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Coffee in Nicaragua : Regional Development and Change in the Nineteenth Century

Craig Stephen Revels
Portland State University

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COMMITTEE APPROVALS:

[redacted]

Martha A. Works, Chair

[redacted]

Barbara A. Brower

[redacted]

Thomas W. Harvey

[redacted]

Shawn C. Smallman
Representative of the Office of
Graduate Studies

DEPARTMENT APPROVAL:

[redacted]

Daniel M. Johnson, Chair
Department of Geography

ABSTRACT

An abstract of the thesis of Craig Stephen Revels for the Master of Arts degree in Geography presented April 29, 1998.

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Throughout the nineteenth century expanding coffee cultivation transformed the economic, political, and social landscapes of the Central American republics. In Nicaragua, coffee cultivation developed in two primary regions, the Southern Uplands and the North-Central Highlands. This study analyzes the formation and development of these two regions using six key factors: 1) pre-coffee economic development; 2) transportation; 3) government promotion; 4) labor and population structure; 5) land tenure and access; and 6) capital and credit. Qualitative assessment of the relative importance of these six factors determines which factors were most important in the creation of the Southern Uplands and the North-Central Highlands as coffee regions. Analysis suggests that active government promotion of coffee culture and the absence or presence of transportation linkages are the two factors which most affected the establishment of coffee cultivation in nineteenth-century Nicaragua.

COFFEE IN NICARAGUA: REGIONAL DEVELOPMENT AND CHANGE IN THE NINETEENTH CENTURY

by

CRAIG STEPHEN REVELS

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CHAPTER I

INTRODUCTION

For much of the nineteenth century, Central America was a region in transition. Newly emergent states, freed from the constraints imposed by imperial Spain, were confronted with the need to develop new political, social, and economic foundations. While political and social solutions varied widely throughout the isthmus, the new economies almost invariably came to focus on one item: coffee. Spurred by burgeoning demand in the United States and Europe, coffee became a highly lucrative opportunity for economic development. By the end of the century, all five countries of Central America save Honduras were exporting coffee to the world market, and the nineteenth century has been aptly labeled Central America's coffee century.

Today coffee remains one of the leading export commodities in Central America, and is a dominant element of the region's economic, social, and political landscapes. Class and societal structures, political hegemony, land tenure and land distribution patterns, transportation networks, and recurrent labor issues are all associated with the cultivation, processing, and export of coffee. Yet these modern patterns, networks, and issues have not suddenly appeared on the horizon; rather, they have identifiable foundations, and are in the process of being continually created and re-created. In this way, the past not only conditions but also shapes the present. In order to fully understand

coffee in modern Central America, it is first important to understand its past. It thus becomes important to study the various ways in which coffee cultivation initially developed throughout the region. How was coffee cultivation introduced? What were some of the factors governing its spread and the effectiveness of its production for export? How do the different areas of cultivation vary in terms of importance? Was coffee cultivation a variable process? For the two best known coffee exporting countries of Costa Rica and Guatemala, such types of questions have been explored in an ongoing academic dialogue concerning the ramifications of the early coffee economy. For the rest of the isthmus, the foundations of coffee cultivation have thus far failed to generate significant research attention.

Like its sister countries in Central America, Nicaragua also turned to the promises of coffee cultivation in the nineteenth century. The initial years of independence, culminating with the National War in the 1850s during which the American William Walker invaded the country and assumed power, were dominated by political, military, and economic struggles over the constitution of the Nicaraguan state. Economic development was difficult at best, and coffee cultivation could only be introduced by those elites with enough local control to ensure some measure of stability. After Walker was deposed and an extended period of political and social stability began in the 1860s, the Nicaraguan government (composed of those same elites) embraced coffee as the means to develop Nicaragua's economy and also further their

own political hegemony. In the second half of the century coffee cultivation increased rapidly and the country's major coffee growing zones were created, dramatically transforming Nicaragua.

PROBLEM STATEMENT

Without a fully informed understanding of the ways in which coffee has historically impacted the Nicaraguan landscape, meaningful research into the social, economic, and political ramifications of coffee cultivation is incomplete; despite its prominent role in changing the Nicaraguan landscape, coffee cultivation in Nicaragua remains underresearched. The most important questions concerning the expansion and development of coffee cultivation in Nicaragua have been neglected in previous research: where was it introduced, and why? What accounts for the rapid spread of cultivation in the nineteenth century? How did the major growing zones develop? What are the implications of this information for contemporary understanding of Nicaragua?

To address these questions, this study undertakes an historical analysis of Nicaragua's two primary coffee regions, the Southern Uplands and the North-Central Highlands, using the contexts of agricultural development and regional definition. Six key factors are used to analyze the establishment and expansion of the two main coffee cultivation regions: 1) pre-coffee economies; 2) transportation; 3) government promotion; 4) labor and population structure; 5) land tenure and access; and 6) capital and credit.

These six factors are composite, drawn from the literature and qualitatively determined to incorporate all of the major political, economic, and social components of the agricultural development process in nineteenth-century Nicaragua. I analyze the historical development of the two coffee regions through the early twentieth century and establish the relative importance of the six factors. By providing a comprehensive overview of this process and determining the key elements affecting the development process, this paper will serve as a baseline for future research concerning the early coffee economy in Nicaragua, an example of how multiple factors can be used to examine regional development, and a contribution to the historical geographic literature of the country.

HISTORICAL GEOGRAPHIC LITERATURE ON NICARAGUA

Despite the well-established and wide-ranging tradition of historical geographic research in Middle America (Robinson 1989, Earle et al. 1989), geographers have contributed little to the historical record of Nicaragua. The most enduring and comprehensive work is Radell's (1969) survey of the historical geography of western Nicaragua. Organized around the concepts of urban hinterlands and regional influences, Radell's work provides a fairly complete record for most of Nicaragua's primary historical influences. Radell constructs a solid background for exploring specific economic activities, but nevertheless does not establish a complete record of development factors for individual export commodities. This work also incorporates his previous

study (1964) on coffee and transportation, which included a description of nineteenth-century Nicaraguan transportation networks. Radell's thesis that transportation was the most important variable in expansion and development of coffee cultivation in Nicaragua is worthy of further consideration, yet his research did not include consideration of other factors which may have influenced the establishment of coffee regions. The present study examines the impact of a range of factors in order to establish a more comprehensive understanding of the regional development process in Nicaragua.

Other historical geographical research in Nicaragua has, as a rule, not dealt with post-colonial landscapes, economic or otherwise. Newson's (1987) work on the process of indigenous cultural survival in the period following initial Spanish contact and Stanislawski's (1983) study focus on Spanish transformation of indigenous landscapes and illustrate some of the spatial ramifications of change in western Nicaragua. Both of these works provide foundations for understanding the centralization of population, economy, and society in Nicaragua's western core, a centralization that would later have major ramifications on post-colonial development. Dozier's (1985) comprehensive work spans most of Nicaragua's colonial and post-colonial history, yet its focus on eastern Nicaragua only peripherally addresses economic issues in the core western area. In this same vein are two studies by

Parsons (1954, 1955a) which focus on the Caribbean side of Nicaragua and its export economies.

Radell and Parsons (1971) provide insight into colonial-era shipment and trade issues but provide little background on specific commodities. Parsons (1955b) illustrates the foundations of the modern gold mining economy, citing transportation and physical geography as historically determinant factors. The processes through which economic activities become established in distinct regions, however, have been largely ignored by Parsons and others who have addressed Nicaragua's historical economy.

Clearly, the contributions of historical geography to the understanding of Nicaragua's past are incomplete. The development of the agricultural export economy, in particular, has received virtually no consideration. For a more complete understanding of how geographers have treated agricultural development, it is necessary to examine the broader scope of geographical research throughout Latin America.

GEOGRAPHICAL LITERATURE ON COFFEE AND AGRICULTURE IN LATIN AMERICA

As one of the most basic of human economic activities, agriculture has long been an area of systematic inquiry for geographers. With the continuing importance of historical and contemporary agriculture in Latin America, geographers have over the last several decades addressed a broad range of agricultural themes and research perspectives (Griffin and Hoy 1981; Hegen et

al. 1971; Parsons 1964; Robinson 1989; Thompson, 1992). This section initially focuses on the geographic literature about coffee.

Geographic research on coffee cultivation in Latin America has been limited, and has generally not addressed the processes through which coffee became a feature of the agrarian landscape. The most comprehensive examination of coffee is Hall's (1976) study of coffee's role in the historical development of Costa Rica. Her work provides a thorough rendering of the historical processes involved in the initiation and expansion of Costa Rica's coffee economy. Biechler (1972) has examined regionalization in the coffee economy of Guatemala. This study differentiates the modern coffee areas of Guatemala using production data and the physical modes of production, but does not analyze the processes through which coffee regions were established or the historical roots of coffee in Guatemala. Price's (1994) study examines the demography of coffee labor at the peak of Venezuela's coffee boom, focusing on the role of government incentives for foreign immigration. Her work illustrates some of the geographic implications of government immigration policy, but is focused on understanding human migration rather than the establishment of coffee in the Venezuelan Andes. Parsons (1949) discusses the coffee landscape of Colombia's Antioquia province, including the role of transportation; his primary emphasis, however, is on the contemporary economic landscape of coffee rather than its historic roots.

Other than Radell's (1964, 1969) work, research into the geographical aspects of Nicaragua's coffee economy has been extremely limited. The various structural, social, and environmental problems facing modern coffee farmers in the Sierras de Managua were analyzed by Patten (1984). Rice's (1990) dissertation examined coffee leaf rust in Nicaragua's Southern Uplands with a focus on contemporary attempts to mitigate the disease and improve production. Neither of these two studies focused on the factors which impacted the introduction and expansion of coffee in this area, a perspective which would seem to be important to understanding contemporary management of coffee cultivation and export.

