Upper Pearl River Basin remained unresolved in the early postbellum decades. Many counties, including most within the Upper Pearl River Basin, were subject to redefinition by Reconstruction-era political forces within Mississippi. A representative example of this process occurred in Choctaw County, in the Headwaters sub-region of the Upper Pearl River Basin. In 1874, all the territory of Choctaw County north of the Big Black River was annexed to the newly created Sumner County (Coleman 1973). Part of neighboring Montgomery County was subsequently assigned to Choctaw County in late 1874, as was a portion of Winston County. The process of border redefinition ceased for Choctaw County by 1875, when the borders that persist to the present time were finalized (Coleman 1973). This process played out in most of the Upper Pearl River Basin counties. The cumulative result was that the regional borders stabilized considerably by 1880.

Cotton farmers of the upper Pearl River basin were obliged to compete with cotton farmers settling newly available lands outside the basin and outside of Mississippi. While the postbellum expansion of cotton culture extended as far as California, expansion in Mississippi counties to the northeast of the Upper Pearl
River basin influenced the internal agricultural geography of the state's other regions. This expansion, of mostly large-scale cotton farms, started to replace bottomland forests of the expansive Yazoo River in the early 1870s (Kelley 1978). To small and meso-scale farmers of the Upper Pearl River Basin, such competition was daunting, since the Yazoo basin boasted of flatter topography and generally more fertile bottomland soils. After completing the considerable task of forest clearing, loamy Yazoo River Valley fields delivered yields well in excess of yields derived from sandy upland soils of the upper basin, which had been in production for several decades (Kelley and Spillman 1976).

In addition to extra-regional competition, challenges to the viability of cotton farming persisted within the Upper Pearl River Basin, increasing pressure on the regional landscape. The sandy soils of upland cotton fields still eroded easily, just as they did before the Civil War interrupted the trajectory of Mississippi cotton culture. Erosion remained a pressing problem after the war, because demand for cotton increased dramatically in the postbellum era. This resulted in the frequent appearance of "red washes" or eroded fields on what had been considered good farmland of upland regions of interior Mississippi and Alabama (Vance 1929).
The experience of the Choctaw who remained in the Upper Pearl River Basin was integral with the push to maximize cotton production. Still occupying the Upper Pearl River Basin in modest numbers after the war, the Choctaw maintained a cultural presence in the region. By the early postbellum period, Choctaw of the Upper Pearl River basin had finally divided into three distinct subcultures. The first and largest subculture consisted of Choctaw who relocated to Oklahoma and left the basin permanently, ending direct relations with the land in the Upper Pearl River Basin by the early 1840s. A second subculture consisted of Choctaw who became increasingly assimilated into the prevalent Anglo-American agrarian society during the late nineteenth century (Kidwell 1986). A third subculture, consisting of less completely assimilated Choctaw farmers, participated in all aspects of postbellum cotton culture, primarily as tenant and wage-earning farmers.

This third group was instrumental in expanding cotton production in the upper basin, since so many Mississippi freedmen gravitated en masse to the new cotton farms of the expansive and fertile Yazoo River bottomlands (Kidwell 1986:82). This change exerted the important effect of privatizing and quantifying much land that had been under de facto Choctaw management. The anthropologist Ronald
Satz noted this far-reaching dynamic in his study of Choctaw relations with the Federal Government:

In the late 1870's white landowners increasingly sought additional land for cultivation, and eventually the marginal lands of the Choctaw were brought into production. At the same time, the exodus of emancipated blacks from the east central portion of the state to the rapidly expanding plantations of the delta region created an acute labor shortage. These two events contributed to the transformation of the Choctaw from squatters into sharecroppers (Satz 1986:19).

The sharecropping system, under which laborers produced cotton on land owned by landlords, kept the Choctaw subservient within the economic hierarchy, as it did for black and white farmers. However, Choctaw schools and churches emerged within Choctaw sharecropping communities. These churches, Kidwell noted, contributed considerably to maintaining Choctaw cultural identity in the face of an expanding market system in the Upper Pearl River Basin (Kidwell 1995). The churches and schools continued to provide forums for Choctaw to maintain close contact with each other in the face of increasing pressure on their remaining lands. While Christianization took place in the churches, and school lessons socialized them to Anglo-American customs, these institutions also served as critical cultural nodes.

The changes indicated above amounted to a considerable amount of stress in the Upper Pearl River Basin, for its farmers and the land alike. The stress helped to bring
about a significant amount of change in the patterns of agriculture in the upper basin, both in the amount and the kind of crops produced within its constituent counties.

Census Views of Upper Pearl River Basin Agriculture

The graphs of agricultural census data for the Upper Pearl River Basin help illustrate the changes in agriculture that occurred after the Civil War ended. When subdivided by the sub-regions of the Upper Pearl River Basin, some significant sub-regional variations in several categories are discernable.

The line graph of improved farm acreage in the Upper Pearl River basin shows a slight dip in response to the Civil War and its aftermath. While this decrease is no surprise, the graph underscores the dramatic decline in farming activity that resulted when the region's farmers heeded the call to fight on behalf of the Confederacy.

Improved land, as defined by the Census of Agriculture, is land that is cleared and made available for productive use, usually for cropping. After reaching a minor peak of 1.1 million acres in the late antebellum expansion of agriculture, the acreage of improved land dropped after the war to 960,710 acres, as recorded in the 1870 Census. This did not represent a large decline, at only 13 percent, but the drop nonetheless demonstrated a strong break in the rate of growth for improved land acreage that led up to the outbreak of war. From 1850—the first year the census
Figure 1. Improved Farm Acreage in the Upper Pearl River Basin of Mississippi
recorded improved land acreage totals—through 1860, the rate of increase had been 36 percent. After the first postwar census of 1870 the rate of increase for improved land grew only slightly from the postwar low recorded in the 1870 returns. Most of the increases in improved acreage took place in the Prairie Counties of Hinds, Rankin, and Scott, counties with soils best-suited for large cotton farms in the upper basin. By contrast, the amount of improved farm acreage actually decreased somewhat in the hillier Headwater counties.

The census returns for cotton production recorded other, more dramatically observable fluctuations in response to the break posed by the Civil War. After a sharp increase (67 percent) in cotton production in the decade preceding the war (1850-1860), cotton production in 1870 plummeted nearly to its pre-war 1850 level. This drop was especially pronounced in the Prairie Counties of the Upper Pearl River basin. A similarly steep decline occurred in the Central Hill counties, which also had a higher frequency of large plantations, with corresponding postbellum labor deficits, than the other two sub-regions.

By contrast, the Reconstruction-era decline of cotton output in the Headwater Counties, while observable, was not as precipitous as was the case in the Prairie Counties. The Piney Woods counties, the sub-region with the least appeal for large-scale cotton planters, experienced the
Figure 2. Cotton Production in the Pearl River Basin of Mississippi
smallest declines in cotton production immediately after the Civil War. The cotton graph in figure demonstrates that Piney Woods agriculture in the immediate postbellum period was fundamentally different from the other sub-regions of the Upper Pearl River Basin.

Cotton production began to rise again between 1870 and 1880. The rebound of cotton production after 1870 is striking in all sub-regions of the Upper Pearl River Basin; the graph of cotton surges upward from 1870 to 1880. Across all the sub-regions, farmers responded to various incentives to increase their cotton production, even in the somewhat anomalous Piney Woods counties, where a modest increase was recorded between 1870 and 1880. After a clearly defined break in the political, cultural, and economic development of the Upper Pearl River Basin, the cotton economy had entered an important new phase at the beginning of the next period of 1880 to 1910, which is the focus of the next chapter. The census figures on cotton production indicate that Upper Pearl River Basin farmers quickly responded to heightened postwar demand for cotton lint.

The remaining graphs of agricultural output for the Upper Pearl River Basin help to indicate the ways that Reconstruction agricultural change manifested in other agricultural activities. While most of the emphasis on farming in the Upper Pearl River Basin was understandably
on cotton, other crops were produced there. Not all staples were imported; the region's farmers produced substantial quantities of corn, peas, potatoes, and other crops necessary to sustain themselves and their livestock.

The graph of corn production further illustrates the important break posed by the Civil War in the Upper Pearl River Basin. While corn production increased dramatically in the decade preceding the war, it then fell at a precipitous rate, similar to the decline recorded for cotton. This is unsurprising, for corn was the second most important crop of the Cotton South, forming a foundation of the agrarian economy. As with cotton, production of the crop rebounded after 1870, continuing a steep climb into the subsequent time period of this study. There was little sub-regional variation to this pattern, except for the cases of the Prairie and Central Hill Counties, which recorded the greatest increases while the Headwater and Piney Woods counties stayed the same. In these two sub-regions, the 1860-1870 decline of corn production in response to the war was especially steep, corresponding with the drop in cotton output for the same time period and sub-regions. In the Piney Woods counties, the output of corn throughout the decades was level, with only a slight decline in corn production between 1860 and 1870. This stood as further indications of the relative stability, and low output, displayed by farms and farmers in the Piney
Figure 3. Corn Production in the Upper Pearl River Basin of Mississippi
Woods counties during Reconstruction. Viewed at the scale level of the entire Pearl River Basin, the output of corn corresponded with the precipitous decline, and gradual recovery of crop output that transpired during Reconstruction.

Tubers were an important secondary crop in the Upper Pearl River Basin. The Census of Agriculture grouped Irish potatoes and yams into the same category. Measures of potato production indicate farmers' efforts to produce food for consumption on the farm, serving as a partial indication of self-sufficiency, or the lack thereof. As with other crops, potato production experienced a rapid decline from a peak in 1860. From 1860 to 1870, tuber production declined to half its pre-war level across the study region. Again, pronounced sub-regional contrasts existed between the Piney Woods counties and others within the upper Pearl River basin. In the Piney Woods, the production of the crop declined only slightly from 1860 to 1870, and again from 1870 to 1880. Total tuber production in the Upper Pearl River basin rebounded rapidly between 1870 and 1880, reaching a peak in 1880. This was notable, for it indicates that the rush to grow cotton at the expense of all other agricultural pursuits was not an absolute trend in the fifteen years after the Civil War.

An informative graphs of agricultural output for the Upper Pearl River Basin in the Reconstruction era depicts
Figure 4. Production of Irish Potatoes and Sweet Potatoes in the Upper Pearl River Basin of Mississippi
Figure 5. Production of Peas and Beans in the Upper Pearl River Basin of Mississippi
the output of Peas and Beans in the region. Cowpeas and beans were commonly intercropped with corn then rotated with cotton, both to provide forage for livestock and to provide a critical means of soil conservation (Earle 1988). One problem with evaluating the output of cowpeas and beans is that livestock were frequently allowed to browse plowed fields, which diminished the census totals of peas and beans. However, the census figures provide a general guide to the prevalence of pea and bean production in the Upper Pearl River Basin. The graph reveals a striking trend. Peas and beans reached a record peak of nearly 340,000 bushels in the 1860 census and plummeted in accordance with the postwar decline of agriculture to only 50,000 bushels in 1870. However, the recorded output of peas and beans rebounded sharply in the 1880 census, a rise that occurred in all the sub-regions of the Upper Pearl River Basin. The smallest recoveries in the Prairie Counties sub-region, and the largest postwar recovery of pea and bean production took place in the Headwater and Piney Woods sub-regions. While these figures are far from definitive, they indicate that the production of legumes persisted through to 1880, with an interruption caused by the Civil War. These observations appear to coincide with Earle's thesis that peas and beans in the cotton South were widely utilized by farmers to conserve and rejuvenate soil. The peak of legume cultivation took place during a macrohistorical
cycle of environmental conservation between 1840 and 1880 (Earle 1988). The fact that production of peas and beans dropped sharply after 1880 suggests that the actions of farmers in the Upper Pearl River Basin coincided with a trend that Earle identified. This was the continuing importance of peas and beans to cotton farming in a cycle that did not end until 1880. Moreover, the continued emphasis on peas and beans before and after the war is one of the strongest indicators of Southern continuity in the agricultural sector. This trend appeared strongest in those counties of the Upper Basin with the strongest traditions of smaller cotton farms: the Headwater counties and the Piney Woods counties.

**New Labor and Economic Arrangements**

The census figures relay critical information about changes that transpired at the sub-regional and regional level in the Upper Pearl River Basin. Behind the agricultural changes that the graphs depict are important national and Southern economic changes that profoundly affected the actions of farmers within the upper basin. Some of the most directly relevant changes were: the changing role of country stores; the new crop lien system; and the generalized effects of the new postbellum economy in the Upper Pearl River Basin.
The Southern Country Store

The Southern country store, one of the emblems of agrarian life across the South, assumed a more important role after the Civil War. They had been local gathering places and important foundations of pioneer towns, but after the war, the Southern rural furnishing agent became a major focus of economic change.

By limiting the mobility of farmers to a short radius from the farm, poor roads encouraged new stores to serve farmers in decentralized regions such as the Upper Pearl River Basin. Equally pressing, however, was the demand for a decentralized system of agents to buy cotton from farmers. New country stores became the foci of new town sites, whose importance increased with the additions of a post office, stores, blacksmiths, etc. Steven Hahn, in his study of yeomen cotton farmers of the Georgia upcountry, noted that because of the isolation of these cotton districts from major population centers, store merchants functioned as critical liaisons between farmers and the economy of the greater world (Hahn and Prude 1985). The emergence of country stores exerted an interesting effect on continued economic/commercial patterns across the South, including the Upper Pearl River basin. The pattern of country stores across the rural Cotton Belt encouraged what Ransom and Sutch (1977) term a "decentralized territorial monopoly," referring to the means by which a class of
merchants, rather than a single entity, achieve control over a dispersed region. Storeowners controlled credit within relatively small units of territory throughout the Cotton South. Ransom and Sutch describe this spatial organization of markets as "compartmentalized into relatively small areas of influence within which each merchant held a virtual monopoly of credit" (Ransom and Sutch 1977:137). The merchants were able to maintain a web of multiple monopolies because the urban financiers did not possess adequate local knowledge to secure loans. The merchants, by contrast, were able to secure loans through their personal knowledge of farmers in their respective territories.

The Crop Lien System

The newly enacted lien laws of 1867 set the legal foundation for the postbellum crop lien system (Adkins 1979). The store merchants became central actors in the expanding system of land liens. In this mode of agricultural economics, the merchants furnished supplies to farmers on credit secured by promissory notes against future cotton crops, and ultimately on the land itself in case of default. As collateral they could offer their farm, or a part of it. In theory it was a sound means for indebted farmers to remain in operation in the post-war years. With advances they could procure necessary
supplies. Of course, if the crop returns were insufficient, dependency could, and did, ensue. Because credit was extended in anticipation of harvests, cotton picking time was "a season of anxiety for country-store customers because it was the period when they learned whether they could pay for their last year's supplies, or would again have to sign a note and carry over portions of their accounts to another year" (Clark 1984:34). Later, when banks appeared across the South in greater numbers, the pattern of relying on the rural merchants was already well established. Storeowners maintained their influence in rural districts through their personal knowledge of farmers. Adding to their hold over farmers, the stores were sources for agricultural implements, vital to maintaining the agricultural economy. The agricultural implements were purchased on credit, further reifying the importance of rural furnishing merchants across the Cotton South, including the Upper Pearl River Basin.

To secure collateral, merchants compelled farmers to grow cotton, for the crop had a cash value far exceeding that of corn or provisions. Insistence on cotton to satisfy credit arrangements resulted in further increases of cotton production. Such arrangements were emphasized immediately after the Civil War by the high prices cotton commanded. However, high cotton prices were short-lived,
so that by 1870, prices had fallen but smallholders were already locked into the land-lien system.

The new reliance on cotton had an effect on the smallholders' self determination, and the lack thereof, as tillers of the soil. The cotton-growing smallholders were in a collective bind, since their decision-making was limited to the least interesting and controlling aspects of agriculture. The rural furnishing agents effectively made land tenure, crop choice, appropriate technology and a range of other critical decisions for the small farmers. This was compounded by the fact that few merchants in the yeomen farming regions of the South extended credit for crops other than cotton (Hyman 1990). This situation contrasted starkly with the decades preceding the war, when smallholders had considerable capacity for self-determination.

The New Cotton Economy in the Upper Pearl River Basin

While cotton continued to be grown in the Upper Pearl River basin, it was done so under a new set of circumstances. Large plantations, while not the norm across the Upper Pearl River Basin, were subdivided into tenant plots in many instances. Rural merchants supplanted the urban-based cotton factors that had served plantation owners in the antebellum decades. In a county adjacent to the Headwater Counties of the Upper Pearl River Basin, a study established that changes in ownership were high for
small landholders of Oktibbeha County. In this case, small landholders who owned fewer than 500 acres (Cockrell 1990). Conversely, changes in ownership were much less frequent for large landowners. Of 43 large plantations in Oktibbeha County (just to the north of Choctaw County, but with more blackland prairie soils), 37 holdings remained in the hands of the same families through 1900. On these larger landholdings, labor needs were met by a variety of arrangements. By 1867, sharecrop arrangements had largely replaced cash wages, and two variants of sharecropping prevailed. The first was the cash rent system. On Rice Plantation, in Oktibbeha County, a rent unit was specified as two bales of cotton (Cockrell 1990). The second prevalent system was the share tenant system. Again, on Rice Plantation, the share tenant system asked for one-half of the corn and fodder produced by a tenant. Like smallholders within the land lien system, sharecroppers obtained their supplies from merchants, but the merchants were usually the landowners themselves. Sharecroppers on Rice Plantation who were unable to settle their debts at harvest time carried them forward to the next season (Cockrell 1990). Continued debt fostered dependency, which helped many large landowners of the Mississippi uplands to maintain control over their largeholdings long after abolition. This story probably replicated itself on large plantation landholdings across Upper Pearl River Basin,
which bore a number of geoecologic and social similarities to Oktibbeha County (Mandle 1983). The sharecropping and lien systems also helped ensure the continuing primacy of cotton. Cotton was in effect the currency of the sharecropping system, even as some largeholders took measures to diversify crops grown on their personal fields (Cockrell 1990).

One of the principal questions raised by the rise of sharecropping was its relationship to stewardship during Reconstruction. In the Pearl River basin there is little evidence to firmly support the widely held assumption that tenant farmed lands suffered increased erosion over owner-farmed lands. No consulted sources revealed information that decried increased erosion or other forms of land degradation on land farmed by non-proprietors. Instead, it appears that the economic exigency of the postbellum period, to produce as much cotton as possible, overruled the more subtle distinctions between farmers by race, class, or proprietorship. In the face of the pressure to produce cotton, no single group seemed to abuse the soil resources of the upper Pearl River basin more than others.

The Pearl River in Reconstruction

Observations of river clarity and navigability serve as a useful indicator of environmental stewardship in the postbellum Cotton South. In the decades immediately following the war, a U.S Army Corps of Engineers
survey, a cross-country travel account and the use of packet boats on the Pearl River provide evidence of the changing characteristics of the river and reflections of the region through which it coursed during Reconstruction.

The U.S. Army Corps of Engineers recorded some valuable observations of the Pearl River Basin during the Reconstruction period. In 1879, a U.S. Army Corps of Engineers survey party carefully surveyed the river along its navigable length. The importance of this survey to knowledge of the period is immense; it serves as one of the most precise descriptions of the river and the valley through which it coursed. The survey began at a point called McFadden's Ferry, upstream from Jackson, and continued downstream to Jackson. This was one of very few surveys that focused specifically on the Upper Basin; most of the government surveys of the time were conducted with an eye toward navigation improvements on the lower Pearl River. In addition to a characterization of the bank conditions and depth measurements, the surveyors described riverside settlements, landscape characteristics, and other elements of the basin aside from normal survey measurements. One of the most compelling observations concerned the lack of turbidity of the Pearl River:

Settlements were made on the lower portion of the river during the latter half of the last century, and it then received its name from the absolute purity of its water which was so clear that the bottom could be seen at depths of 10 to 15 feet, except during short periods at the head of a
rise; but even then it was good drinking-water. This character it remained within the memory of old inhabitants, and even up to 1850 it was a comparatively clear stream during a greater portion of the year. Since then the channel has been shortened by cut-offs in almost every place where it was easy to make them; and as cut-offs were made, the current at once increased and began to wear away its banks in bends and so to increase in length. This made further cut-offs easy, and they still further increased the wearing away of the bank in bends, each in turn reacting until the entire character of the river has been changed from being a slow running clear stream, with few snags or logs in its channel, with permanent banks, very crooked in its course, it is true, but with a good navigable channel, to a rapid torrent during freshets, and about as muddy as the Mississippi River. So many trees have been washed in that it is not now navigable with less than a 6-foot rise on the upper sections. Until it shall have regained its normal length, the wash of the banks must take in trees, which form the obstruction to navigation in great part (Howell 1879:87).

The report, penned some fifty years after the start of commercial farming in the Upper Pearl River Basin, indicates that much of the muddiness in the river resulted from cut-off construction. The degree to which the muddiness resulted from agriculture and attendant soil erosion was not entirely clear from Howell’s account. However, Howell does relay frustration at the degree to which users of the river apparently gave little thought to environmental quality in their quest to expedite the transit of cotton to market through river straightening.

The murkiness resulting from suspended sediment in Upper Pearl River waters was also starkly apparent even to non-scientific observers of the river and its environs. In
what was surely an epic journey through the Reconstruction South, a traveler named Stephen Powers walked from Raleigh, North Carolina to California in a southern traverse (Powers 1872). He walked across part of the Upper Pearl River Basin. The short passage about the Jackson region helps convey the distinctly Southern natural beauty of the region, diminished by visible environmental degradation:

That filthy misnomer, the Pearl, separates the piney-woods from the valley of the Mississippi with the greatest sharpness. On one side the endless piney-woods; on the other side a magnificent prairie-like roll of Miami loam, bearing noble forests of beaches (sic) in their russet suits, sweetgums still flickering with snatches of autumn flame, the oak, the holly, the gorgeous magnolia. Here is the cotton-wood, too, which begins, and is co-extensive with, the Great West (Powers 1872:82).

Among the many cities and towns where he sought overnight accommodations was Jackson, Mississippi, which he clearly found less preferable to the surrounding countryside, while acknowledging its importance to the region:

Jackson, just over the river, is really the first city in the West. Entering it, I thought to cheer my thirsty soul with lager beer. It was a very small glass of very mean beer, but the price was twenty-five cents. As I laid down that amount of currency, I quietly remarked to the proprietor that, in Montgomery, I drank as good for fifteen cents. Thereupon, with a most lordly and contemptuous wave of the arm, he shoved the currency back. "Never mind, sir; I'll make you a present of one glass of beer," said this Mississippi Teuton (Powers 1872:83).

Modifications to the Pearl River itself continued, revealing the continued importance of the role of river navigation in human affairs within the basin. Steamship
travel on the river continued, despite new competition from the railroads. *Way's Packet Directory*, a listing of boats plying the rivers of North America, mentions the continued presence on the Pearl River of packet boats, small self-propelled steamboats (Way 1994). One packet, the E.R. Steadman, plied the Pearl River in 1876. That May she cruised to within six miles of Carthage, Mississippi, twenty miles upstream of Jackson in Leake County, a Central Hill County. This was the highest point upstream that steamboats reached on the river during this time, and many overhanging or fallen oaks had to be cut away to permit its passage. While not definitive, this account indicates that steamboats were not going able to venture as far upstream as they generally had during winter high water conditions before the Civil War. The presence of numerous obstructions suggests two possibilities. Increased flow from straightening contributed to increased bank erosion, and little 'snagging' maintenance was accomplished immediately after the war, possibly because of labor and economic shortfalls.

The preceding accounts show that the economic and aesthetic and geoeconomic status of the Pearl River had diminished significantly from the exalted status it enjoyed in the early nineteenth century. The muddiness of the Pearl showed that a tremendous amount of soil was washing from the interior of Mississippi, into the Gulf of Mexico.
This high level of suspended sediment resulted from erosional deposition and modifications to fluvial channels of the Pearl River and its tributaries. This change in conditions was apparent to three types of observers: army engineers, itinerant observers, and steamboat travelers.

**Uncertain Prospects**

The evidence presented in this chapter provides indications that the Civil War years brought about a temporary depression in agricultural output and cultural landscape modifications in the Upper Pearl River Basin. This was followed by a period, 1865-1880, when there was considerable uncertainty influencing the larger imperative to rejuvenate the regional agricultural economy. The farmers of the upper basin responded locally to a renewal of demand worldwide for cotton. For a while they and others farmers of the Cotton South were able to fulfill this need, and the sandy hills of the upper Pearl River basin were once again awash in blankets of white cotton bolls. In this sense, there was an exhibition of continuity between the old and new South, manifested in events on the ground in the Upper Pearl River Basin. However, events of the next period, of 1880 to 1910, comprised a distinctly different period in agriculture and environmental stewardship of the Upper Pearl River Basin, in which the lasting impact of Civil War disruptions became more apparent.
CHAPTER 6
AGRARIAN RESTRUCTURING (1880 TO 1910)

Introduction

The period from 1880 to 1910 was an important one in the Upper Pearl River Basin, when patterns of agriculture and settlement established during Reconstruction persisted or were overturned. The legacy of postbellum transformations was intensified by economic and geoeconomic challenges to profitable and sustainable cotton farming in the region. A range of important transitions took place during this period, and most of them confirmed that, by 1890, the cotton-based staple economy had entered a stage of development and expansion that was distinct from the preceding one. Moreover, new landscape modifications and transportation improvements were slowly implemented, redefining the cultural landscape of the Upper Pearl River Basin.

Two decades after the cessation of Civil War hostilities, Upper Pearl River Basin cotton farmers initiated efforts to re-define the agricultural landscape. For the first time in the Euro-American settlement chronology of the region, serious investments in "landesque capital" - intensive and expensive measures to create a permanent working agricultural landscape - were implemented to increase its agricultural productivity. Observers of the Upper Basin became increasingly cognizant of the
limitations of the land, particularly those of the uplands, which were prone to the most severe erosion and declining fertility.