Research conducted by Latin Americanist geographers has also focused on other agricultural commodities. As an example, Jones and Morrison (1952) as well as Parsons (1957) address banana production in the first half of the twentieth century. Both studies provide comprehensive descriptions of the physical modes of production and associated landscapes. Each study also includes historical background on the initiation of banana cultivation, but neither moves very far beyond an exploration of the contemporary modes of production to an analysis of historical factors concerning cultivation regions or how those regions have developed through time.

Geographers have, however, examined a wide range of factors contributing to the expansion and development of agriculture. These factors have generally been subsumed in research addressing other topical themes

such as frontier settlement or the environmental limitations and interactions of agriculture. For example, frontier settlement studies, though not specifically focused on agriculture, often cite transportation and governmental promotion as key determinants of settlement expansion (Bromley 1981, Hiroaka and Yamamoto 1980, Rudel 1983); settlement expansion in Latin America usually equates to agricultural development as well. Augelli's (1984) discussion of the implications of Costa Rica's closing frontier speaks to the question of land availability and agricultural change. Additionally, research into the expansion of agricultural activities in marginal areas has incorporated considerations of governmental influence and land availability (Doolittle 1983, Harnapp 1985). Agricultural development has also been explained in the context of government policy activity by both Brierly (1985) and Lawson (1988), but these studies also point to the larger dialogue concerning regional development and the factors impacting structural change (Bromley 1992) rather than to the development of specific commodities such as coffee. These examples provide support for the idea that it is relatively easy to speculate on the factors which may influence agricultural development. Yet geographers have not explicitly incorporated a range of factors into studies for the purpose of examining the conditions through which individual commodities have developed; more commonly, they have adopted this broader perspective only in the exploration of regions and regional construction.

CONCEPTIONS OF REGION

Although regions have traditionally been one of the foundations of geographic inquiry, some recent geographical literature has called into question both the nature and definition of regions (Entrikin 1996; Pudup 1988). Traditional regional geography, sometimes defined as comprehensive description of a given part of the Earth's surface (Lewis 1985), is no longer considered satisfactory by these new regionalists. The description and observation inherent in traditional regional geography is seen as creating nothing more than static, non-changing pictures of human action rather than historically informed, dynamic processes (Pred 1984). The new, or reconstructed, regional geography has as its core agenda the merging of social theory with the study of regions, a process which casts regional formation as an ongoing historical and geographic process (Pudup 1988). This is evident in an overriding concern with the structures of social interaction and social behavior, and the ways in which they create or impact the process of regional formation and reproduction (Gregory 1994). From this perspective, regions are seen as socially constructed and subject to an almost infinite array of abstraction and interpretation, continually being redefined and re-established (Cox and Mair 1989; Gregson 1987; Murphy 1991).

Yet Murphy (1991) and Entrikin (1996), among others, express concern over the disjuncture between socially informed constructions of place and region and the study of regions. Both authors hold firmly to the belief that

region and place are social constructions which inform and are informed by larger social and historical constructs. Entrikin (1996), however, warns against allowing social processes to dominate research considerations to the point of excluding the greater geographic whole, i.e. those elements which are not purely social. Murphy (1991) acknowledges that even social theorists must recognize that "...some sort of concrete regional construct is inevitable..." (p. 25); though they must be questioned at every step, empirically-constructed regional frameworks are a necessary component of regional exploration.

The current study falls at a unique juncture in the debate over regions and regional geography. Though coffee regions can be considered as discrete functional regions, their definition can be viewed through the lens of socially-contingent processes such as labor relations and individual conceptions of place and space; theory may be important for a more integrative understanding of the ways in which coffee has defined and transformed the Nicaraguan social landscape. However, the foundations for theoretical analysis of Nicaragua's coffee regions have not yet been established. This study creates those foundations by establishing the framework through which two separate regions developed a specific commodity, coffee. As such, it falls within the realm of traditional regional geography: an empirically-based description of the characteristic landscapes of the two regions (Pudup 1988). As noted above, such an empirical foundation

is a prerequisite for the in-depth analysis of social structures and relations which is essential to the reconstructed regional geography (Entrikin 1996, Murphy 1991). This project, in constructing an historical geography of Nicaragua's two primary coffee regions, thus becomes a baseline from which to gain a deeper understanding of nineteenth-century Nicaragua.

STRUCTURE OF THE PAPER

This study begins by establishing the context for exploration of Nicaragua's coffee economy in the nineteenth century. Chapter II reviews the salient characteristics of coffee: its physiographic requirements, key cultivation aspects, labor requirements, and processing methods. This section of the thesis includes a review of coffee's introduction into the New World, with a particular emphasis on Central America. Chapter III of this paper establishes the geographical setting for the study, specifically addressing the regional geography of the Southern Uplands and the North Central Highlands, the two primary coffee regions of Nicaragua. Chapter IV analyzes the development of the Southern Uplands as a coffee region, using the six factors mentioned above. This chapter argues that the Uplands was well-positioned to be the first coffee region in Nicaragua and coffee cultivation developed through the convergence of highly favorable conditions. Chapter V shifts the analysis to the North Central Highlands. The Highlands region was established despite a wider range of negative factors than the Uplands, and more focused effort was necessary to develop the Highlands as a coffee

region. Chapter VI juxtaposes the two regions, comparing and contrasting the relative importance of the factors governing the establishment of coffee cultivation. This chapter concludes with suggestions for future research based on the conclusions of this study.

METHODOLOGY

While delimitation of time periods can sometimes be arbitrary in historical research, the mid-1800s was chosen as a starting point for two reasons: one, the 1840s and 1850s were the decades during which coffee began to be developed as a commercial crop in Nicaragua, and two, this was the time when Nicaragua began moving from the chaos of post-colonial independence to the development of stable political and social institutions. This study addresses the period from the mid-nineteenth century until 1909. This year is significant for three primary reasons: one, that it was the year of the first coffee census in Nicaragua, hence it provides the first comprehensive and generally complete overview of the country's coffee economy; second, by 1909 coffee was established as the leading export commodity in Nicaragua and primary areas of production had been well-established; third, by the time of the first coffee census Nicaragua had been through two successive government eras, each characterized by progressive, modernizing attitudes toward the promotion of trade and commerce. The endpoint of 1909 therefore provides a convenient marker for reflecting on the establishment of Nicaragua's coffee regions.

This paper relies on historical methodology for its analysis, especially archival materials written in both Spanish and English. Primary sources include economic pamphlets and updates of both the world coffee industry and Nicaragua in general; accounts of nineteenth-century Nicaragua by outside observers are also used. I evaluated secondary sources to draw on their use of primary sources unavailable to me in Portland or the Nicaraguan archives. These sources range from academic theses and dissertations to research publications and books on previously researched aspects of nineteenth-century economic development, society, and politics. Background for discussion of the coffee tree and its cultivation was obtained from recently published books addressing economic botany and crop distribution. The coffee economy of the Americas is a complex, under-researched subject, and I hope that additional sources for further research are uncovered in the future.

CHAPTER II

COFFEE AND ITS EARLY CULTIVATION IN CENTRAL AMERICA

By the late eighteenth century coffee was a well-established commodity in the world market. However, due largely to its peripheral status in the Spanish colonial empire and recurrent transportation issues, Central America was one of the last major regions of the Americas to introduce commercial coffee cultivation. Nevertheless, optimal physical conditions for coffee cultivation and a convergence of historical processes quickly established Central America as a source for some of the most sought-after coffee in the world. This in turn led to rapid expansion of coffee cultivation throughout the isthmus, creating the coffee boom of the 1800s.

COFFEE- A BRIEF BACKGROUND

There are two basic commercial species of coffee, *Coffea arabica* and *Coffea robusta*. *Coffea robusta*, indigenous to West Africa, was not commercially cultivated until the twentieth century (Purseglove 1968, Sauer 1993) and has not been established in Central America, thus all references to coffee in this paper refer to *Coffea arabica*. *Coffea arabica* is an evergreen tree native to the highlands of southern Ethiopia and northern Sudan. This area lies at an elevation of 1400 m to 2000 m above sea level, has an extended

rainy season, has a short dry season of only two to three months, and has generally mild temperatures which range between 15 and 27 degrees F throughout the year (Sauer 1993). Ideal commercial growing conditions for *Coffea arabica* are in areas which closely mimic this natural environment. Various cultivars have expanded significant commercial cultivation into other climatic regimes (Lock 1888, Ochse et al. 1961, Purseglove 1968), however, and coffee is now grown at a varied range of altitudes and temperatures. Optimal precipitation is approximately 2000 to 3000 mm annually; moist climates throughout the year can lessen the amount of precipitation necessary for cultivation. Coffee trees have a deep root system; this maintains the viability of the tree during the short dry season which is essential for maturation of the coffee berries (Sauer 1993). As a result, coffee requires deep, well-drained soil rich in organic matter (Bureau 1902, Lock 1888, Purseglove 1968); volcanic loams are almost ideal for coffee cultivation (Ochse et al. 1961).

The traditional procedure for planting coffee is to first establish seedbeds, then transfer the plants to the field six to ten months after germination. Coffee seedlings are maintained in a partially shaded environment for at least two to three years after germination (Purseglove 1968). Though naturally reaching fifteen feet or more in height, *Coffea arabica* is usually pruned to a height of six to eight feet, primarily for ease of harvest (Bureau 1909). Mature coffee can be harvested, depending on the

cultivar and local conditions of cultivation, approximately five to seven years after initial germination. There has historically been some debate over the issue of shade and cultivation (Bureau 1902, Purseglove 1968), but mature upland coffee trees are now considered both healthier and longer-lived when grown underneath taller deciduous trees or intercropped with other plant species (Sauer 1993). Trees are usually productive for a period of thirty to fifty years, although climatic conditions and cultivation practices can extend or shorten that time frame (Purseglove 1968).