**The Upper Pearl River Basin in 1884: Hilgard's Studies**

Many of the aforementioned changes in the Upper Pearl River Basin were observable in considerable detail at the ground level. An 1884 study of cotton production in each Mississippi county comprises a detailed compendium of farming practices and landscape modifications in the Upper Pearl River Basin (Hilgard 1884). This survey, alongside Hilgard's 1860 study (Hilgard 1860), provides an indispensable means of comparing the postbellum agricultural situation with antebellum cotton culture in Mississippi. The 1884 treatise also provides a datum of agricultural activity in each of Mississippi's counties. An overview of relevant Upper Pearl River Basin county profiles provides a portrait of cotton production and land use in the Upper Basin in 1884. Further, many of the county descriptions include abstracts of reports tendered to Hilgard by resident field observers, reports that relay invaluable first-hand observations of the relations between agriculture and land. These surrogate observations are similar in value to travel accounts, but they have the major distinction that they were written mostly by local residents of the regions surveyed.
The Headwaters Counties

Hilgard's description of counties in the Headwaters sub-region of the Upper Pearl River Basin — Winston, Attala, Neshoba, and Choctaw counties — reveals significant agricultural change, tempered by certain agricultural traditions that persevered. In one such county, Winston County, the bulk of lands under cultivation were creek bottomlands, reflecting a major change from the antebellum pioneer farming era when farmers preferred the uplands. However, numerous tracts of Winston County's upland redland soils still found favor in 1884 for cotton cropping (Ingraham 1966 originally 1835). These red soils, on uplands called the Noxubee Hills, were situated at the extreme headwaters of the Pearl River, with similar smaller tracts near the Yockanookany River, a tributary of the Pearl River. These soils were valued for their fine drainage and fertility when fields were fresh, which meant that they were recently improved into cropland. In these fresh fields, yields of 800 to 1000 pounds of seed cotton per acre were recorded, translating to a remarkably high yield of nearly two 400-pound bales of lint per acre (Hilgard 1884). There were stark yield contrasts between new and old lands in the county, whether bottomland or upland. Yields on old (and unfertilized) lands of upland cotton districts of the Cotton South produced typically one-half the yield of fresher lands (Hyman 1990).
Despite the importance of upland cotton fields, most of the cotton grown in postbellum Winston County was cultivated on recently improved bottomland fields of the first and second stream terraces (Hilgard 1884). These bottomland fields produced high yields, which boosted the overall cotton yield of the county to 0.39 bales per acre (Hilgard 1884). This yield was comparable with the yields recorded for Prairie counties, although the overall cotton production of the county was small and confined to only 10 percent of the total land area of Winston County (Hilgard 1884).

The cotton production of Winston county was accompanied by demonstrable land degradation. William T. Lewis, the field observer of Winston County, recorded dismaying observations of erosional degradation in the region:

Sandy slopes are damaged to a serious extent by washing and gullying. Low and marshy valleys are improved by the washings, others are damaged to the extent of 25 percent of their value. To check the damage, felling timber into the gullies and hillside ditching are practiced. They succeed very well if done in time, before the gullies get too deep. Their depths sometimes equal 20 feet, the sides exhibiting white sand (Hilgard 1884:304).

The short passage summarizes what was evidently an ominous situation for Winston County planters, exacerbated by the hilly broken terrain so characteristic of the Headwater counties. The situation was especially troublesome in light of the small percentage of the county that was
cultivable in cotton. One mitigating factor was that hillside ditching, introduced to the region in the 1830s, was determined to be partly effective at checking upland soil erosion. The fact that washed soils occasionally improved bottomland fields was not an entirely positive development. The county observer noted that cotton grown on Winston County bottomlands was prone to excessive rot and rust, compared to the well-drained but erosive fields of the county's upland cotton fields (Hilgard 1884).

Hilgard's observations of agriculture in Attala County provide an additional perspective to this portrait of the Headwater counties in 1884 (Hilgard 1884). Hilgard noted again that bottomland soils of the Pearl River's narrow upper tributaries were increasingly becoming the primary cotton lands of the Headwaters region. However, he noted that the bottom soils of Attala County in particular were naturally friable and well-drained with minimal human modification, and the average cotton yield of the county, 0.43 bales per acre, was slightly higher than in similar fields in Winston County.

Attala County exhibited severe and permanent land degradation, as recorded by A. Tur of French Camp, who was Hilgard's correspondent for the county:

After eight to ten years' cultivation the soil becomes unprofitable and is usually 'turned out'. None that was originally cultivated is now cultivated, as it is only suitable for sedge-grass and Lespedeza or Japan clover. Slopes wash and gully readily, and are in most cases
seriously and often irreparably damaged. In some cases the valleys are badly injured by the washings, but where the latter is deposited in low, wet places it is beneficial. Horizontalizing and hillside ditching have been practiced, but have usually failed to check the damage because the work was not properly attended to. The ditches were allowed to fill up after a few years, the heavy spring rains broke over, and gullies resulted (Hilgard 1884:305).

Mr. Tur's observations confirm that the cotton land use pattern initiated during the 1820's in the Natchez District -clear, plant, and abandon- was replicated later in the century in the hill lands of the Headwaters sub-region (Colonus 1858; Moore 1958). Similarly, the prescribed remedy of horizontaling for erosive downslope erosion was widely implemented, but without the requisite degree of precision to obviate destructive soil erosion.

Hilgard's interpretation of cotton culture in Neshoba County demonstrates that late eighteenth-century Headwater farmers were increasingly moving downslope to plant corn and cotton but faced inevitable problems of excessive soil moisture. This was especially true of Neshoba County, which is drained primarily by the Pearl River itself. The attendant Pearl River bottomlands in this county were approximately 1.5 miles wide in the western part of the county, but they were liable to seasonal and episodic overflow (Hilgard 1884:306).

There were signs that Neshoba County farmers were becoming acutely aware of the potential for improving bottomlands; they experimented with draining black soil
swamps that lined small tributary creeks in the county. When drained, these soils were, by the correspondent's estimation, some of the most fertile soils imaginable; they supported exceptional corn crops of 80 bushels per acre (Hilgard 1884:307). Despite the improvements, these tracts were found to be excessively swampy for cotton.

The fourth county of the Headwaters sub-region, Choctaw County, exhibited land use that essentially echoed the pattern observed other counties. Again, farmers increasingly cultivated the bottomlands, with corn producing the greatest yields. The perils of this pattern became greater known in 1900, a particularly wet year in Choctaw County. In that year there was a wet spell - bottomland corn was almost a complete loss, the highlands fared better and saved the county from disaster (Coleman 1973). The uplands generally produced superior cotton lint, but faced the then-familiar problems of down-slope erosion and gullyng, and declining fertility from prolonged intensive cotton cultivation (Hilgard 1884:303).

A lack of passable roads aggravated the difficulties encountered in cultivating marketable cotton in the Pearl River bottoms. The roads became treacherously muddy and rutted, due to excessive soil wetness and poor drainage. Poor roads were a common problem across the Headwaters counties, which no longer relied on riverine transport to ship cotton to market. Each of the four Headwaters
counties primarily shipped cotton to market by railroad connections. This necessitated carrying cotton by wagon on terrible roads to railheads (Hilgard 1884). Ox cart drivers of Headwaters counties, who took corn and cotton to market/gin, were renowned for their skill in manipulating their teams over treacherous paths and roads (Coleman 1973).

The Central Hill Counties

The Central Hill counties, comprised of Leake, Madison, and Newton Counties, exhibited agricultural characteristics that varied within the sub-region. Farmers of Leake County cultivated cotton on an expanse of rolling fertile terrain, and on the second bottom of the Yockanookany River, a major tributary of the Pearl River. They benefited from their down-river location, relative to the Headwaters sub-region, for it afforded easier access to railheads that delivered cotton to the Mississippi River for transshipment. Leake County farmers also recognized the benefits of draining canebrakes in the bottomlands of smaller streams, and cotton was successfully cultivated on these rich soils to a higher degree than in the comparatively underdeveloped Headwater counties (Hilgard 1884).

Two correspondents who surveyed Leake County agriculture discussed the reutilization of old lands for cropping after extended fallow periods. Unfertilized old
crop land there produced good yields of cotton, corn, oats, or wheat, but only when they were allowed to revert to scrub pine and briers before reclearing (Hilgard 1884:306). Despite the fallow periods, land degradation from erosion and gullying was widespread in the county, although there was evidence of successful efforts to check damage through hillside ditching and horizontalling (Hilgard 1884:306).

Madison County, another Central Hill county, differed from Leake in that it had a higher population of black (19,920) than white inhabitants (5,946) (Hilgard 1884:327). The county also had more gentle, undulating terrain characteristics, which lent themselves to larger cotton farms. These lands were preferred for cotton and corn. By contrast, boggy bottomlands that the correspondent termed "crawfishy" were used much less for cotton cropping than in the Headwaters sub-region (Hilgard 1884). There is no mention given of erosive land degradation in the county. However, there was a widespread problem of worn-out lands that suffered fertility loss, particularly on the large plantations that predominated across the rolling uplands of the county (Hilgard 1884:327). However, the correspondent was optimistic for the prospects for lands that were rendered infertile through over-intensive plantation cropping. He stated that these lands awaited conversion to a "rational system of small farming to restore productiveness" (Hilgard 1884:328).
Newton County, while a constituent of the Central Hill sub-region, was demographically more like the Headwater counties than Madison County, because the white population (8428) exceeded the black population (5008) (Hilgard 1884). Newton county had a diverse mix of cotton farms of varying sizes, but overall cotton production was much smaller than the other two counties of the Central Hills sub-region. Some upland cotton farms of good productivity existed there, as did a few farms on improved bottom lands, which were similar in productivity to prairie soils of the next sub-region, the Prairie counties (Hilgard 1884).

The Prairie Counties

One Prairie county, Hinds County, was primarily a county of large upland cotton plantations, and accordingly the ratio of white to black inhabitants of the county was 1 to 3 (11675 white, 32,283 black) (Hilgard 1884:328). A massive quantity of cotton was produced in the county (36,684 bales) in 1880, making it the largest cotton producer of the upland counties of Mississippi (Hilgard 1884:328). Cotton was king in Hinds County: the acreage of corn (47510 acres) was half that devoted to cotton. However, the prospects for the continued high output of cotton in the county were uncertain in 1884. The county correspondent, H.O. Dixon of Jackson, noted that Hinds County planters were finding it difficult to secure and organize adequate labor to ensure the continued viability
of large-scale plantation-based cotton production in the county (Hilgard 1884:329).

Hinds county, a zone of large plantations, also suffered from large-scale land degradation. The labor uncertainty made it difficult for the county's planters to implement effective soil conservation measures, and the county suffered pervasive "washing and gullying of the soil" (Hilgard 1884:329). The main hope for Hinds county, in the view of Hilgard, was that a system of sustainable small farms would eventually take over the prairie soils of the county and rejuvenate these soils using locally available marl deposits (Hilgard 1884:328).

The next Prairie county, Rankin County, had a more even population balance between black and white inhabitants (7193 white, 9559 black) (Hilgard 1884). It also had a highly diversified agricultural landscape; within its borders was a belt of rolling upland light loamy soils, which were well settled by farmers, and there were also scattered pockets of prairie soils, akin to the Prairie belt found in Hinds County. Rankin County's patches of prairie soils were smaller, however, making it difficult for the correspondent to judge their overall productivity (Hilgard 1884:329). The southern third of the county was composed principally of longleaf pine-covered uplands, which made for poor or excellent crop fields, depending on micro-environmental factors (Hilgard 1884:329). One of the
most distinctive aspects of the Rankin cotton description was that it was the only county in which the Pearl River itself was still a principal means of transporting cotton to market in New Orleans. This stood in contrast to the railroad farm-to-market connections that prevailed in the rest of the Upper Pearl River Basin (Hilgard 1884).

Scott County was the least populous of the Prairie counties. Cotton was successfully grown on tracts of gypseous prairie soils, but these soils were less prevalent than in Hinds county, which was the exemplar of Prairie largeholding (Hilgard 1884). As was the case elsewhere in the sub-region, the bottomland soils were fertile, but the wettest soils were cropped with corn because of the tendency of cotton toward blight on such soils (Hilgard 1884).

Soil erosion was a serious problem in Scott County, but the effectiveness of hillside ditching and horizontalling was relatively successful here. The bottomlands of the county frequently suffered from clay and sand deposition from eroded up-slope fields (Hilgard 1884:330). The county correspondent, W.T. Robertson of Forest, mentioned a practice that alleviated the deposition problem but certainly contributed to river muddiness. This involved the construction of ditches in the bottomlands to convey soil washed down-stream without damaging bottomland fields (Hilgard 1884:330). There was no mention of this
practice at such an early date (1884) elsewhere in the Upper Pearl River Basin.

The Piney Woods Counties

The remaining sub-region of the Upper Pearl River Basin, the Piney Woods, exhibited characteristics that demonstrated that its farmers were becoming more aligned with agricultural patterns of other counties in the basin where small farms prevailed. Despite the Piney Woods reputation as a poor zone for cotton culture, the farmers of Simpson and Copiah counties were remarkably productive at the time of Hilgard's 1884 survey of agriculture.

Copiah County was a region of principally small farms in 1884, and the black to white population ratio was nearly even (14,451 black, 13,101 white) (Hilgard 1884:334). While the uplands of the county were regarded as moderately productive cropland, the focus of cotton cropping had shifted to the fertile bottomlands. By 1884 cotton was becoming an increasingly important crop of the county, with a little over half of the tilled acreage devoted to cotton, and two-thirds of the remaining acreage in corn. The second bottoms of the Pearl River were the most highly esteemed cropland of the county, but the report does not mention results of efforts to secure adequate drainage. Second bottoms were bottomland expanses at a slight elevation above the immediate flood plains of river courses. They were less subject to frequent flooding, but
they did benefit from periodic soil rejuvenation by alluvial deposition, in addition to downslope washing of soils from adjacent uplands. The average cotton yield per acre in the county was among the highest in Mississippi (0.43 bales per acre); This was remarkable to the field observer who thought this yield ran against popular notions of the Piney Woods region as a poor environment for successful cotton planting (Hilgard 1884:335).

Simpson County exhibited characteristics more in keeping with the Piney Woods sub-regional traditional identity as a zone of small farms where cotton production was secondary to corn and food production. In keeping with this perception, more acreage was planted in corn (14,165) than in cotton (8,855). As was true of Copiah County, the best cotton lands were the second bottoms of streams and rivers; the second bottom of the Pearl River itself was among the best croplands of the county (Hilgard 1884:339). The suitability of the bottomlands in the Piney Woods counties for cotton was partly due to the relatively high sand content of bottomland soils there, which helped drainage significantly. The correspondent for the county, J.C. M'Laurin of Mount Zion, reported that there was some damage to slopeside hills from gullying and washing. Damage was successfully checked in many such zones by circling and hillside ditching in a timely fashion (Hilgard 1884:339).
The Shifting Agricultural Landscape

Hilgard's county summaries underscore the fact that considerable changes were taking place in agriculture and settlement in the Upper Pearl River Basin in 1884. Cotton farmers in the region still saw merit in pursuing the antebellum model of cultivating cotton on the sandy but productive uplands. Nonetheless, there was a clear realization that in order to maintain and expand the cotton economy, considerable changes in the landscape were necessary. The effects of this realization are seen in the initial efforts to develop the potential of the bottomlands of the Upper Pearl River Basin, both to benefit from their intrinsic fertility and to minimize further erosive land degradation from continued upland tillage.

Landscapes Defined: Agricultural Patterns in the Census Data

Increased detail in agricultural census reports further develops the portrait of agriculture for the period 1880-1910. In 1880, the census added categories that had been overlooked in previous censuses. Some of the categories, especially measures of crop acreage, allow calculation of yields for various crops, and this has considerable potential for studies of Southern agricultural and environmental history, provided one keeps in mind the noted limitations of the Census of Agriculture (Prunty 1956). One of the primary problems was that the Census of Agriculture failed to adequately interpolate tenant and
share farming subdivisions on large land holdings. Reporting in the Basin was at times inconsistent; sharp changes in one census reporting period should be regarded with a judicious measure of skepticism, but generalized patterns are more indicative.

**Cotton Patterns**

The expansion of cotton farming into parts of the Upper Pearl River Basin where it had been under-emphasized before is an indicator of the continued fervor for cotton. By 1880, farmers were pressing in on the northern Piney Woods, in the mid-Pearl River Basin, and planting cotton. Within this period Simpson county increased the acreage of land cleared and land planted in cotton.

After the volatility of the immediate postbellum period, the quantity of improved acreage in the Upper Pearl River Basin steadily increased after 1880. A measure of land prepared for agricultural production, the figure nearly doubled from 1 million acres in 1880 to 1.8 million acres in 1910. At a sub-regional scale the increase varied, but improved acreage still rose in each group of counties. A slight exception to the observed pattern was the Piney Woods sub-region, where the amount of improved acreage remained nearly level in this time interval. In sharp contrast, the amount of improved acreage neatly doubled in the Headwater counties, reflecting ongoing efforts there to develop the bottomland soils. By the same
measure the Headwater counties of the Upper Pearl River Basin were a hotbed of late-postbellum agricultural expansion. Across the study region, agricultural land improvement continued at a considerable pace in the last decades of the nineteenth century.

The graph of Cotton Production in the Upper Pearl River Basin of Mississippi underscores the steep increase of cotton production between 1880 and 1910; total production doubled in the region, before an ensuing steep decline. By 1900, annual Upper Pearl River Basin cotton production had risen from 100,000 bales to 200,000 bales, reaching a level equal to its antebellum peak. Within the sub-regions of the Basin, the peak of cotton production was most notable in the Prairie counties, where it rebounded to seventy percent of its antebellum level. A similar situation prevailed in the Central Hill sub-region, where cotton production failed to match its antebellum peak output level of 70,000 bales. This was also a sub-region where the reliance on antebellum slave labor was higher than in the Headwater and Piney Woods counties.

In the extreme northern and southern sub-regions of the study region, the situation differed somewhat, owing to the higher prevalence of small farms in those counties. Cotton production in 1910 mildly exceeded its antebellum peaks. In the Piney Woods counties, the timeline of cotton production reflects the sub-region's character as distinct
from the rest of the Upper Pearl River Basin. In the Piney Woods counties, cotton production increased gradually from 1850 to 1900, with production remaining flat between 1860 and 1870. The Civil War exerted less of an influence on staple output there than in the rest of the study region.

In the Headwater counties, cotton production exceeded its prior postbellum peak. This sub-region had the strongest rebound after the Civil War, occurring in counties with the most accidented topography of the Upper Pearl River Basin. While the amount of cotton produced in the Headwater counties was less than in the Prairie or Central Hills counties, the expansion of cotton production shows that farmers there were intent on raising ever-increasing harvests of cotton. They achieved this as long as conditions permitted.

Beginning in 1880, the Census recorded the total amount of land in each county that was planted in cotton. Divided by the amount of cotton produced, the new figure enables calculations of cotton yield. This measure is an important one, for it provides a rough estimate of agricultural efficiency in the Upper Pearl River Basin. Cotton acreage figures are not available before 1880, precluding yield calculations before the Civil War or during Reconstruction.

One of the most striking characteristics of late nineteenth-century cotton yield was the persistence of high
Figure 6. Annual Yield of Cotton (Bales/Acre) in the Upper Pearl River Basin of Mississippi
yields in the Piney Woods counties. For the census years 1880, 1890, 1900 and 1910, the Piney Woods counties were the highest yielding counties of the Upper Pearl River Basin. The difference was particularly striking in 1910 when the Piney Woods yield was 0.36 bales of cotton per acre. In that year cotton yields in the other three sub-regions had taken a sharp drop, down to a mean level of 0.29, a significant deviation from the level achieved in the Piney Woods counties. This anomaly was likely related to the advance of boll weevils, which first decimated Mississippi's cotton crop with greatest severity in the oldest cotton regions. Support for this conjecture may be bound in the cotton yield results for 1920, when cotton yields in the Piney Woods counties dropped to the level of the other counties of the Upper Basin after the weevil infestation had permeated cotton fields of the entire state.

The situation appears somewhat different when assessing cotton yields for the Upper Pearl River Basin in its entirety. Across the Basin, cotton yields remained steady between 1880 and 1900; farmers were able to muster yields of only around 0.4 200-pound bales per acre. This yield was comparable with other Cotton Belt counties in the same period. But yields fell sharply in 1910, reflecting the turn-of-the-century decline in cotton yields that accompanied the boll weevil infestations.
The Boll Weevil

The turn of the century nearly coincides with the unwelcome entrance of the boll weevil into Mississippi; the weevil brought an end to cotton agriculture as it had been known. Boll weevils were first recorded in the state in 1907 (Ransom and Sutch 1977). The weevil made its entrance into the Upper Pearl River Basin around 1908, and by 1910 it was necessary to combat weevils and army worms in Winston County and other counties at the upper end of the Basin (USDA 1912). Across the state, the weevil spurred a reduction in acreage devoted to the cotton crop. This marked the first serious decline of cotton since the Civil War. Mississippi cotton acreage between 1907 (first infestation) and 1914 (year of complete infestation) declined 22 percent, and the average yield per acre also suffered, dropping 15 percent (Ransom and Sutch 1977). In this way the boll weevil, an insect, attacked the core of the cotton economy: the plant itself. Or, as Ransom and Sutch assert, the weevil epidemic “heralded the end of the era the Civil War introduced” (Ransom and Sutch 1977:174).

Efforts to combat the weevil by boosting soil fertility were not entirely successful. The level of fertilizer use in the upper Headwaters counties lagged behind the Southern trend toward increased use of fertilizers in this period. In Winston County, very little
fertilizer was used by 1910, in contrast with fertilizer practices in counties downriver of Jackson (USDA 1912).

**Other Crops: Corn, Peas, and Beans**

The graph of corn production help to broaden the perspective on agriculture in the Upper Pearl River Basin from 1880 to 1910. Across the entire Upper Basin, corn production increased markedly from its postbellum low point of 1870. Corn, as a marker of traditional cotton culture across the Old South, is an important crop to gauge. It was almost a mantra of the antebellum era that corn acreage should nearly equal cotton acreage to achieve balanced farm operation (Moore 1958). Corn and cotton (and peas) were alternated between fields to help forestall soil depletion.

The graph of corn production reveals of the role of corn in the region’s dramatic agricultural expansion after 1890. While corn production increased between 1880 and 1890, it really took off in the following decade, a pattern which is mirrored in the sub-regions. The Piney Woods counties differ slightly from the pattern observed in the rest of the Upper Basin: corn harvests in these counties experienced less volatility. Corn output there did rise to a peak in 1900 like the others, but the peak and subsequent decline were not nearly as drastic. Farm outputs were considerably more stable in the Piney Woods.

The corn yield graph for the interval of 1880 to 1920 helps to add breadth to the understanding of the cycle of
Figure 7. Annual Yield of Corn in the Upper Pearl River Basin of Mississippi
agriculture in this time period. In 1880, the yield of corn in the Basin was just over 11 bushels per acre, but at the time of the next enumeration, 1890, yields shot upward to 14.5 bushels per acre, a 25% increase. Yields stayed at that elevated level through one more census enumeration before falling back to the level of 11 bushels per acre in 1910. The pattern was an expansion followed by a retreat to pre-expansion levels.

Since peas and beans were regarded as the third element in the "holy trinity" of classic Southern cotton culture, a consideration of their production in the Upper Pearl River Basin is warranted. Field peas were often grown not only for animal feed but also to replenish fertility in cotton and cornfields through leguminous nitrogen enhancement. Another benefit was the efficacy of a pea crop as ground cover, helping to check soil erosion. The greatest usage of field peas and beans across the South occurred during the antebellum period; their importance is clearly visible in the regional figures for 1850, when pea and bean crops reached their apogee. After the Civil War, the measurement of pea and bean output is somewhat unreliable, because peas were often left for livestock to browse. Enumerations of this category were especially inconsistent by the standards of the nineteenth-century Bureau of the Census. Accordingly it would be injudicious
to accord too much weight to the wild fluctuations between 1870 and 1910.

Despite acknowledged anomalies, however, the line graph does reveal a trend for pea and bean harvest in the Upper Pearl River Basin. Beans and peas rebounded from the 1870 postbellum nadir by 1880, and until 1910 they declined notably and started to level off at around 60,000 bushels for the entire region. These declines suggest a few possibilities. First, there was an understandable drop in the harvest of peas and beans in response to the Civil War and its aftermath. The emphasis in this time was on reviving a diminished economy under new labor conditions. Peas and beans, a crop intended to preserve soil in the long term, were curtailed in deference to more immediate concerns. Secondly, the influence of debt arrangements increased the pressure on farmers to produce increasing amounts of cotton at the expense of peas and beans.

Agricultural Patterns and Self-Sufficiency

When viewed in comparison with the line graph of cotton production, the line graph of peas and beans production reveals an important element of the changes in cotton culture at the end of the nineteenth century. While a substantial expansion in cotton production continued between 1880 and 1910, the overall importance of peas and beans declined. The contrast was especially apparent in the Prairie counties, where gross cotton production was the
highest and the output of peas and beans was the lowest. In this case, the figures help tell a story: cotton farming expanded tremendously, but postbellum changes entailed an important departure from one of the basic soil conservation measures of enlightened antebellum cotton farmers.

The census data on cotton yields and improved farm acreage in the Upper Pearl River Basin reveal the change in late-postbellum cotton farming from its antebellum precedent. Gross cotton output recovered to the highs recorded before the Civil War, but the same amount of cotton was grown on vastly greater acreage, showing a decline in overall productivity. The sharp rebound of the corn crop suggests that farmers of the Upper Basin were partly successful in their quest to maintain a measure of crop diversity and regional self-sufficiency. This must have been difficult to achieve against the backdrop of extraordinary financial pressure to grow cotton.