Successful commercial coffee cultivation is also conditioned by other variables. Landholding size is generally not one of them. Given the right physiographic conditions, coffee can be productively grown on landholdings which range from small dooryard gardens to moderate commercial farms to vast plantations. The availability of labor, however, is a factor. The actual maintenance of coffee groves throughout the year is relatively low except for pruning, but labor is a significant issue during harvest. Small-scale coffee growers may grow only as much coffee as can be successfully harvested by their immediate family, while somewhat larger commercial farms may require only moderate amounts of seasonal labor. Large plantations, of course, require a larger labor pool for the two- to three- month harvest.

After coffee is harvested, it must be processed. Ripe coffee fruits are covered with a thin skin, a pulpy flesh, and a parchment layer; in processing, these layers are removed, leaving the familiar coffee bean (Ochse et al. 1961).

Historically there have been two methods of processing coffee, the wet and the dry. The dry method involves spreading the harvested berries on a flat surface to a depth of 12 to 20 cm. The coffee is then dried in the sun; it is occasionally raked in order to ensure maximum drying. After the coffee is sufficiently dry (approximately three weeks) the beans are milled to remove the husks and hand sorted (Bureau 1909, Ochse et al. 1961). Coffee processed using the dry method is generally inferior to that processed by the wet method (Charlip 1995, Radell 1969). The wet method is a more expensive process, involving more machinery and resources (i.e. an abundant supply of water) than the dry method (Bureau 1909). The first step in this method is machine pulping, which must be performed within the first twelve hours after harvest (Radell 1969). The coffee is then washed and fermented in large vats of water; this step removes the flesh attached to the parchment surrounding the bean. After fermentation there is a drying stage, which can either be mechanical, using kilns, or natural, as with the dry method. The beans can then be picked over and sorted in preparation for shipment (Ochse et al. 1961). The end result is the highly prized commercial commodity familiar around the world.

THE ARRIVAL OF COFFEE IN THE NEW WORLD

By the middle of the eighteenth century, various European states had begun to export coffee from colonial plantations scattered throughout the world. In the Americas, the first areas planted in coffee were the

French-controlled islands of the West Indies. Possibly by as early as 1715 coffee had been planted on Martinique, with St. Domingue and Guadeloupe planted soon thereafter. The Dutch introduced coffee into Guyana in 1718, and the British brought it to Jamaica by 1730 (Bureau 1902, Williams 1994).

These areas were the first in the Americas to cultivate coffee for two primary reasons. The first was technological. Transportation and trade in the eighteenth century were still dependent on favorable winds for sailing. The Caribbean (and by the 1730s Portuguese-controlled Brazil) had the most reliable trade routes in the Americas during the age of sail (Williams 1994). Physical geography was also a factor. With rich volcanic soils, favorable climates, and abundantly available land, the Caribbean was ideally suited for early production of high-quality coffee for the emergent European market. Spanish-controlled territory which was planted in coffee included the islands of Cuba (1748) and Puerto Rico (1755), with export production in Venezuela established by the late 1770s (Williams 1994). Further expansion introduced coffee into Mexico by the mid-1700s (Bureau 1902, Sauer 1993) and subsequently into Central America.

In Central America, coffee was first introduced in Guatemala. As the administrative and trading center of Spanish-controlled Central American, Guatemala was the most logical point of entry for coffee cultivation on the isthmus. By the mid-eighteenth century, coffee seedlings had been planted at various locations throughout the country. These seedlings, brought from the

Caribbean, were initially more of a botanical curiosity than a commercial prospect. However, commercial cultivation commenced by the early 1800s, and nascent production was consumed by Guatemala's internal market (Williams 1994).

Costa Rica's first coffee trees also came from the Caribbean, but were not planted until the final years of the eighteenth century. Nevertheless, Costa Rica was the first Central American country to export coffee in significant amounts outside of the isthmus, exporting initially to South America and then Europe in the early years following independence in 1823 (James 1969, Williams 1994). By the mid-1800s coffee had been introduced throughout Central America, although commercial production was often poorly developed, particularly in Honduras and El Salvador (Williams 1994). Costa Rica and Guatemala continued to function as the core producers in the region; Costa Rica quickly gained a reputation for growing some of the finest coffee in the world (Lock 1888), a reputation that has persisted well into the modern era.

Though it was the last major region in the Americas in which coffee was introduced, Central America is generally well suited for coffee cultivation. Rich volcanic soils characterize much of the region, while the gently sloping highlands and overall favorable climate are ideal for cultivating high-quality arabica coffee (Williams 1994). In addition to having these prime physical characteristics, the countries of Central America began

cultivating coffee at a propitious time in relation to the world economy. Demand for coffee was rapidly increasing in both the United States and Europe throughout the nineteenth century, stimulating the development of new sources of supply. Technological advances in oceangoing transportation, namely the advent of steam power, meant that trade was no longer dependent on the vagaries of wind. Steam power ensured reliable, cost-effective trade linkages for Central America (Williams 1994). The newly emergent republics of the isthmus were also seeking to establish national economies and consolidate political hegemony. New export products were actively being explored, and the economy was generally in a state of transition. Markets for such traditional mainstays of the colonial economy as cochineal and indigo were collapsing as synthetic dyes were discovered in the wake of the Industrial Revolution, while ongoing social and political unrest reinforced the importance of even basic economic activities such as subsistence agriculture (Perez-Brignoli 1989, Woodward 1985). Central America was also well-positioned to take advantage of the migratory traffic generated by the discovery of gold in California; various trans-isthmusian routes through Central America were the quickest, cheapest, and most reliable pathways for transit between the eastern and western coasts of North America (Williams 1994).

This context for Central America's coffee boom provides a foundation for analysis of specific conditions and factors of growth on a more localized

scale. Nicaragua's two distinct zones of cultivation provide a meso-scale forum for further examination of these conditions and factors.

CHAPTER III

REGIONAL SETTINGS

Nicaragua is the largest of the Central American republics, extending over a land area of 120,254 sq km. The country is divided into fifteen departments and two autonomous regions (Figure 1). Bordered on the north by Honduras and the south by Costa Rica, Nicaragua is characterized by a diverse range of physical environments. The country can be divided into three main physiographic regions: the Pacific Coastal zone (including the Southern Uplands), the Central Highlands (including the North-Central Highlands), and the Caribbean Lowlands (Figure 2). This chapter reviews the regional geography of both the Southern Uplands and the North-Central Highlands, the two regions analyzed in this study.

THE SOUTHERN UPLANDS

The Southern Uplands (Figure 3) are divided administratively among the modern Departments of Managua, Masaya, Granada, and Carazo. Located in the southwestern quadrant of Nicaragua, the Uplands are bounded on the south by the Rivas Anticline, the north by the Managua Lowlands, the west by the Pacific Ocean, and the east by the Lacustrine Depression which contains Lake Nicaragua and Lake Managua. This area is approximately