Other census measures show that one must not overestimate the self-sufficiency of the region's farmers during this critical period in Southern environmental history. The potato, an important source of food and a measure of regional self-sufficiency, made a half-hearted comeback by 1880, as shown in the time-line graph of potato production. Tuber production declined again to a new low in 1910, so the crop was never an important element of the Upper Pearl River Basin during this time. The time-line
graph of legumes (peas and beans) suggests that self-sufficiency and environmental stewardship suffered setbacks in the late antebellum period, because the crop was so strongly identified with soil conservation of the antebellum era.

**Adversity, Diversification, and Entrapment**

Despite the unquestioned supremacy of cotton as an economic and cultural aspect of Southern culture, questions of self-sufficiency and its role in agriculture persisted in the 1890s. In the primary cotton-growing regions of the South, the incentive to maintain devotion to the staple crop overwhelmed the cautious advice of local newspaper editors and agricultural agents that it would be prudent to produce more food crops on the farm for home consumption (Ayers 1992). By the same token, the production of meat declined across cotton-growing regions of the South (Ayers 1992). Farmers also curtailed growing their own wheat for the same reason; it was more convenient and profitable to focus on cotton.

However in the Upper Pearl River Basin, farmers did not forsake non-staple crops to the same degree that agricultural writers reported for the South in its entirety. For every county of the Upper Pearl River Basin, oats, not a major commercial crop in the South, were grown in quantities sufficient to merit recording in the agricultural census. The continued cultivation of oats in
the Upper Pearl River Basin, in the midst of a massive expansion of cotton output, shows that farmers there at least recognized the utility of growing food for home and livestock consumption.

**Landscape Modifications**

An important redefinition of the settlement landscape of the post-Reconstruction South was the expansion and creation of new towns between 1880 and 1910. Across the South, thousands of new villages developed, and amidst the panoply of rural villages, towns that had been minor hubs of commerce developed into important regional cities. Among these cities of the cotton uplands were Little Rock, Arkansas, Shreveport, Louisiana, and Jackson, Mississippi, in the Pearl River Basin (Ayers, 1992).

Continued modifications to the Pearl River itself was a direct mode of governmental intervention in the Upper Pearl River Basin was continued modifications to the Pearl River itself. Despite the expansion of railroads into the region, the U.S. Army Corps of Engineers increased its efforts to optimize the channel for waterborne navigation. Cut-off construction, a means of eliminating troublesome bends in the river, reached its peak in 1878; in that year every possible bend in navigable portions of the river had been straightened (Howell, 1879). This caused some considerable problems. First, the cut-offs caused dramatic increases in the current of the river. During flood
conditions this led to undesirable downcutting and bank erosion. Bank erosion was so bad that the engineers finally recommended against continued straightening of the river's course. They reasoned, correctly, that the problems of snagging and excessive muddiness would not abate until the river assumed resumed its normal, sinuous, course.

The engineers worked to ensure navigability because of continued demand for a clear channel. The tonnage transported on the Pearl River during this time period peaked at 14450 tons in 1890, and then diminished substantially to a trickle of 199 tons by 1910 (Deakyne 1930 1938). The largest decrease occurred in 1900, when a low bridge was erected across the Pearl at Jackson. By 1910, there was almost no commercial water traffic upriver of Jackson. By the same token, navigation improvements to the Upper Pearl River Basin had essentially ceased by 1911 (Deakyne 1930).

By 1911, when straightening the Pearl had ceased, attention turned to modifying its headwaters. Farmers in the northern reaches of the Upper Pearl River Basin started to straighten small courses. This process was termed canalization or channelization. Its purpose had little to do with navigation; canalization was most commonly carried out in the upper reaches of the basin. The process was intended to reduce flooding in the upper
reaches, to improve those lands for continued cropping and settlement. Farmers also perceived other benefits to canalization: it was done for sanitary reasons to reduce the mosquito/malaria problem (USDA 1912). Lowering the water table, to minimize swampiness, eliminated mosquito habitat. Another benefit of eliminating of meanders was to enhance land values by creating larger plots of land with rectangular dimensions.

In the Headwater counties, farmers employed methods appropriate to the regional landforms they encountered. In the Winston County uplands "bedding" was practiced (USDA, 1912). Bedding involved the construction of raised rows, to permit superior drainage conditions to the usual method of planting at ground level. It is difficult to ascertain the prevalence of this method. However it was an effective means of alleviating over-saturation in mucky bottomland soils, and a powerful indicator of stewardship. In Winston County bottomlands, where much agricultural development took place in this period, raised fields were also constructed to minimize drainage problems (USDA, 1912).

Inventory and Prospect

The measures to improve agricultural lands discussed in this chapter to improve agricultural lands were important, but incompletely effective at reversing the deleterious and widely noted soil erosion and gullying in cotton farming regions of the Upper Pearl River Basin. In
1910, a governmental report, appropriately titled *Our Wastelands, a Preliminary Report on Erosion in the State of Mississippi* (Lowe, 1910) painted another grim portrait of land stewardship in upland portions of the state. The report was unequivocal: a crisis in agriculture continued to become dire in the state. The increasing demands of the cotton economy were aggravating a bad situation. Gullying and sheet erosion were still problematic across the state, except in regions that were not yet placed in cotton.

The numerous examples of land degradation that characterized the Upper Pearl River Basin did not result from wanton exhaustive exploitation by farmers. They were cultivating cotton under difficult economic and geoeconomic conditions. They were compelled to grow cotton because it was the only crop that would garner enough income to remain economically solvent under a lien and sharecropping land tenure system. The one real hope for continuing to cultivate cotton while minimizing soil erosion - developing bottomland fields for cotton cultivation - was retarded by the arrival of the boll weevil. The farmers of the Upper Basin deserve some credit for adapting to difficult conditions. Upper Pearl River Basin cotton culture faced a crisis in 1910, and it was about to face further challenges to prosperity and sustainability.
CHAPTER 7
CRISIS AND CONSOLIDATION (1910 TO 1930)

Introduction

The period of 1910 to 1930 forms a distinct chapter in the environmental historical geography of the Upper Pearl River Basin. At the start of this period, cotton-based agriculture took a sharp downturn, followed by a rebound that was nearly as precipitous. The initial decline, which amounted to a crisis of agriculture, and changes in the role of the Pearl River itself, underscored the tumultuous nature of the years 1910 to 1930. Adversity tested the ability of the farmers to produce cotton, and the subsequent recovery tested their resolve to practice soil conservation measures in the maturing cultural landscape of the Upper Pearl River Basin.

Census Views of Agricultural Decline and Recovery

As indicated in the previous chapter, events in the Upper Pearl River Basin began on an inauspicious note in 1910. The region experienced a sharp break from the steady expansion of cotton output and other measures of agricultural productivity, in stark contrast with the postbellum expansion leading up to 1900. The dramatic decline and subsequent recovery is most readily apparent in graphs of the Census of Agriculture returns for the years 1910 through 1930. The graph of improved acreage charts the dramatic changes wrought between 1910 and 1920 in particular. During that time, the steady rise in the
amount of improved acreage leveled off noticeably, after a steady increase from 1870.

**The Cotton Decline**

The graph of cotton production illustrates the downturn: by 1920 the amount of cotton grown in the Upper Pearl River Basin had plummeted from its 1910 level of 170,000 bales down to a 1920 nadir of 90,000 bales. The decline was universal among all the sub-regions of the Upper Pearl River Basin, even in the historically resilient Piney Woods counties. Farmers of the Piney Woods counties, the sub-region historically least dependent on cotton, experienced a 60 percent drop in cotton output. Not since the Civil War had cotton output suffered a drop like this. In a region of farmers dependent on cotton for cash to keep themselves out of debt, this represented an enormous crisis.

The yield of cotton also fell from 1910 to 1920, continuing a downward trend that was initiated in 1900. Between 1900 and 1910, cotton yields fell from 0.4 bales per acre to 0.33 bales, continuing down to a nadir of 0.23 bales in 1920. This was a 40 percent drop in the amount of cotton produced per unit of land, a catastrophic decline by any standard of determination.

**Corn**

Agricultural decline in the Upper Pearl River Basin was not limited to the cotton crop. There were some
Figure 8. Picking Cotton Near McNeil, Mississippi During the Period from 1919 to 1927.

Source: (USDA 1927)
parallel developments in corn, although these figures reveal less of underlying malaise than do the cotton figures.

The graph of corn production provides an interesting counterpoint to the graph of cotton production for the same time interval. Total corn output suffered a temporary decline around 1910, as reflected by a single dip in corn output for the Basin in that census year. However, corn output recovered rather neatly by the following enumeration in 1920, while cotton output continued its downward slide. In the last decade, 1920-1930, corn production fell only slightly in response to the massive surge in cotton output that was recorded in the 1930 Census of Agriculture. By that point, corn production leveled off, remaining an important but stable agricultural commodity in the Upper Pearl River Basin. Farmers of the Upper Basin benefited from their base of corn production when they needed it most: 1910. Just as cotton output and yields plunged, the amount of corn produced in the Upper Basin helped to cushion the drop in cotton. Never was the antebellum notion that corn can help cotton farmers through bad times so true as during the cotton crisis of the years surrounding 1920.

There was a strong correlation between corn output and corn yield in the decline of 1910. By 1920, corn yields
attained a level of 13.2 bushels per acre, recovering just as quickly as corn output. The yields rose to new heights by 1930, when the entire region attained a mean corn yield of 17 bushels per acre. This was the highest yield attained for corn since just before the Civil War, when fresh fields had abounded in the Upper Pearl River Basin. The period of 1910-1930 was a volatile one to say the least. Corn continued to play a vital role in Upper Pearl River Basin agriculture, long after its beginnings as a foundation of pioneer cotton farming in the Old Cotton Belt.

Other Products

The graph of the production of irish potatoes and ams in the Upper Pearl River Basin depicts a major agricultural change between 1910 and 1930. While never a crop of the same regional importance as cotton or corn during the nineteenth century postbellum decades, potatoes dramatically increased in production between 1910 and 1930. During that time, potato production in the Upper Basin rose steadily to new heights, peaking in 1930 at 1.8 million bushels. The farmers of the Upper Basin had clearly placed newfound emphasis on food production, after output of the crop had steadily declined during the cotton expansion of the late nineteenth century.

The graph of the production of peas and beans in the Upper Pearl River Basin shows the continued low recorded
harvests of nitrogen-fixing legumes in the early twentieth century. The output of peas and beans never exceeded 90,000 bushels between 1910 and 1930. However, the raw output figures may mask the true importance of legumes in the Upper Pearl River Basin during this time, for farmers frequently regarded the crop as a ground cover and forage crop instead of a marketable one. While levels of peas and beans were low, the output did rise slightly across the entire region, particularly in the Prairie counties. While the magnitude of the rise itself was not remarkable, the fact that it rose at all during a time of crisis in cotton is.

Although this dissertation has concentrated on cotton culture, cattle were also persistent as an important element of farming in the Upper Pearl River Basin. As shown in the graph of cattle population in the Upper Pearl River Basin, nineteenth-century Upper Pearl River Basin farmers continuously maintained a population of approximately 150,000 to 190,000 cattle between 1850 and 1910. The only break in this pattern was a short dip during the Civil War decade that was universal to all forms of agricultural output. After 1910, the situation changed drastically, and cattle began to assume a role of greater importance in the Upper Basin. In 1910, the same year that cotton and corn output diminished, the cattle population surged for the first time, from 190,000 to 260,000 head.
Figure 9. Cattle Population of the Upper Pearl River Basin of Mississippi
The cattle population dropped back to 210,000 cattle in 1930, the same year that cotton production climbed to a new height of 230,000 bales.

There was a strong inverse relationship between the cattle population and cotton output during the interval of 1910 to 1930. Farmers of the Upper Pearl River Basin compensated for poor cotton returns by increasing their livestock herds. This represented a change from an earlier period in which corn production provided a slight cushion against poor cotton yields. But corn never completely compensated for depressed cotton output: the peaks and valleys of both crops were nearly synchronized between 1850 and 1940, with the exception of the 1920 census year. When the cotton crisis of 1910 occurred, farmers of the Upper Pearl River Basin had a partial economic cushion of cattle and potatoes.

**The Boll Weevil Infestation**

Behind the scenes of the cotton crisis of 1920 lurked a sinister actor in Southern environmental history: the boll weevil. By 1920 the boll weevil was firmly entrenched in the cotton fields of the Upper Pearl River Basin, spelling disaster for the cotton crop between 1910 and 1920. In 1914, 1915, and 1916, for example, the Choctaw County crop was nearly completely destroyed, and farmers went to great lengths to combat the infestation:

In 1914, the Choctaw Plaindealer advertised a mixture which was considered to be fatal to this
destructive insect. The proposal was to boil a pound of mothballs in a gallon of lubricating oil, add a pint of tar, and mix with five gallons of kerosene. Gunny sacks were then to be saturated with this concoction, attached to the singletree, and thus dragged against the cotton plants. The Plaindealer quite correctly stated that "the fumes of this mixture are very obnoxious," as it must have been to the mule who was drawing the plow and the man who was following it. It is not known how extensively this preparation was used in the heartbreaking battle with "Mr. Boll Weevil." (Coleman, 1973: 220).