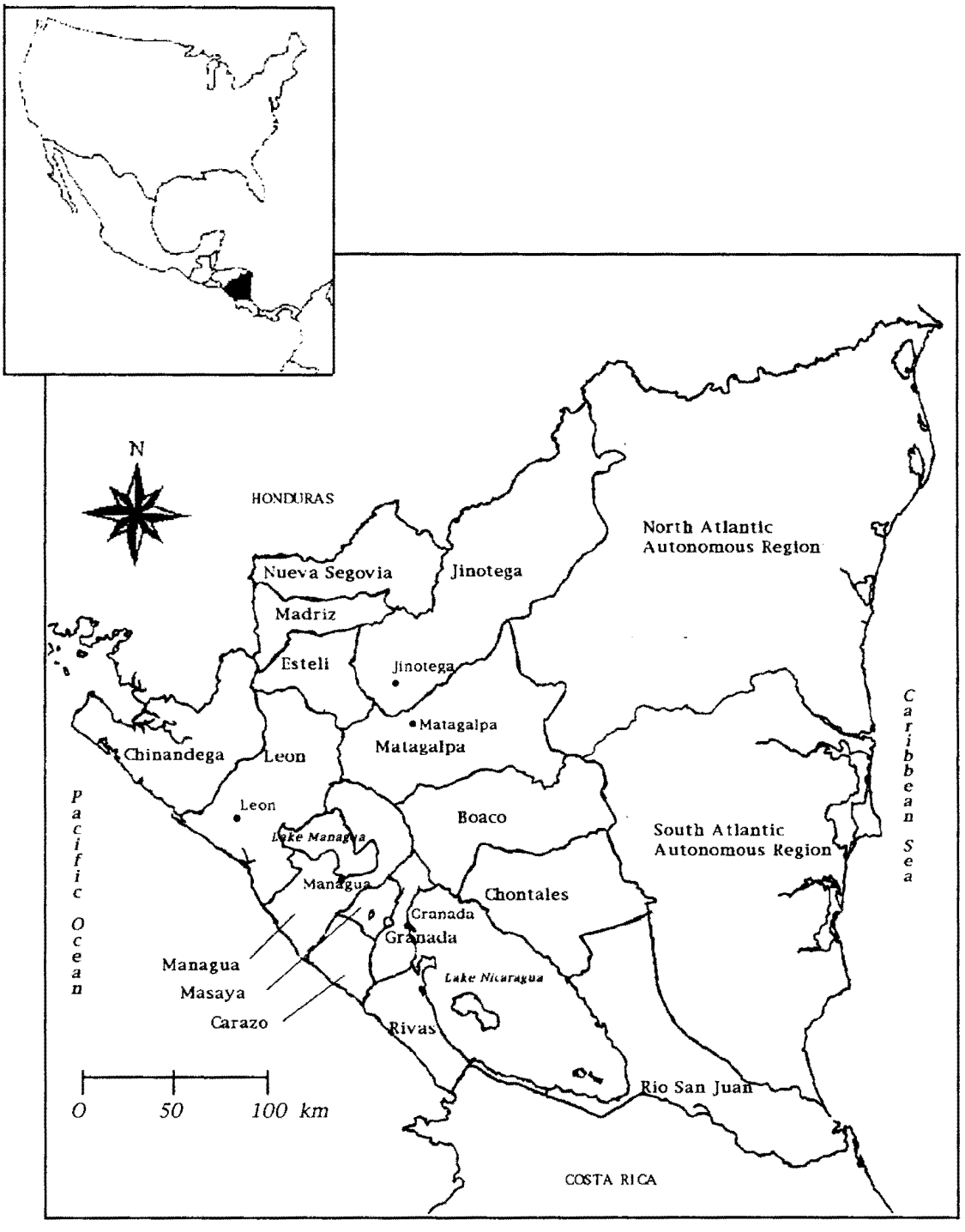

Figure 1. Nicaragua: Administrative Divisions and Principal Cities

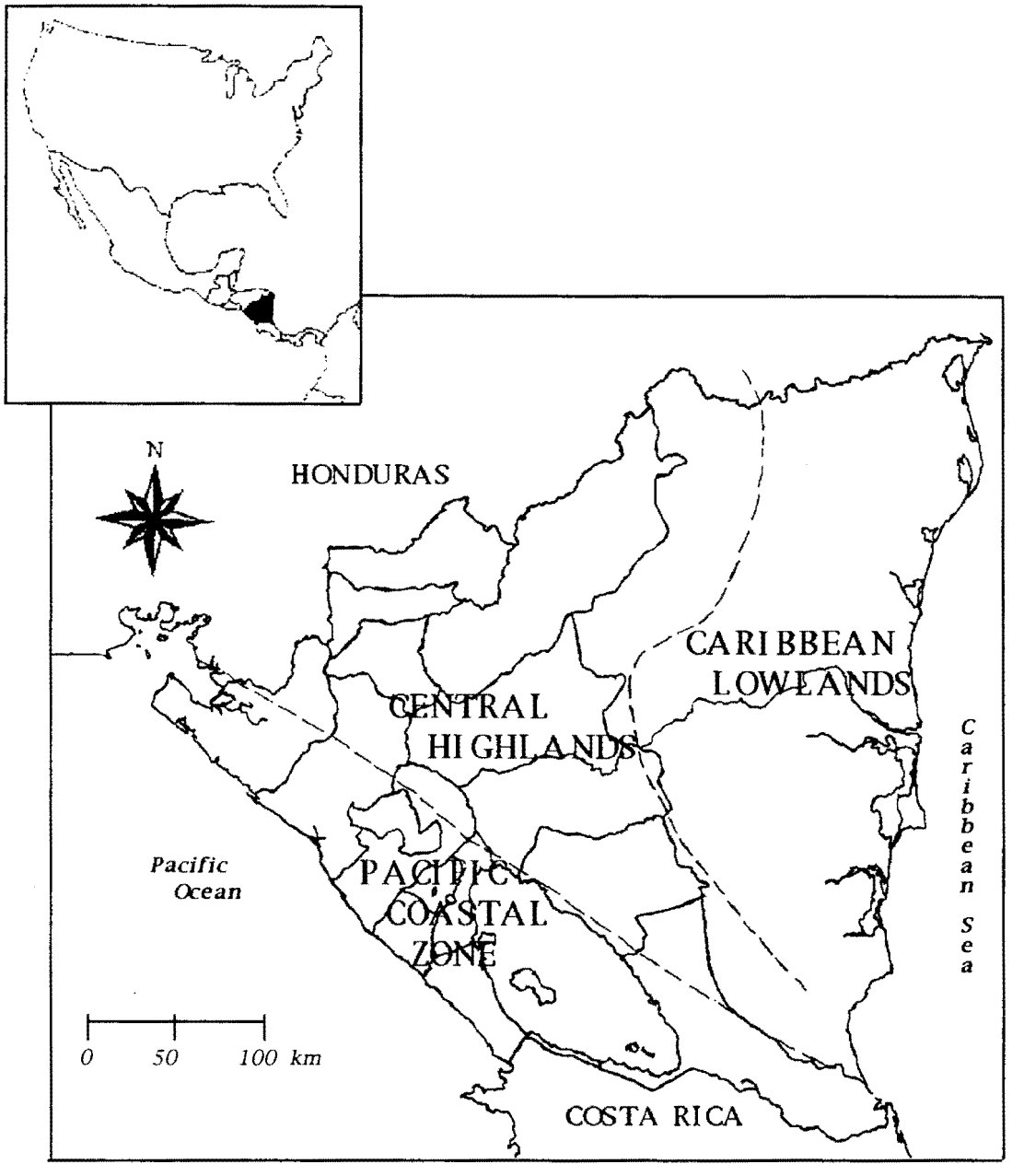

Figure 2. Nicaragua: Physiographic Regions

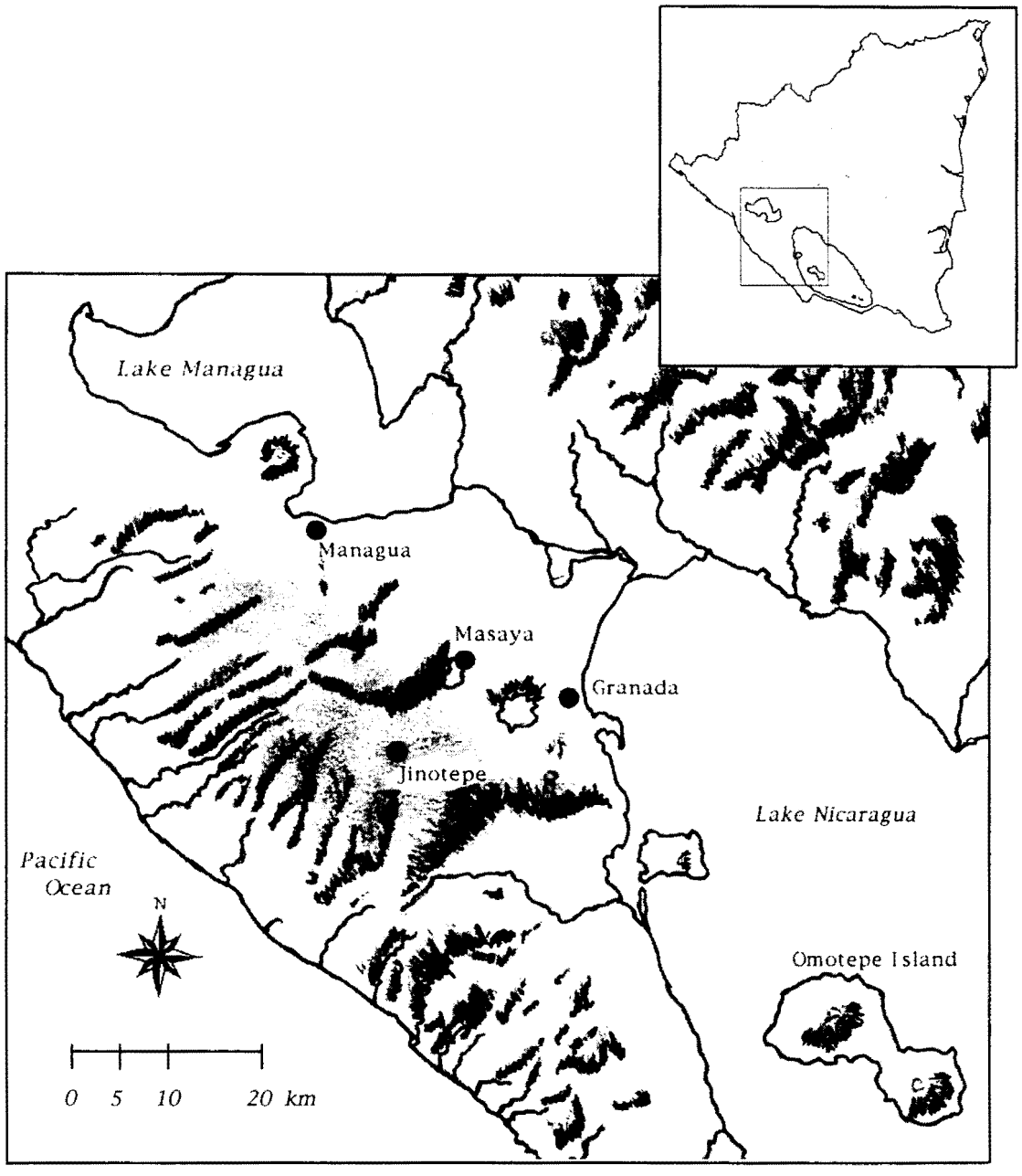

Figure 3. The Southern Uplands

forty km from north to south and ranges between eleven and sixteen km from east to west. In addition, the island of Omotepe and the slopes of Mombacho volcano are usually incorporated into discussions of the Uplands; statistics for coffee cultivation on Omotepe and Mombacho are traditionally included in data for the Uplands as a whole (Radell 1964).

Physical Geography

Coffee is grown in two main areas of the Uplands, the Sierras de Managua and the Carazo Plateau. The Sierras de Managua, in the northern third of the Uplands, are a highly eroded fault scarp with elevations over 650 m. This area is characterized by steeply sloped ridges. The Carazo Plateau, in the southern half of the Uplands, is part of the same fault scarp, but is at lower elevation (300-600 m) and is more gently sloped than the Sierras. The Uplands as a whole is a block-faulted anticline of Eocene and Cretaceous origin, overlain by recent, generally unconsolidated volcanic deposits primarily originating from the Masaya volcano east of the Uplands (Radell 1969, Rudolph 1982). These volcanic deposits result in a rich, deep, fine-grained soil which is ideal for coffee cultivation; deeper soil concentrations occur away from the more eroded Sierras de Managua (Playter 1927). High soil porosity results in deep groundwater, sometimes obtainable only at a depth of 200 m or more (Radell 1969). Groundwater depth accounts for the only major physical drawback of the Uplands; inaccessible groundwater required that coffee be processed through the dry method during the

nineteenth and early twentieth centuries. This, as noted previously, resulted in an inferior grade of processed coffee and a subsequently lower market price.