There was an exodus from Choctaw County during this period. An editorial in the Plaindealer plead against this tide, stating that it was better to stay and face the known, rather than to repeat the pioneer settlement process again in Arkansas or some other strange place (Coleman, 1973:220). This was a sure sign of a maturing cultural landscape of the Upper Pearl River Basin. Despite the misgivings of its farmers, most realized the difficulty of starting over versus the utility of adapting to the exigencies of the time.

A 1926 soil survey of Rankin County helps to explain events on the ground as they affected the agricultural returns reflected in the Census of Agriculture (USDA 1926). In 1920 the population of Rankin County was 20,272, of whom most were engaged in farming (USDA 1926). The county, classified in this study as a Prairie county, encompassed a diversity of landforms in addition to the historically important black prairie soils that were the favored soils for cotton production.
The Rankin County soil survey details localized manifestations of the 1910-1920 decline in agriculture. At the top of the list was the boll weevil, which the Department of Agriculture identified as the primary cause of the downturn (USDA 1926). In Rankin County, as in all other counties of the Upper Pearl River Basin, corn was a partial salvation for the crisis in cotton. In 1920, corn was planted primarily in the bottomlands, where impressive yields of 40 to 50 bushels per acres were common (USDA 1926). However, as cotton acreage was reduced because of the weevil infestation, farmers often grew corn on upland cotton fields where weevils were out of control (USDA 1926). On these upland fields farmers received diminished corn yields on the order of 20 to 40 bushels per acre, but this compared favorably with the alternative of complete cotton losses (USDA 1926).

With the decline of cotton, a considerable amount of farmland was abandoned around 1920, and many lands reverted to pine or pasture (USDA 1926). The reduction of farmland opened a niche for the rise of cattle farming that is so readily apparent in the census graph. The report of the Rankin County soil survey expressed discouragement at the low quality of herds in the county; they concurred with the observation that cattle were grown more for the short-term cash they could provide than with thoughts of building a strong herd for long-term stability. Most of the cattle
raised in Rankin County were for cash sale; dairying was unimportant (USDA 1926).

Farmers of Rankin County made a number of adaptations to minimize the depredations of the boll weevil infestation. As they had in the past, the farmers capitalized on the better drainage of the uplands for cultivating cotton in the face of the invasion, for weevil infestations were significantly worse in bottomland soils (USDA 1926). The boll weevil increased farmers' propensity to plant cotton in the uplands. Corn thrived in the wet bottomlands, which partly explains why corn output went up as cotton production decreased in 1920, as recorded in census totals for Prairie counties. Rankin County planters were also somewhat effective in combating the weevils by planting early-maturing varieties of cotton (USDA 1926). While these varieties did produce smaller heads (bolls; and consequently smaller yields, at least it was possible to salvage a crop (USDA 1926)

The extension agents who contributed to the soil survey of Rankin County also noted that numerous farmers, in the face of the weevil dilemma, planted peas and beans to improve the soil (USDA 1926). By increasing the nitrogen content and retaining as much topsoil as possible, they were able to mitigate the negative effects of this terrible infestation. This increase, noted on the ground, is partly reflected by a slight increase in the census
records of peas and beans production, both for the Prairie counties and for the entire Upper Pearl River Basin. The graph records a slight rise in the harvests of peas and beans between 1910 and 1920, and a greater rise between 1920 and 1930.

It is doubtful that the census figures adequately reflect the true output of legumes in the Upper Pearl River Basin. It was common practice for farmers to let their livestock browse fields that had been planted in peas and beans. Browsed fields were not harvested in general, and this probably accounted for under-reported harvests of legumes in the early twentieth century. Despite these uncertainties it does appear that, faced with adversity, that Rankin County farmers turned, once again in times of trouble, to legume-based soil conservation measures.

The changes recorded in successive agricultural censuses, particularly the negative effect of the boll-weevil infestation, exerted pressure on Upper Basin farmers to implement critical environmental adaptations. They responded by implementing long-deferred landscape modifications that, in addition to mitigating the effects of the weevil infestation improved the medium-term viability of agriculture.

**Agricultural Adaptations and Innovations**

A soil survey of Winston County, one of the Headwater counties, adds breadth to knowledge of agricultural
adaptations and innovations in the Upper Pearl River Basin during this dynamic period (USDA 1912). The 1912 soil survey presents agricultural activity in the Headwater counties at an earlier date than the Rankin County survey. One of the oldest incorporated counties of the Upper Pearl River Basin, the county had 17,139 inhabitants in 1910 (USDA 1912). As in Rankin County, farmers in Winston County had to combat massive boll weevil infestations after 1910, in addition to another important crop-ravaging pest, the army worm (USDA 1912). They found that one of the most effective ways to minimize insect damage was to optimize drainage; the weevils exacted their highest toll on cotton planted in poorly drained soils. In the uplands, some Winston County farmers employed a technique they called “bedding” to improve drainage conditions for cotton plants. In the bottomlands, raised fields were employed in some cases to minimize drainage trouble (USDA 1912).

Beyond these efforts to optimize growing conditions in extant fields, farmers of the upper Headwater counties recognized that a key to agricultural prosperity was in reclaiming bottomlands for crop fields. After eighty-plus years of cotton farming, the old upland cotton fields were showing their limitations for further cotton culture. So, measures were taken to channelize some of the headwater streams and rivulets (USDA 1912). Channelization involved the straightening of stream channels, and it was employed
primarily in the Headwater counties. Farmers sought to channelize the streams for two principal reasons. First, this helped drain the bottomlands; by straightening the streams, the bottomlands became much less swampy as the streams downcut lower in to the landform surface.

Channelization was also done for "sanitary" purposes (USDA 1912), by which the soil survey refers to the need for minimizing the mosquito/malaria problem that plagued the American South well into the twentieth century (National Resources Committee 1938). Awareness of the need for control of malaria, a disease borne by the mosquito vector Anopheles quadrimaculatus, had heightened in Mississippi by 1910 (Sunderman 1993). Across the South, awareness was enhanced in part by the publication of a study by the Rockefeller Foundation (Meade 1980). The study, based on a survey of malaria control measures across the South, made recommendations for improving drainage and its consequent benefits to health and agriculture.

Farmers of the Headwaters counties considered channelization a benefit for it straightened streams there is no evidence to suggest that farmers in the upper part of the Pearl River drainage Basin were concerned about the increases in suspended sediment load that channelization imparted further downstream in the Middle and Lower Pearl River Basin. This was a major problem in watersheds of upland regions of Mississippi in the early twentieth
century. Channel dredging operations commenced in uplands stream segments and later proceeded downstream. The transfer of plugging and drainage problems occurred downstream, making treatment of entire watershed clearly necessary (Sunderman 1993).

Channelization also increased the resale value of bottomland croplands. Straightening the streams helped to render the fields more orthogonal in form, making them more amenable to mechanized forms of cultivation that were slowly diffusing into the Upper Pearl River Basin (USDA 1912).

The Yockanookany River, a tributary of the Pearl that rises in Choctaw County, was one of the principal headwaters that was channelized. Channelization of the upper twenty miles of the river was completed in 1914, and the lower part of the river was completed in 1928 (U.S. Army Corps of Engineers 1960). The extreme lower portion of the channel began to fill with sediment only two years after completion. This process was indicative of the widespread problems associated with attempting to redefine the flow characteristics of streams in the Upper Pearl River Basin's sandy soils (U.S. Army Corps of Engineers 1960). The increased sediment discharge of the stream contributed to increased sediment deposition further downstream in the Pearl River, diminishing prospects for navigation.
In order to augment the drainage effect of channelization, farmers in Headwater counties began to "tile" bottomlands crop fields. "Tiling" was a method of improving the drainage of bottomlands by installing a network of subterranean terracotta pipes. The pipes drained bottomland fields and made it possible in many cases to grow cotton in the fertile bottomland soils.

Quite a distance down-river from Winston County, in the Piney Woods sub-region, Simpson County exhibited variations of agricultural adaptation different from those implemented upstream. A soil survey of the county provides a contrasting view of agriculture and settlement in the Upper Pearl River Basin during this important period of adverse conditions and responses (USDA 1919). As in other counties during the weevil infestation, farmers here preferred to plant their cotton on the uplands, which in this sub-region were predominantly flattish ridge-tops (USDA 1919). In complementary fashion, corn was cultivated in the wetter bottomlands, of which there were many in the Piney Woods sub-region.

However, farmers in Simpson County had a more diverse range of agricultural output, which helped them to weather this period of uncertainty with less volatile economic swings. For example, farmers here continued to grow oats in considerable quantities. The preferred soils for oat cropping were patches of heavier upland soils, which lacked
Figure 10. Black Laborer Laying Tile Drainage Pipe in an Unidentified Bottomland of Mississippi

Source: (USDA 1938)
the friable character of upland soils groups that were favored for cotton (USDA 1919).

In strong contrast with farmers further upstream in the Upper Basin, Simpson County farmers used copious quantities of fertilizer to augment the relatively low inherent fertility of their upland fields (USDA 1919). Some of the fertilizer in use was limestone marl, available from deposits in southern Mississippi. The Piney Woods farmers also used commercial fertilizers that were shipped upriver or by railroad. The farmers of the Headwaters counties, by contrast, faced higher transportation costs, and thus they used comparatively few fertilizers to boost soil fertility of the uplands (Coleman 1973; USDA 1912).

In retrospect, the Piney Woods farmers, tilling a region that lost population in the antebellum cotton craze, were remarkably astute among the farmers of the Upper Pearl River Basin as a whole. Across all of the the Census of Agriculture variables, the Piney Woods sub-region experienced less volatility of agricultural output than the other constituent sub-regions. However farmers across the entirety of the Upper Basin deserve recognition for their investments in critical landscape modifications. The imperative to improve bottomland drainage characteristics and to terrace uplands, had never been so apparent as during the early decades of the twentieth century. These efforts were integral with concurrent changes in the Upper
Pearl River Basin, to improve overland transportation to improve the regional economy.

**Riverine and Overland Transport**

With bridges across the Pearl River at Jackson and other locations along its course, the value of the Pearl River for commercial transport of cotton and other supplies diminished to near-negligible levels between 1910 and 1930. There were some limited efforts to maintain the river for transport, but during this time the head of navigation was Jackson, which severely limited access by farmers of the Upper Pearl River Basin to the benefits of down-river transport. By 1922, all work to secure a navigable channel on the middle and Upper Pearl River had been suspended, and traffic was limited to the occasional movement of sand and gravel in the lower part of the river, and to some rafting of logs (U.S. Army Corps of Engineers 1960).

Transporting crops to market remained a major challenge for farmers of upland Mississippi. Photographs from the collection of the Bureau of Public Roads portray the stark challenges Mississippi cotton farmers faced as they transported cotton to the railheads on the commonly unimproved and soggy “gumbo” roads. Developed steamship navigation on the Pearl River would have eliminated much of the trouble for farmers of the Upper Basin, but with considerable economic and environmental costs. However, this option faded quickly in light of increased
Source: (Chief of U.S. Army Corps of Engineers 1909)

Figure 11. Snagboat Black Warrior and Barge at Head of Farr's Slough, Pearl River, November 10, 1909
Source: (US Bureau of Public Roads ca. 1910)

Figure 12. To Meridian, Mississippi: Difficulty of Transportation Over Bad Road
sedimentation and diminished governmental resolve to maintain the river channel for the region's farmers.

The town landscape of interior Mississippi, including the Upper Pearl River Basin, assumed a redefined identity during this period. The great advances of railroads in the region privileged those localities with rail access and diminished those without (Adkins 1979). Furthermore, the importance of central locations within Mississippi's counties was reinforced from 1912 onward, by the establishment of the cooperative cotton gin (Adkins 1979). County seat towns became the sites of cooperative gins because of their centrality and accessibility to the greatest number of cotton farmers in a given county (National Resources Committee 1938).

In the Upper Pearl River basin, these changes, which started during Reconstruction with the arrival of merchants throughout the cotton farming countryside, represented an important step toward centralizing the commercial structure. This pattern continued with the finalization of county seats in the Upper Basin. The current network of county seats was fully realized by 1930 (Adkins 1979). A good example of one such county seat is Philadelphia, county seat of Choctaw. Like other county seats of the Upper Pearl River Basin, much of Philadelphia Mississippi's economic status in Choctaw County solidified with the introduction of its central cotton gin (Coleman 1973).
This ended the previous practice of farmers taking their cotton to gins dispersed throughout the county.