Climatically, the Uplands falls within the tropical savanna climate regime of extreme western Nicaragua. A distinct wet-dry seasonality can be observed, with a six month rainy season running from May to October and the dry season from November to April (West and Augelli 1966), which allows for maturation of the coffee crop as well as sufficient time in which to harvest it. The Uplands fall almost completely in the *tierra caliente* found at elevations up to 800 m throughout Central America, although certain portions of the Sierras de Managua (at altitudes of 800-1000 m) are found in the *tierra templada.* The Uplands is an example of quality coffee being cultivated outside of its optimal elevation by means of shaded cultivation. Mean average monthly temperature is primarily dependent on elevation, and can range from 17 to 24 degrees C in the Sierras and from 24 to 28 degrees C on the Carazo Plateau (Radell 1969); diurnal variation is more extreme than seasonal. Annual precipitation is variable, but averages between 1600-1800 mm (Rudolph 1982, West and Augelli 1966), an amount is more than adequate for coffee cultivation. There is no major drainage to the Pacific, although a series of small intermittent streams are found along the western edge of the Uplands (Rudolph 1982).

Human Geography

The Uplands region has been one of the most populous regions in Nicaragua since well before the arrival of the Spanish, and has remained so ever since. The Pacific side of Nicaragua contains over sixty percent of the country's total population, and the four departments which incorporate the Uplands have the highest population density in Nicaragua (Merrill 1994). The ethnic composition of the Uplands, as with most of Nicaragua, is mostly white or *mestizo* (of mixed European and indigenous ancestry), although indigenous communities are still found in some areas around Masaya.

Most of the population of the Uplands is engaged in some form of agricultural activity, especially agricultural wage labor and direct production of crops for market or export. The agricultural landscape is dominated by large landholdings, which employ large numbers of *mozos* (landless laborers), especially during the harvest season (Merrill 1994, Radell 1964). Coffee remains the primary export crop grown in the Uplands, although tobacco is also cultivated. Domestic agricultural products from the Uplands include corn, beans, and milk (Merrill 1994). Nicaragua as a whole remains dependent on agriculture, yet it is a rapidly urbanizing country, and the key urban centers of Managua, Masaya, and Granada exert a powerful influence on the Uplands. These cities are the focus of trade, finance, and transportation for the region.

THE NORTH-CENTRAL HIGHLANDS

The North-Central Highlands (Figure 4) is the northern portion of the Central Highlands physiographic region, and includes parts of the Departments of Matagalpa, Jinotega, Esteli, Madriz, and Nueva Segovia. From just south of the town of Matagalpa to the Honduran border in a northwesterly direction, the range of the North-Central Highlands is approximately 140 km.

Physical Geography

The physical resources of the Highlands are generally favorable for coffee cultivation, and the Highlands produces a higher-quality crop than does the Southern Uplands. The Central Highlands as a whole has as its axis a series of plateaus, with various cordilleras extending east toward the Caribbean. In the North-Central Highlands the main features are the Cordillera de Dipilto, the Cordillera Isabella, the Cordillera Dariense, and the Montanas de Huapi (Radell 1969, Rudolph 1982). These four ranges are deeply divided by the river valleys of the Rio Coco, the Rio Tuma, and the Rio Grande (Figure 4). Elevations along the main axis of the Central Highlands are mostly between 500 and 1500 m, although several peaks are somewhat higher and low-lying valleys are found at elevations of less than 500 m (Radell 1969, West and Augelli 1966); these altitudes allow cultivation of a higher grade coffee than at lower elevations (Williams 1994). The entire region is overlain by soils which are derived from Tertiary volcanic rock

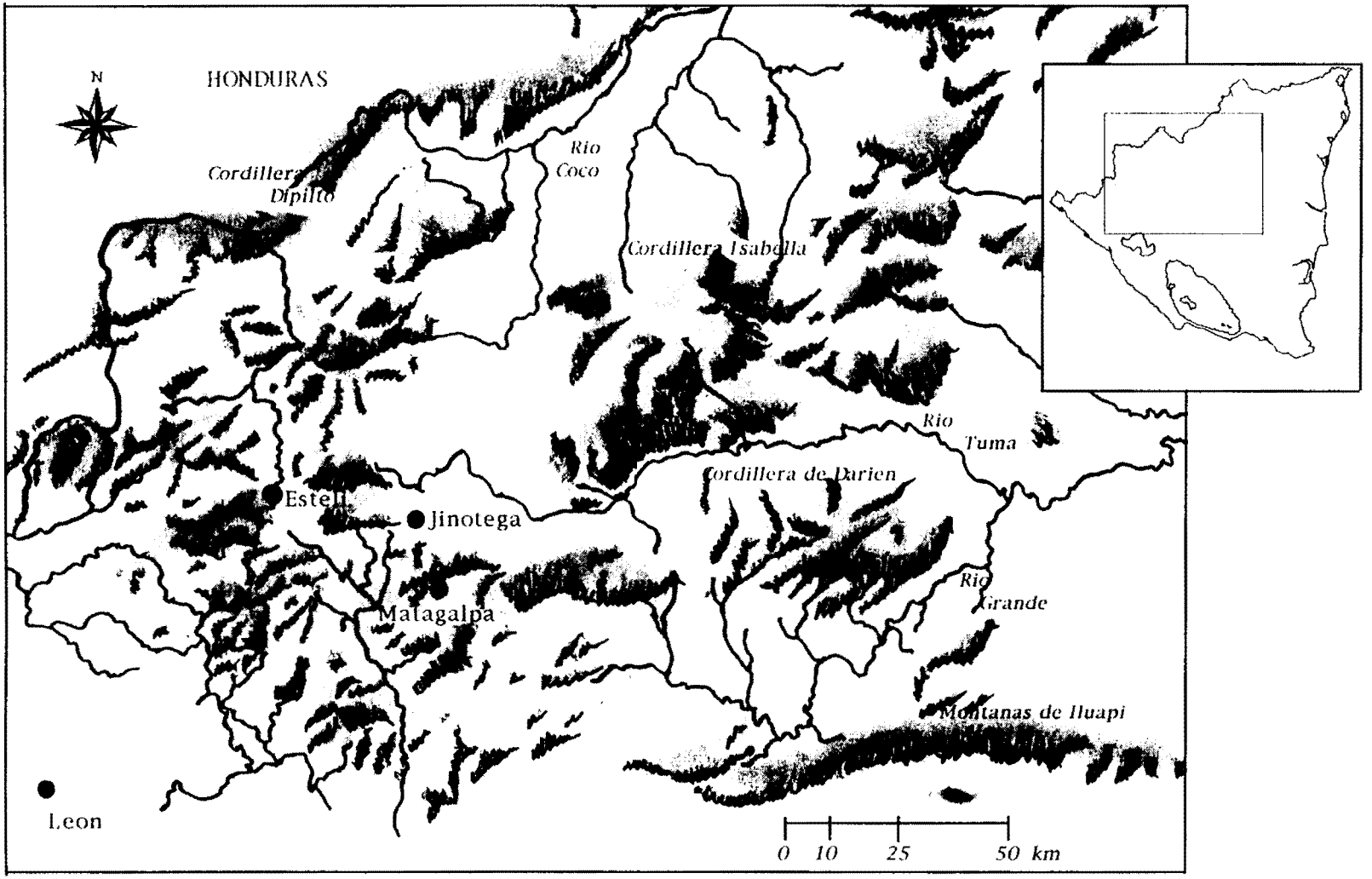

Figure 4. The North-Central Highlands

(Rudolph 1982). The most fertile of these soils are found in the alluvial deposits resulting from intensive weathering and erosion; otherwise, soil fertility is low to moderate throughout most of the region (Denevan 1961). Soil both deep and fertile enough to support coffee cultivation is found only in scattered areas of the Highlands (Playter 1927, Williams 1994).

The North-Central Highlands is classified as a tropical montane climate. There are both wet and dry seasons, though the distinctiveness between them is not as clearly demarcated as in the Southern Uplands. The rainy season usually lasts from May until the February, when the two to three months of the dry season occur. It is not unusual, however, for light, intermittent rainfall to occur during the dry season, and the climate is moist throughout the year (Radell 1969, Rudolph 1982). The short dry season is usually sufficient for coffee maturation and harvest, yet rain sometimes interferes with the harvest. The North-Central Highlands generally falls within the tierra templada, where temperature can vary markedly and is again primarily dependent on elevation. Mean annual temperatures in most areas conducive to coffee growing are between 16 and 20 degrees C (Radell 1969). Precipitation in the North-Central Highlands averages between 1400 and 2200 mm annually (West and Augelli 1966); the western side of the Central Highlands falls within the rain shadow of the northeasterly Caribbean trade winds (Rudolph 1982). Total precipitation is more than sufficient for coffee cultivation. The lengthy rainy season and easily accessible surface

water throughout the year has meant that coffee from the Highlands has historically been processed using the wet method, and has commanded higher prices on the market than lesser grades obtained processed by the dry method (Radell 1969, Williams 1994). Drainage along the eastern side of the Highlands flows toward the Caribbean, primarily in the form of the Rio Coco, Rio Tuma, and the Rio Grande, but only intermittent streams are found on the western side of the Highlands.

Human Geography

The Central Highlands holds approximately thirty percent of Nicaragua's population, and the majority of these inhabitants are located in the departments of Matagalpa, Jinotega, and Esteli. At the time of Spanish contact, the Central Highlands were less densely settled than the Pacific zone, and that pattern holds true today; none of the North-Central Highlands departments rival the four Uplands departments for inhabitants per sq km (Merrill 1994). Though the predominant ethnicity of the Highlands is white or mestizo, indigenous communities maintain a larger presence than in the Southern Uplands; the Matagalpa Indians retain some cultural distinction in the Highlands.