**Conclusion**

The turbulence in agriculture that characterized the period from 1910 to 1930 provides the opportunity to compare and contrast the experiences of farmers across the Cotton Belt during this difficult period. The boll weevil infestations after 1910 drove some farmers in the South, including the Upper Pearl River Basin, toward diversification for the first time since the days of antebellum pioneer farming (Daniel 1985). There is some evidence that farmers of the Upper Pearl River Basin did respond to the imperative to diversify, despite the continued pressure to produce cotton for badly needed cash. Across the South, the severity of the weevil invasion accelerated the movement of many cotton farmers in hill counties toward more fertile land, and to render cotton less subject to damage from infestations.

Almost paradoxically, farmers across the South were almost too effective in countering the boll weevil. Cotton productivity increased to an unprecedented level in 1930. Unfortunately the new heights of cotton productivity were reached at the same time that synthetic fabrics first appeared on the world market, setting a difficult state of affairs for farmers to face in the 1930’s. The growing availability of cotton from foreign countries depressed...
cotton prices further, lending further complications to farming the sandy hills of east-central Mississippi. By 1930, farmers of the Upper Pearl River Basin faced a cruel dilemma; they had overcome a biological crisis (the weevil) through innovation and adaptation, only to face a global economic threat to their prosperity: the upcoming Depression years of the 1930's.
CHAPTER 8
THE NEW DEAL IN THE PEARL RIVER BASIN (1930-1940)

Introduction

Even though the period was only a single decade in duration, the 1930s merit separate examination for important changes that took place in the Upper Pearl River Basin. While multiple factors coalesced to define another chapter in the environmental historical geography of the Upper Basin, the involvement of the Federal Government in agricultural and environmental affairs was especially pronounced during the 1930s. The implementation of the Roosevelt administration’s New Deal policies, particularly those of the Alphabet-Soup social and agricultural relief agencies, aided in redefining the cultural landscape of the Upper Pearl River Basin. This implementation, in conjunction with other important changes, signaled a dramatic rise the trajectory of increasing professionalized (Worster 1985) authority over agriculture and settlement. Accompanying these developments was the rise of unprecedented cotton productivity during the century’s worst economic depression.

Census Views of 1930-1940

The graphs of agricultural census data demonstrate the importance of the year 1930 in the upper Pearl River basin. By nearly every variable displayed, 1930 stood as a watershed year, helping to underscore the reasons for which
this decade merits separate attention. In that year, cotton reached its peak of production in the Upper Pearl River Basin, as recorded by the Census of Agriculture.

The graph of improved farm acreage depicts dramatic changes after 1930 in the Upper Pearl River Basin. After seven decades of steady increases (except for 1920), the amount of improved farm acreage initiated a drastic slide around the time of the 1930 Census of Agriculture. Paradoxically, the decline in farm acreage coincided with cotton yields reaching their highest levels since the last pre-weevil infestation peak of 1900. An underlying reason for the decline in improved farm acreage was policies of the federal government in the Cotton Belt, which actively promoted cropland reductions to combat soil erosion and to help elevate cotton prices (Conrad 1965).

After the remarkable recovery of Upper Basin farmers from the boll-weevil crisis, cotton output fell after 1930. The sharp peak in 1930 and subsequent decline (see the the graph of cotton production in the Upper Pearl River Basin) indicates the size of this reversal. Cotton output, which reached an all-time high of 230,000 bales in 1930 dropped back to 180,000 bales by 1940, a 22 percent decline. Again, much of this drop was due to U.S. Government agricultural policy, which sought to maintain higher cotton prices by paying farmland owners, and not always the
farmers themselves, to reduce their cotton acreage (Conrad 1965; Daniel 1985).

The line graph of production of Irish potatoes and yams in the Upper Pearl River Basin shows that the agricultural decline after 1930 was not limited to the all-important cotton crop. This category declined precipitously after thirty years of impressive increases between 1910 and 1930. The decline was particularly troublesome, for it represented a decline of food crop output just as the entire nation plunged into economic depression.

The graph of cattle populations in the Upper Basin reveals an interesting development in relation to cotton output at the same time. In 1930, concurrent with the stunning rebound of cotton output, the cattle population dropped. However, in a corresponding response to the subsequent decline in the cotton economy, the cattle population rebounded to a new peak of 280,000 head in 1940. This increase of cattle was another iteration of the critical role livestock played in the Upper Basin during twentieth-century crises in the cotton sector. Cattle populations surged in the first crisis in 1910 in response to the boll-weevil disaster. The population surged a second time in response to the economic crisis of the 1930s. This second increase solidified the importance of
cattle in Upper Pearl River basin agriculture as the relative importance of cotton permanently declined.

The bar graph of the cotton yields demonstrates the tremendous gains cotton farmers of the Upper Pearl River Basin made in improving their productivity, and in overcoming the boll weevil scourge. Cotton yields rebounded dramatically from the weevil-associated lows of 1910 and 1920, and they increased further between 1930 to 1940. The highest yields ever recorded by the Census of Agriculture in the Upper Pearl River Basin were recorded in the Prairie and Headwater counties in 1940. The mean Prairie county yield exceeded 0.6 bales per acre. These counties with the gentlest and most open terrain of the Upper Basin proved amenable to the mechanized forms of cultivation that became more commonplace in the and 1930’s. By contrast, the Headwater counties, with broken upland terrain and narrow bottomlands, were less suited to mechanized forms of cultivation or harvesting. Mules, however, were still vital tools of cotton culture in the hilly terrain of the Upper Pearl River basin through the 1930s.

The graph of corn production in the Upper Pearl River Basin reveals that corn remained a vital crop of the Upper Pearl River Basin, at the same time that cotton declined. The level of corn output hovered at 6,000,000 bushels between 1930 and 1940. Corn output, which historically
rose and fell in accord with cotton output during the nineteenth century, was no longer pegged to the fortunes of cotton in the early twentieth century.

Highways and Muddy Riverways

By 1930 the transport role of the Upper Pearl River had receded to its lowest level in 100 years. In the previous period, 1910-1930, continuing bridge construction and railroad development further limited interest in the river as an important transportation artery for Upper Basin farmers. This was especially true for farmers above the bridge at Jackson, Mississippi, a demarcation that excluded the majority of the Upper Pearl River basin land area. Riverine transport remained important only on the downriver reaches of the Pearl River, where depths remained sufficient for navigation. However, in the upper Pearl channel, the federal government ceased to maintain an adequate channel for riverboats to serve cotton farmers of the Upper Basin. Consequently, the frequency of reports of commercial vessels, or Army survey activities diminished from public records after the 1920s. After surveying the river in 1930, Brigadier General Herbert Deakyne of the U.S. Army Corps of Engineers concluded that the future role of the Corps was limited:

Improvements for navigation, for the development of power, or for flood control can not be regarded as economical. Irrigation is not necessary. The board therefore is of the opinion that no improvement of this stream for navigation in connection with power development, flood
control or irrigation, or any combination thereof, is justified at the present time (Deakyne 1930:5).

Deakyne's remarks marked the end of an era for the Upper Pearl River Basin. Prospects for the Pearl River as a navigable artery into interior Mississippi were permanently diminished.

The diminution of the Pearl River's economic importance coincided with increasing attention to the imperative of improving roads in the Upper Basin and elsewhere in the Cotton Belt. The Mississippi state highway system, which began improving roads in the 1920s, significantly improved overland transport in the Upper Pearl River Basin throughout the 1930s (Swanton 1931).

The Alphabet Soup Agencies: Unprecedented Oversight

In the Upper Pearl River basin, as in the rest of the South, the 1930s were an important and unique decade, for the unprecedented involvement of the Federal Government in the affairs of agriculture. The United States Department of Agriculture rose to new heights of power in the South. Other U.S. Government agencies, especially the Works Progress Administration (WPA), were created to further address problems relating to agriculture and settlement in the South.

These Federal agencies, called 'Alphabet Soup' agencies for the acronyms by which they were known, emerged in the 1930s. But the roots of their formation dated back
to the previous decade. During the 1920s, a series of major crises affected Southern farmers, and thrust the plight of Southern agriculture into the national spotlight. One environmental historian, Pete Daniel (Daniel 1985) called these crises, 'the origins of Southern relief'. One of these 'origins', the Mississippi River flood of 1927, was a monumental disaster for farmers of the lower Mississippi River basin (Arnold 1988). The deaths, crop losses and property damage wrought by this disaster remains etched in the memory of individuals old enough to remember the flood when it occurred. While flooding did occur in the Upper Pearl River basin at the time, the basin managed to escape the types of severe damage suffered by so many just a hundred miles to the west. Upper Basin inhabitants were, however, affected by the flood of programs that the US government instituted in response to this crisis. Other crises that helped unleash Federal agricultural relief included the great drought of 1930, which especially devastated dirt farmers in the Southern Great Plains (Worster, 1979). Profound declines in world commodity prices also compounded the effect of the two natural disasters in increasing general awareness of a Southern crisis of settlement and agriculture. Of particular concern were steep drops in cotton prices just at the time that synthetic fabrics were first brought to market.
Erosion and Power

During the 1930s attention focused on the destructive land degradation that ensued from the previous century of cotton culture across the South. A stark photograph is representative of images of land erosion in the South, which appeared frequently in newspapers and magazines during the late 1920’s and early 1930’s.

A 1938 report by the Mississippi State Planning Commission of the National Resources Committee, included, among other items, the results of a statewide survey of erosion (National Resources Committee, 1938). The existence of the survey is fortunate, for it provides a quantified survey of the scope and extent of soil erosion near the conclusion of the dissertation study period. The survey was a planimetric survey of aerial photographs of each county in the state. The photogrammetrists assigned values for each of eight degrees of erosional severity, helping to achieve the first available survey of erosion in the region.

Some interesting patterns emerged from grouping the data by the sub-regions of the upper Pearl River basin. First, the grouping makes it clear that the greatest severity of erosion was observable in the Piney Woods counties. Incredibly, only 4.23 percent of the land area of the two Piney Woods counties, Copiah and Simpson Counties, were found to have no appreciable erosion. The
Figure 13. Desolation of Farm From Soil Erosion. A Nearly Abandoned Farm with Severe Soil Erosion in Marshall County, Mississippi, in February, 1941.
amount of land affected by erosion was striking. 40% percent was affected by moderate sheet erosion (National Resources Committee 1938). Sheet erosion is erosion where the topsoil layer is partially (or completely) removed by the laminar flow of rainfall. The Drainage committee deemed such lands as still usable for agriculture, but their productive capacity was certainly diminished. More disturbing were the percentages of the Piney Woods counties affected by severe erosion. 50% percent of arable land in the Piney Woods counties was degraded by moderate sheet erosion and gullying, or by severe sheet erosion and gullying. Perhaps the most shocking figure was the 8.94 percent figure of land classified as "destroyed by gullying" (National Resources Committee 1938).

The other sub-regions of the upper Pearl River basin were also profoundly affected by soil erosion, as determined by the National Resources Committee. The Headwater counties experienced serious cumulative erosion, with 80 percent of its land surface degraded by erosion by gullying and/or sheet erosion (National Resources Committee 1938). The results were similar for the Headwater counties, and the Central Hills counties. This was due in part to the similar rugged relief and soils of the two sub-regions. Consequently the two sub-regions shared similarly discouraging erosion estimates: both had 80 percent of their landscape adversely affected by soil erosion. The
Headwater counties, with some of the steepest terrain in the upper Pearl River basin, also experienced considerable degradation from gullying.

There was no good news in the erosion report, but the tone may have been indicative of the government's desire to stress the problem as a means of justifying intervention by federal agencies (Lehman 1995). While one may admire farmers' efforts to adapt to uncertainty and adversity over the past century of cotton farming in the Upper Basin, the damage wrought by their efforts was undeniable, as recorded in the erosion study. The evidence was in: an economic crisis further aggravated the situation and massive changes in traditional cotton culture was the only certain means for remedying the situation.

The erosion study provides an invaluable datum for the extent of destructive soil erosion in the Upper Pearl River Basin. It invites comparison with ground-truth observations of soil erosion in the cotton South in the mid-1930's. An important source of this type is the work of Frederick Graves Morris (Morris 1937), a protégé of Carl O. Sauer. While Morris did not record direct observations of the Pearl River basin, he conducted important studies of the extent and dynamics of soil erosion in geoecologically similar regions of Tennessee and Alabama. Morris was dismayed by the pervasiveness of soil erosion across the Cotton South. What struck him most, and rings true for the
Upper Pearl River basin, was the contrast between accounts of clear-running Southern streams and river before 'cotton mania' ensued in the early nineteenth century. In 1937 when Morris conducted his study, rivers that coursed through cotton regions were thoroughly clouded by water-borne sediment transport (Morris 1937).

Five physical factors contributed to the crisis of erosional land degradation that was so readily apparent in the late 1930s in the Upper Pearl River Basin and elsewhere in the cotton South. The absence of sufficient vegetative cover was one such factor; few farmers planted adequate cover crops to protect against washing by the strong winter rains. Contributing to this factor was the intensity of rainfall. The episodic strong storms quickly overwhelmed embanked-soil terraces and washed away exposed soils more effectively than they could in a region with a climatic regime of steady and gentle rainfall. Aggravating the scope of erosion was the character of Southern cotton cropping itself; through the 1930s the dominant practice was to plant cotton in wide rows, and the rows were usually clean-cultivated to discourage weeds. In the Southern upland cotton regions, slope-side planting still enhanced the severity of erosion. Farmers in the upland South, including the upper Pearl River basin, planted cotton on
Figure 14. Soil Conservation by Terracing. The Dewesse's Farm in Meridian, Mississippi
surprisingly steep slopes, particularly in the Headwater Counties. Further compounding the problem was the character of the soils favored for cropping in the American South. While there were many variations between soil groups of this region, most shared the same basic character: a Sandy A horizon underlain by clay. When rain fell, the clay layer provided a substrate that permitted easy overland transport of the sandy A horizon downslope, where it clogged streambeds and damaged the Pearl River itself.

Combined, these factors conspired to create a terrible situation: strong episodic rainfall fell onto clean-tilled fields. The rainfall quickly accumulated between the wide rows drawing the sandy A horizon away, exposing the inferior B and sometimes C horizons. On sloping fields, even farmers' best efforts at terracing the field were rapidly overwhelmed by the rainfall (Morris 1937). The accumulated water created breaches in the terrace, causing down-cutting. The cuts developed into gullies over repeated episodes. Finally the gullies became so deep, and the soil was so spent, that the fields themselves became worthless for further cropping, in cotton or any other crop. This scenario repeated itself countless times across the Cotton South, resulting after a century, in the severely degraded landscape described by so many in the 1930's.
Of all the images of land degradation, few struck the American public quite like images of gullies. Deep gashes in the landscape left no doubt in the viewer's mind as to the severity and finality of the land degradation they observed. Severe gullies were permanent in many cases. Morris (1937) visited a gully in a cotton-growing region of interior Alabama that Charles Lyell had previously observed in the 1840s. Morris found that the same gully had enlarged to monstrous proportions in the intervening interval. Morris asserted damage of this type as proof of the mismatch between cotton culture and the physical environment of the American South, despite a century of efforts to stem land degradation.

While lacking the visual impact of gullies in photographs, sheet erosion was also a tremendous problem across the South and in the Upper Pearl River Basin. Sheet erosion was especially problematic in farming regions of low relief, such as the Prairie counties. Morris (1937) examined sheet erosion in the Alabama Black Belt, a major belt of black soils that closely resembles the smaller patches of Jackson Prairie in the Upper Pearl River Basin. Morris opined that sheet erosion was "deserving of greater attention, but that its importance was less immediately apparent because the degradation was less visually striking than gullies. The problem of sheet erosion was especially problematic in the Black Belt.
regions. Despite the low relief and gentle slopes, sheet erosion was severe. In many places he surveyed, the normal profile of black clay underlain by white marl was completely eradicated. Instead the surface was all marl in many places, and the land surface was covered by scrub, in thin soils incapable of supporting cotton (Morris 1937). The problem of sheet erosion on blackland soils extended to the upper Pearl River basin. The erosion survey shows that the Prairie counties were primarily affected by sheet erosion (Jones 1937; National Resources Committee 1938). Gullying was a problem also, but not to the same extent encountered in the hillier sub-regions of the Upper Pearl River Basin.

The cumulative erosion damage that was so readily observable across the South in the 1930s prompted many observers to lament the long-term "harvest" of land degradation. Morris' dismay was especially poignant for the way he connected degradation of the earth with its human cost:

It is impossible to do justice to the appalling results of soil erosion in the south-eastern states. An exploitive and wasteful system of agriculture has ruined the soil and this, in its turn, is reflected in the terrible conditions under which the majority of the farmers, both white and negro, are living. The south has been described as 'a miserable panorama of unpainted shacks, rain-gullied fields, straggling fences, rattle-trap Fords, dirt, poverty, disease, drudgery, and monotony that stretches for 1000 miles across the Cotton Belt,' and no better description could be found. Cotton, it seems, is doomed and radical changes must be made in the
Standing in support of this grim description were photographs of the region taken by the United States Department of Agriculture. While few of the photos were made of farms and farmers of the Upper Pearl River Basin, most were taken in nearby counties of the state, on farms with representative characteristics of interior Mississippi agriculture. While the farm was in Marshall County, in northern Mississippi, the scene represents a vision that was commonplace by the end of the 1930’s in upland regions of the state. The landscape was no longer tillable, the cotton fields having been carried downstream away by sheet erosion and gullying.

Despite the widespread land degradation, agricultural reformers were not ready to give up all hope of conserving upland croplands. Even Morris, the pessimistic observer of destructive agricultural practices in the South, offered a few suggestions to restore some viability to agriculture. He advocated a more balanced form of agriculture, in which pasturage would play a greater role (Morris 1937). Pasturage was a form of land use better suited to sloping lands than cotton farming, for it left the exposed hillsides less vulnerable to soil washing. For hillside cropping, Morris echoed the nineteenth-century words of Dunbar and Hilgard in his call for improved soil
conservation measure. Morris encouraged "proper terracing combined with contour ploughing" (Morris 1937:369). Along with these measures, Morris also advocated the construction of check dams at the end of terraces, a measure intended to curtail the too rapid flow of water that is instrumental in gully formation.

Morris was not a lonely voice calling out for agricultural reform in the cotton-producing South. The government, particularly through the United States Department of Agriculture and the WPA, embarked upon an unprecedented campaign to advance sound farming techniques across the affected region. The USDA worked with selected farmers, many of them in upland cotton cropping regions of Mississippi, to develop farming techniques that minimized the potential for erosive land degradation. One photograph demonstrates the results of USDA efforts in the vicinity of Meridian, Mississippi, a Lauderdale County city just east of Newton County in the Pearl River Basin (USDA 1927). The photograph depicts neatly and precisely constructed terraces, on a demonstration plot designed to promote soil conservation practices. Notable for its absence in the photograph is any sign of cotton: the USDA to minimized its support for continued cotton farming on lands such as this. Another elegant United States Department of Agriculture demonstration plot (USDA 1927). This field, on gently sloping terrain, was neatly plowed along the landscape
contours. The Department of Agriculture promoted contour plowing as another means of minimizing downslope washing and sheet erosion in fields that were to remain in crops. While the goal of these demonstration plots was well-intentioned, there is little evidence that the measures were entirely successful; the plots were too widely dispersed, and there was little oversight in their implementation on individual farms (Lehman 1995). However, the soil conservation demonstration programs were a powerful symbol of the U.S. Government's awareness of the land degradation problem in the Cotton Belt.

Other important measures were implemented in the Upper Pearl River basin and elsewhere in Mississippi to modify the cultural landscape. Across the South the Works Progress Administration constructed important earthworks that became important elements of the cultural landscape. One such problem the WPA addressed was the continued persistence of malarial conditions in poorly drained bottomlands of the Cotton Belt (National Resources Committee 1938). A photograph shows the form of earthworks created by the impressive forces of labor marshaled under the WPA's mandate. During this period, the malaria problem had largely abated the Upper Pearl River Basin and in similar regions of the South, in part through construction of permanent drainage ditches like the one depicted in the photograph (Meade 1980; National Resources Committee 1938).
Conclusion

By 1940, the conclusion of the study period, cotton culture in the Upper Pearl River Basin had reached a critical phase of development. The effects of a century of cotton cultivation were apparent across the region, and these results were publicized through the unprecedented presence of governmental intervention in agriculture. By this measure, the 1930s represented the height of the professionalized authority in agro-environmental affairs within the Upper Basin. While the crisis of land degradation had clearly reached a critical mass of popular awareness in Washington and on the ground in the Upper Basin, the problem of destructive occupancy itself was abating. This was due to the fact that cotton was in the process of diminishing as the dominant staple crop of interior Mississippi.
CHAPTER 9
SUMMARY AND CONCLUSIONS

It would be facile to conclude an environmental history of cotton culture in the upper Pearl River basin. The following passage is a fabrication, written in a manner intended to mimic the sentiments expressed by reformers and scholars who viewed Southern cotton culture in benighted terms:

The events described in the upper Pearl River basin constitute a monumental failure in the history of Southerners’ relations with the land. The legacy of erosion, economic usury, farm abandonment, and volatility qualify cotton culture as a one of the most abject failures in American Environmental history.

However, such assertions are incorrect, for there was much more to the story, of bittersweet triumph and adaptation that is subsumed in many surveys of Southern agriculture. To evoke the highs and lows of land, life, agriculture and settlement in the South, it helps to examine them in a specific locale. A small regional focus aids in recognizing largely unheralded efforts to make cotton culture work in a difficult physical setting, under constantly challenging and changing socio-cultural conditions.

Of the end of cotton culture, Pete Daniel wrote,

While the tobacco and rice cultures experienced little structural change in the 1930’s — for
quite different reasons — the old cotton culture caved in, crushed by the untimely confluence of government intrusion and mechanization (Daniel, 1985 #81:156).

Whether one agrees with the latter half of Daniel’s statement depends on one’s personal view of New Deal agricultural reforms. Questions of whether New Deal reforms empowered farmers or diminished their self-determination remains a hotbed of historical discourse. But in the upper Pearl River Basin, cotton culture was about to cave in. Output of cotton in the region was down, World War II provided an opportunity for many of its poorer farmers — black white and red — to leave farming for opportunities in manufacturing and military service. An economic foundation of traditional cotton culture — a large dependent labor force of sharecroppers, renters and debtors — was no longer dependent to the same extent. Cotton was still grown in Mississippi’s upper Pearl River basin after 1940, but the crop became increasingly concentrated on large farms with increasing amounts of mechanization. The incentive to tend small plots of cotton on side-hill fields diminished considerably. Many of those old fields are now reforested in pines, and others serve as pasturage.

Like the Treaty of Dancing Rabbit Creek, the Civil War, the entrance of the boll weevil, and the 1930 economic crisis, the year 1940 was a defining
moment in the upper Pearl River Basin. 1940 signaled the conclusion of traditional cotton culture as it had existed in the upper basin since pioneer settlers established new farms on newly available lands. Beginning in the 1830’s farmers grew the crop and organized a cultural landscape around its production and transshipment. While they were successful in raising and marketing cotton, they ran into trouble along the way. The propensity of the soils, particularly the upland sandy soils, to erosive land degradation became apparent. The farmers did not abandon the land, for growing cotton was a profitable enterprise, even for small farmers on small farms. To counter topsoil loss, gullying, and excessive siltation of the Pearl River, some farmers implemented soil conservation measures such as terracing and ‘horizontalling’. While the extent of these measures was not great, and they were not entirely successful in checking downslope soil movement, these measures deserve recognition. Likewise the pioneer farmers’ use of field peas as cover crops was another example of attempts to conserve soils despite the considerable land degradation that occurred despite their best efforts.

After the Civil War, cotton culture rebounded, but with a more aggressive capitalist character than
it had in the antebellum era. New labor arrangements emerged, where freedmen and the yeomenry entered into dependent labor relations with landowners and merchants respectively. The dependent relations were based on the maximum production of cotton, and shortfalls in the cotton crop placed added pressure on farmers to compensate the next season. Yet in the face of this pressure, evidence shows that farmers in the upper Pearl River basin still grew crops, notably corn, which had greater value for self-sufficiency than for commercial remuneration.

Then the boll weevil scourge arrived just after the turn-of-the century. When the wave of pestilence crossed the Mississippi River from the west and wreaked havoc in Mississippi, the results were predictable. Cotton yields and output suffered considerably. Soil erosion continued to be an endemic problem, and many smallholders lost their land, but the upper basin’s farmers adapted in commendable ways. They switched to quicker-maturing varieties of cotton, and they turned to cattle raising as a means of narrowing gaps created by the crisis in cotton. They also started developing the basin’s fertile bottomlands on an unprecedented scale, out of recognition that a sustainable future rested on
minimizing bottomland swampiness to reap the benefits of low relief and high fertility.

A series of natural and economic challenges that visited the lower South in the late 1920's spurred further changes in the land and the way it was administered. The US government exerted unprecedented influence in the basin by paying farmers not to grow cotton, and making important public-scale improvements to the cultural landscape. This represented an important escalation in the interjection of professionalized authority in Southern agricultural affairs. The publication of a state-sponsored erosion survey provided ample evidence that serious land degradation resulted from the transformations wrought by cotton culture. However, cotton culture must not be regarded as a universal failure. It was instead a story with positive and negative elements, and was an important facet of American environmental history.
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VITA

Frederick W. Sunderman III was born on August 4, 1966 in Gainesville, Florida. Fred began his geographical studies at Farmington High School in Farmington, Connecticut. He graduated in 1988. At Middlebury College in Middlebury, Vermont, he majored in American Literature, with a minor in human geography. Fred’s graduate education in human geography began at the University of Vermont under the tutelage of Dr. Daniel W. Gade. Fred completed a thesis there, entitled “High-Altitude Agriculture Prior to 1890 in Lincoln, Vermont and the Central Green Mountains.” He received a master of arts in geography from the University of Vermont in 1991. Fred furthered his geographical education at Louisiana State University, in Baton Rouge. Dr. Kent Mathewson was his mentor and dissertation advisor. Fred will receive his Doctorate of Philosophy in May, 2001.
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Date of Examination:

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