As with the Southern Uplands, the majority of the Highlands population is involved in agriculture. Yet unlike the Uplands, landholding structures are more varied. This is mostly attributable to the availability of free or inexpensive land, which has resulted in a large number of subsistence

and small-scale farms as well as large-scale commercial estates (Radell 1964). Coffee and cattle are the two primary export crops of the North-Central Highlands, and subsistence farming of beans, rice, and corn is common throughout the region (Merrill 1994). The main urban centers of the region are the towns of Matagalpa and Esteli, where the major markets and financing are located. Main transportation links from the Highlands to the rest of Nicaragua are also directed through these towns.

REGIONAL DISTINCTIVENESS

The Southern Uplands and the North-Central Highlands occupy different segments of the Nicaraguan landscape. While the most obvious differences lie in the physical character of each region, there are also other contrasts. Both regions are involved in the cultivation of high-quality coffee, yet coffee from the Highlands is consistently higher in quality than that of the Uplands. Economically, coffee is the most important crop of both regions, although other market-oriented agricultural commodities are also important in both the Uplands and the Highlands. In addition, subsistence farming plays a larger role for the population of the Highlands than it does for inhabitants of the Uplands, where agricultural wage labor is the standard; the Highlands still exhibits characteristics of a pioneer region, while the Uplands is more settled (Radell 1964, West and Augelli 1966). As might be expected, the Highlands is also more removed from the political and social life of

Nicaragua, which is centered in the Pacific lowlands and the national capital of Managua.

CHAPTER IV

THE SOUTHERN UPLANDS COFFEE REGION

Coffee was introduced into Nicaragua during the nineteenth century boom which transformed the agrarian landscapes of Central America. The first area in Nicaragua to plant coffee was the Southern Uplands, one of the historic economic and social cores of the country. The establishment of coffee in this region resulted from a convergence of unique historical and social processes. The combination of these factors formed a region of coffee cultivation distinct from other regions where coffee would be established later.

THE INTRODUCTION OF COFFEE INTO NICARAGUA

It was only after coffee had been successfully established in the Central American core regions of Costa Rica and Guatemala that coffee was introduced into Nicaragua. Though source material is scarce, most accounts attribute initial coffee introduction to Dr. Manual Matus Torres, a resident of Jinotepe on the Carazo Plateau (Radell 1969). Matus learned about coffee while studying as a medical student in Costa Rica. It was there that he made the acquaintance of a Guatemalan who would later send him a gift of two coffee seedlings and some coffee beans; Matus subsequently planted the seedlings and beans in a private garden (Lanuza 1976, Levy 1873, Radell 1969).

Radell (1969) has reviewed the debate over the exact timing of this planting and has concluded that 1825 was the most likely year in which Matus planted coffee in Jinotepe. Other than this date, few facts concerning the initial establishment of coffee cultivation in Nicaragua have been uncovered. Lanuza (1976) cites official correspondence from 1846 which comments on the promising early efforts at growing coffee in Jinotepe. The first recorded observation of commercial cultivation was made by United States envoy George Ephraim Squier, who documented coffee cultivation in the Sierras de Managua in 1849 (Squier 1852). Squier noted not only the presence of coffee cultivation, but also the general suitability of the region for producing quality coffee, which he described as being comparable to that of Costa Rica. For Squier to have observed productive, viable coffee trees, it was necessary that trees be planted by the 1840s; this leaves a gap of approximately fifteen years in the historical record of initial coffee plantings in Nicaragua. These intervening years may remain a mystery for the foreseeable future.

DEFINING THE UPLANDS COFFEE REGION

The creation of the Southern Uplands as a coffee region (Figure 5) was the result of major social, political, and economic factors. These include: 1) previous economic development; 2) transportation linkages to markets and transshipment points; 3) government efforts to promote coffee cultivation; 4) the availability of labor; 5) land tenure and holding size; and 6) the availability of capital and credit. Combined, these elements created a distinct

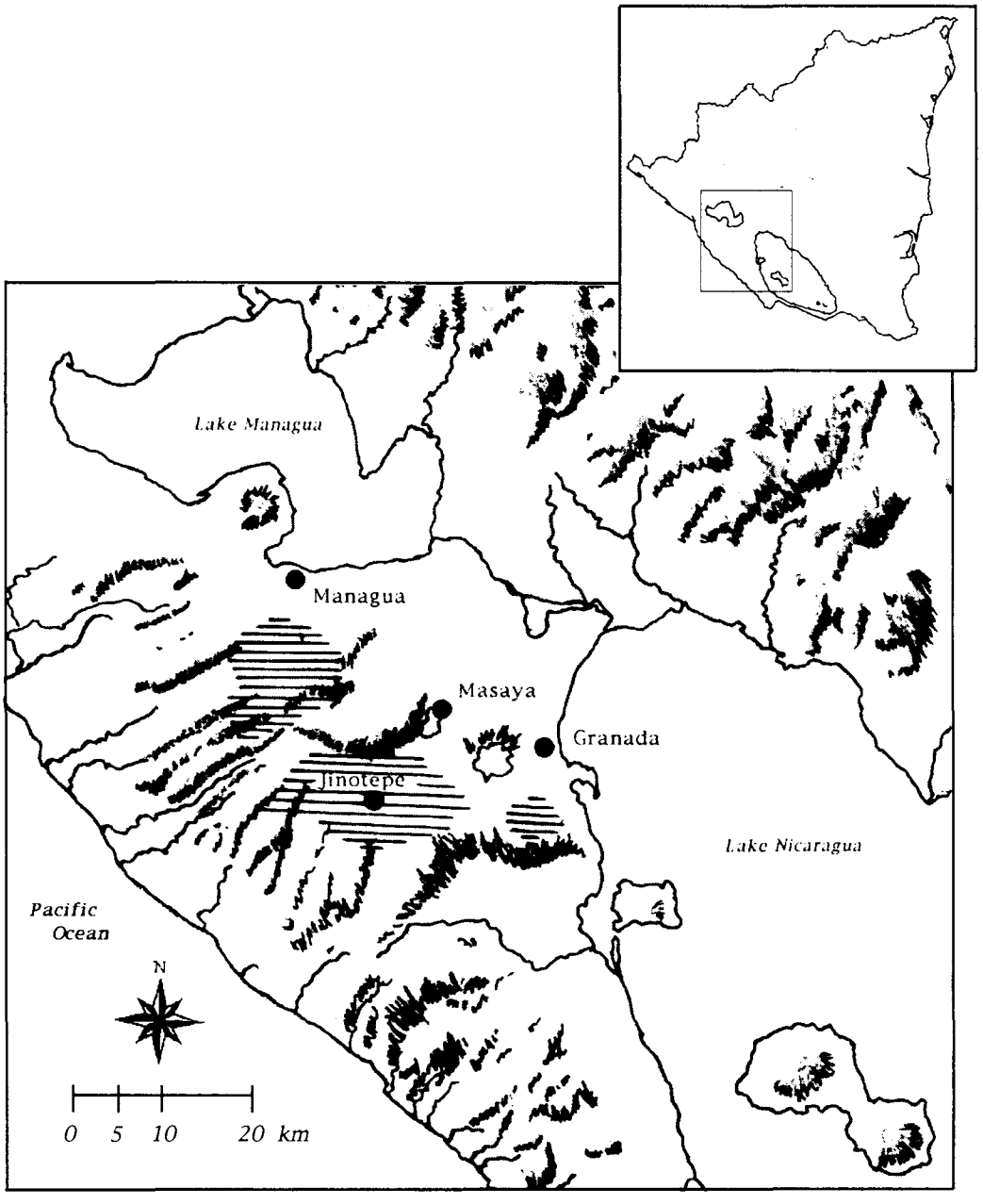

Figure 5. Coffee Cultivation Areas in the Southern Uplands

and dynamic region which served as the foundation of Nicaragua's burgeoning coffee economy.

Pre-Coffee Economy

One of the factors that can affect the introduction of new economic activities is the absence or existence of already-established commercial foundations. In comparison to other areas within Nicaragua, the Southern Uplands was economically well developed prior to the introduction of coffee. When the Spanish arrived in this area in the early 1500s, they encountered thriving agrarian societies with settlements centered around markets and trading centers (Stanislawski 1983). These indigenous societies had complex social systems of production and extensive trade linkages throughout the greater region (Newson 1987). This agricultural economy declined during the colonial era as native depopulation led to labor shortages and made available large amounts of fertile, productive land (Newson 1987, Radell 1969). With its decline, however, Spanish settlers quickly established a ranching economy in the areas surrounding Granada.

Granada-centered cattle ranching initially expanded in the areas now encompassed by the departments of Granada, Masaya, Managua, Carazo, and Rivas (Levy 1873, Radell 1969). As the cattle industry became established, Granada emerged as one of the most important trading centers in Central America. A major cattle market was located in Granada, and storage capacity for hides and tallow was extensive. Lanuza (1976) states that livestock

haciendas were the principal economic unit of production in the Southern Uplands at this time. Granada was also positioned at the head of the Rio San Juan trade route as well as on the key overland trade route through the isthmus (Radell 1969).

This trade route through Granada was also important to Nicaragua's cacao and dyestuff economy. The key area for production of these two commodities was the Rivas Isthmus, although substantial amounts of indigo and cochineal originated in the Upland region itself. The Granada trade nexus was vital in exporting these crops to Europe (Radell 1969).

At the dawn of the coffee era in Nicaragua, the Southern Uplands were well established economically. The cattle and dye industries, in particular, were the economic foundation of the region. The Uplands had already been exposed to the money and market economies; this previous economic development meant that the region was predisposed for the introduction of a new export commodity.

Transportation

Several researchers, including Radell (1964, 1969) and Kauck (1988), have advanced the theory that one of the most important variables governing the establishment of coffee regions is transportation. As noted above, the Uplands had been introduced to the market economy through cattle ranching, cacao cultivation, and indigo harvesting, and was in close proximity to Granada, the center of trade in Nicaragua. Nevertheless, the

state of transportation in the Uplands reflected the general underdevelopment of transport throughout Nicaragua in the nineteenth century (Lanuza 1983). Squier (1852) noted in mid-century that the Uplands could potentially grow some of the best coffee in the world, yet commercial cultivation was not well developed as a result of poor transportation to market. One of the initial stimuli to developing transport in this region was the steamship line of Cornelius Vanderbilt. A wealthy American financier, Vanderbilt recognized the opportunity provided by the discovery of gold in California. Thousands upon thousands of immigrants to the gold fields required an inexpensive, relatively quick means of travel. In response, Vanderbilt established a land- and water- based route through Nicaragua. This route traversed the Rio San Juan, crossed Lake Nicaragua, and included a stage route across the Rivas Isthmus (Radell 1964, 1969). This passage was both quicker and less dangerous than similar travel through Panama at the same time (Scherzer 1857) As a result, as many as 20,000 passengers a year used this route from 1850 to 1855, when Vanderbilt closed down the route due the filibustering activities of William Walker and the civil war in Nicaragua (Scroggs 1969). Since coffee was the most frequently demanded beverage by passengers on this route (Radell 1969), Vanderbilt was indirectly a key factor in developing the Nicaraguan coffee economy and infrastructure, and

> In response to this demand coffee cultivation expanded rapidly during the early 1850s. If the market had not been brought

> directly to Nicaragua by the transcontinental passenger traffic, it is doubtful that commercial coffee cultivation would have been so attractive at this early date. The internal coffee market . . . made coffee production a financially attractive investment. Once the transcontinental traffic had ended, the need to reach replacement export markets . . . promoted the general improvement of transportation (Radell 1964: 30).

As the only major city in the vicinity of Lake Nicaragua and a key trading center, Granada became the primary collection point for coffee from the Southern Uplands during the years Vanderbilt's line was in service. However, the proximity of the Uplands to Granada was not a guarantee of adequate or easy transportation. Commercial transport in Nicaragua at this time was primarily by means of *carreta* roads. A carreta was a two-wheeled cart usually drawn by one or two oxen (Radell 1969). There were two routes to Granada, one from the Carazo Plateau and another from the Sierras de Managua (Figure 6). From the Carazo Plateau, there was a carreta road directly to Granada. From the Sierras, however, there was no direct carreta road to the south, and a more time consuming journey was required via Managua then onward to Masaya and finally Granada (Radell 1964).

These routes proved sufficient while coffee production was relatively low, but after the National War of the 1850s, the elites of Nicaragua increasingly focused on the need for improved transportation to facilitate economic development (Lanuza 1976). Nevertheless, little progress was made during the 1860s, and by the end of the decade there were only three means of transporting coffee from the Uplands to port (Figure 6). The first

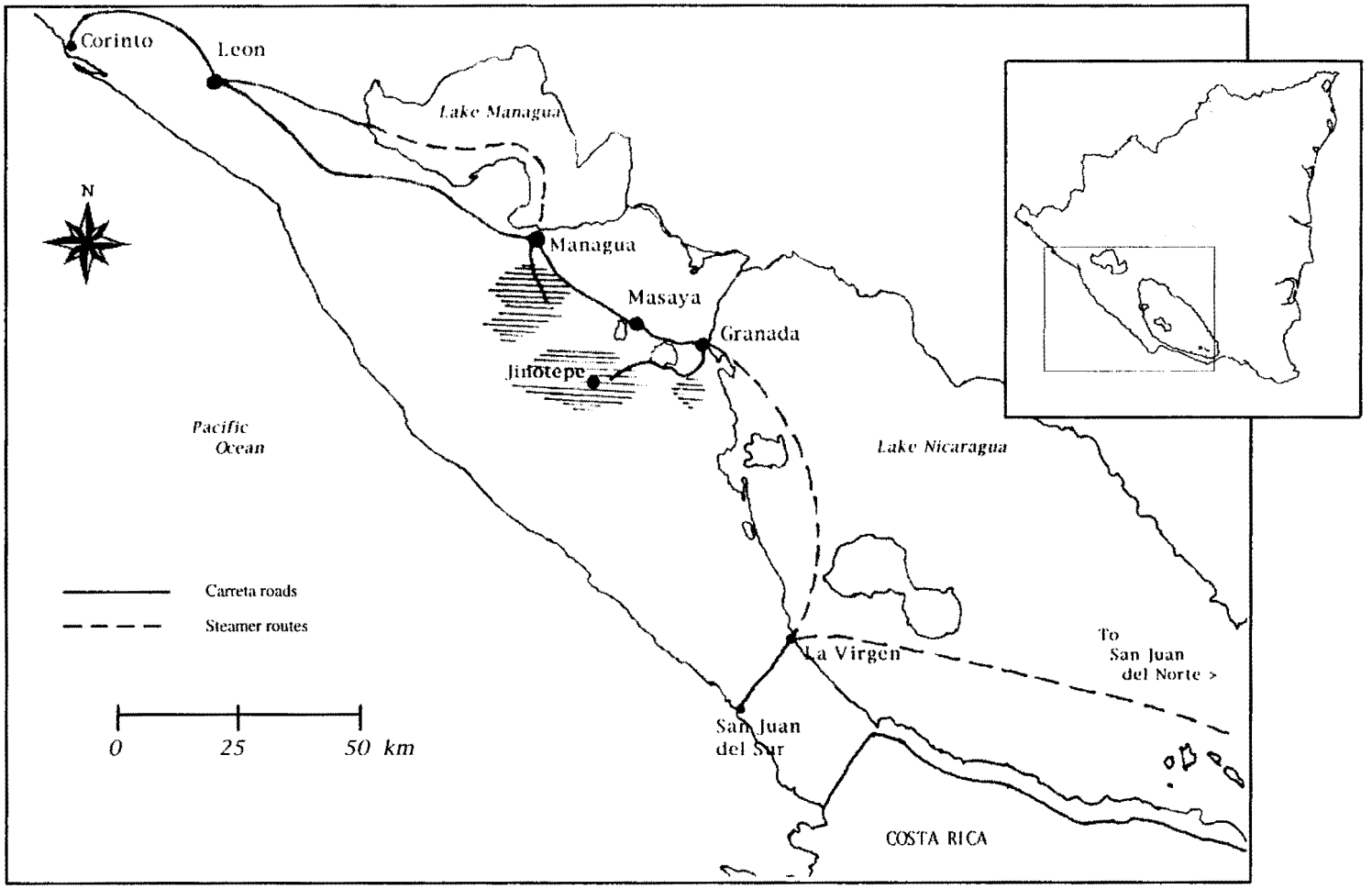

Figure 6. Transportation Linkages from the Southern Uplands, ~1870

was the route from the Carazo Plateau portion of the Uplands, by carreta to Granada and then down the Rio San Juan. The second route also used the same carreta road, but transshipped coffee down the western coast of Lake Nicaragua to La Virgen, where it was taken via carreta to San Juan del Sur. The third route developed in response to the needs of the northern section of the Uplands, the Sierras de Managua. This carreta road ran to Corinto, on the Pacific coast northwest of Leon (Radell 1964). It was clear that further improvements were necessary to facilitate increasing production; those improvements came in the form of railroads.

The coming of railroads to Nicaragua was important in consolidating the coffee economy, involving both governmental support and the financial backing of foreign and local elites. The railroad was built outwards from Corinto beginning in 1878, and construction to Momotombo, on Lake Managua, was completed in 1886. A steamship line from Momotombo to Managua linked with the railroad and was so successful that it virtually eliminated travel along the carreta road from Managua to Corinto (Radell 1964). This linkage provided lower costs and quicker connections from the Sierras de Managua. In the 1890s rail links were constructed for the Carazo Plateau. Masaya and Jinotepe were connected by rail in 1898 (Charlip 1995), and Jinotepe and Diriamba were connected to Managua the same year. The final rail link of significance to Uplands coffee growers was completed in 1903, when Managua and Corinto were finally connected by rail (Radell 1964). The

Southern Uplands initially had the advantage of somewhat serviceable transportation linkages, and the evolution of transport in Nicaragua served to solidify the market connectivity of the region.

Government Promotion

The 1800s were a period of tremendous upheaval within Nicaragua, yet successive political leaders realized the value of an export economy to the newly formed Republic. The government vigorously promoted coffee cultivation throughout the century, and the promising agricultural landscapes of the Southern Uplands were the focus of much of this government activity. In 1835 coffee was included in legislation exempting new export-oriented agricultural production from taxation (Charlip 1995). By 1846 coffee was promoted enthusiastically by local officials on the Carazo Plateau. This was the same year in which coffee growers were first singled out for special consideration by the government, with cultivators of more than two thousand trees exempted from taxes and military service (Delgado 1973, Lanuza 1976). Subsidies for coffee cultivation were extended by the government of Diego Chamorro in 1853 (Burns 1991). With the conclusion of the National War, the government of Tomas Martinez initiated increased efforts to promote coffee cultivation (Alvarado 1935). Owners of coffee farms with more than five thousand trees (as well as their employees) were exempted from military service, the farms themselves were not taxed, and import substitution credits were given based on the amount of coffee

exported. Land was also made easily accessible through the use of government credits (Charlip 1995). In 1859 import duties on agricultural products were lifted, cash prizes and subsidies for new cultivation were offered, and seedlings were distributed at cost by the government (Burns 1991). Cash premiums were substituted for the earlier import credits in 1877 (Charlip 1995). By this point coffee had been well established in the Southern Uplands and governmental attention soon shifted to other areas of the country. Nevertheless, specific governmental promotion of coffee cultivation greatly contributed to the establishment of the Uplands as a coffee region.

Labor and Population Structure

Another major variable in the development of the Southern Uplands coffee region is labor. As established previously, coffee requires few labor inputs except during the harvest season. However, the general structure of the population impacts the introduction of new agricultural crops, and the conditions of that crop's production. Population data for nineteenth-century Nicaragua is of questionable accuracy, with inconsistent methodologies and definitions often producing wildly disparate numbers. Nevertheless, a general idea of both population size and density can be extrapolated from the most accurate accounts. In the mid-1800s, the Southern Uplands were entirely contained within the Department of Granada, the most populous department in Nicaragua. Levy (1873) estimated the departmental population

at more than 55,000, or over one-fifth of the total population. Perhaps more importantly, the population density for Granada at this time was approximately 24 per square mile. The working-age population of the Uplands was the largest and most concentrated in Nicaragua.

One of the key elements of the labor situation in Nicaragua as a whole throughout the nineteenth century was a shortage of agricultural workers (Lanuza 1976, Niederlein 1898). The Uplands was in close proximity to the only sizable labor pool in the country. By the time coffee became the primary focus of Uplands cultivation in the 1860s, larger-scale farms had been established which incorporated the available labor supply of the region. Williams (1994) notes that some agricultural laborers had become accustomed to living year-round on estates, combining subsistence farming with work on the estate. Labor could also be obtained on a seasonal basis from the nearby population centers of the region. Despite the existence of these large-scale estates, the majority of the population in the Highlands practiced subsistence farming on their own land (Lanuza 1976).

The advantages of the available labor pool were, however, somewhat illusory. Accustomed to small-scale export production or working their own land, most of the peasants on the Uplands were reluctant participants in the establishment of large-scale commercial coffee cultivation. The most common way coffee growers attempted to get around this problem was to offer cash advances in exchange for harvest labor contracts. This system

ensured a certain amount of ready labor, but was also subject to abuse by workers, who were able to obtain money and flee to the agricultural frontier to continue subsistence farming. The ability to secure labor became an issue not just in the Uplands, but also on a national scale (Charlip 1995); the Nicaraguan government was forced to step in to ensure labor availability.

Government efforts to guarantee the labor supply were numerous throughout the nineteenth century. As early as 1835 the Nicaraguan government established a legal framework for agricultural labor contracts (Charlip 1995). By the 1880s over a dozen decrees concerning agricultural labor had been issued by the government. These decrees dealt with a wide spectrum of issues. Among other important aspects, in 1881 agricultural justices with broad powers were established. These justices could levy fines, jail or mandate public labor for workers, and pursue fugitive workers into neighboring jurisdictions (Delgado 1973). By the 1890s the labor situation had eased only slightly, and the new regime of Jose Santos Zelaya actively continued to mitigate the difficulties. New measures included national identity cards, new vagrancy laws, and an increase in the number and powers of the agricultural justices. The national military was also strengthened, which meant a greater degree of enforcement for enacted legislation (Teplitz 1973, Williams 1994). Even these measures, however, failed to decisively end the labor issue: Charlip (1995) notes labor issues as a problem on the Carazo Plateau as late as 1919. It nevertheless appears that government legislation

and enforcement helped stabilize labor transactions in the Uplands. The combination of government activities and the mere fact that the Uplands were well-populated meant that labor availability was not an insurmountable problem in the Uplands.

Land Tenure and Access

Land tenure is inarguably one of the major factors in the transformation of any agrarian landscape. Important considerations include general land availability, land tenure types, and landholding size. Nineteenth-century Nicaragua was one of the least populous countries in Central America, both in terms of total population and population density (Levy 1873). Despite being located in the pre- and post-contact population core of Nicaragua, generally low population numbers meant that during the nineteenth century the Southern Uplands was characterized by a general abundance of land. Juan Mendoza, cited in Charlip (1995), refers to freely available virgin land in the area of Diriamba, in the future Department of Granada, during the 1820s, and again to abundant, easily obtainable land in 1868. Levy (1873) also cited untouched land in a number of areas including the Southern Uplands, land open to anyone willing to cultivate it.

Immediately after Nicaraguan independence, land could be acquired through three primary methods: direct grants from the state, purchase from local administrators or municipalities, and direct land occupancy (Blandon 1962). The resulting mosaic of land ownership was generally threefold:

private lands, public lands, and indigenous lands (Blandon 1964). Private lands were those held by individuals, regardless of size; Church lands were usually included in this category (Burns 1991). Public lands were in two basic forms, *ejidos* (municipal lands) and *baldios* (vacant lands). Ejidos were either lands to be used by the whole community, as with grazing land, or were lands which could be rented from the municipality, usually for a minimal fee (Charlip 1995). Baldios were vacant lands nominally owned by the state, but considered available to anyone wishing to exploit them. In mid-century, some estimates of the percentage of government-owned lands in the country were as high as sixty-five percent (Lanuza 1976). Ownership of baldios was often granted after the mere delimitation of boundaries and a simple appearance before the local authorities (Levy 1873); this made the outright purchase of these lands a rare thing (Dunlop 1847). Indigenous lands were administered similarly to ejidos, with either communal use or private rental. These three general types of land ownership ensured that land was available, in one form or another, to all Nicaraguans, regardless of social class or financial means.

Landholding size is also important to understanding an agricultural region. In Nicaragua, there are five traditional categories of landholding size, based on *manzanas* (a manzana is equal to .58 acres). *Minifundios* are farms less than 10 manzanas; small farms are 10 to 49 manzanas; medium farms are 50 to 199 manzanas; large farms are 200 to 500 manzanas; and *latifundios* are

greater than 500 manzanas (Charlip 1995). In terms of coffee cultivation, traditionally 1,000 coffee trees were planted per manzana. The historical records for landholding structure in the Southern Uplands are either incomplete or non-existent prior to establishment of the local property registers in the 1870s and 1880s (Charlip 1995, Lanuza 1983). However, enough data is available for the Uplands to establish a general overview of property sizes.

Prior to coffee cultivation, the Southern Uplands had developed a distinct minifundio/ latifundio dichotomy; large cattle estates and previously developed commercial agricultural lands were interspersed with subsistence minifundios or small farms (Lanuza 1976). The conversion of the Uplands to coffee cultivation appears to have changed the landholding structure very little. In 1867 the Sierras de Managua had established an annual coffee production rate of over 4,000 quintals (a quintal was approximately equal to 100 pounds) yet still had 135 cattle haciendas (Lanuza 1983). Additional landholding data from the 1867 *Gaceta Nacional* is also cited by Lanuza (1983). The Managua district of Granada, which includes the Sierras de Managua, shows 149 coffee farms at this time. Almost forty-five percent of these farms cultivated fewer than 10,000 coffee trees and can be classified as minifundios; judging by the data, the rest were in the form of small farms, with less than 50,000 trees. This coexistence of large and small landholdings persisted through the late nineteenth century.

One unknown aspect of nineteenth century landholding in the Uplands is the evolution of indigenous-controlled lands. The indigenous presence in the Uplands was strongest in the Masaya district, where before coffee cultivation land was still held corporately and leased to individual farmers for subsistence cultivation (Squier 1852). The process through which indigenous land transferred into private ownership has not yet been determined. Lanuza (1983), once again citing the *Gaceta Nacional,* has established that by 1867 there were twenty-one coffee farms in Masaya district, in all likelihood minifundios. Despite the nominal question of ownership, it appears that Masaya district, at least in farm size, exhibited the same large and small landholding characteristics as the rest of the Uplands.

By the 1909 coffee census, these patterns were still evident throughout the Southern Uplands. Carazo was characterized by the highest degree of smallholder participation in the coffee economy, but still exhibited this distinction. The 1909 census shows that ninety-four percent of the coffee farms of Carazo were medium-sized or smaller. Yet these farms only occupied fifty-five percent of cultivated coffee land; the remaining forty-five percent is accounted for by large farms and latifundios (Charlip 1995). Over ninety percent of the 129 coffee farms in Masaya were smaller than fifty manzanas. In Managua only thirty percent of coffee farms were classified as small farms or minifundios, while the percentage of latifundia and large farms was the highest of any Southern Uplands department. The

Department of Granada exhibited a similar distribution as Managua (Williams 1994). The diversity of landholding size in the Southern Uplands reinforces the general characterization that land was generally available to both large and small landholders and was held primarily through private title.

Capital and Credit

The last factor used for understanding the development of Nicaragua's coffee regions is capital access and availability. In the nineteenth century, start-up costs for a coffee farm varied widely, with the most important variables being size, technology, and the previous state of the land. If virgin land was brought into cultivation a greater cost was incurred than if previously farmed land was converted to coffee (Charlip 1995). Regardless, coffee was considered a crop which required a significant amount of capital to initiate commercial cultivation (Lanuza 1976).

There were several ways of obtaining capital in Nicaragua during the nineteenth century. One of the most common means of acquiring capital was a form of short-term lending in which cash was advanced against an upcoming harvest. Commercial mortgage lending was another way in which farmers could acquire the necessary capital to initiate coffee cultivation. By 1892 two commercial banks had been established in Managua (Bureau 1892a). It is probable that these banks were involved in the coffee economy of the Southern Uplands, although no bank-financed mortgages have been

discovered for the Carazo Plateau in the nineteenth century. Privately financed mortgages were the general rule in Nicaragua at this time. The *hipoteca* was a type of property mortgage which was created specifically for coffee financing (Charlip 1995). *Pactos de retroventa* were also established as a result of the coffee economy; the pacto was a lending process whereby a farmer would sell his land to a private lender and lease it back until it could be repurchased at a later date (Charlip 1995, Williams 1995). The pacto provided longer-term financing than that available through short-term crop advances (Williams 1994). As evidenced by these various sources of capital, the system for obtaining capital was well established in nineteenth-century Nicaragua.

In addition to these lending structures, it appears that a great deal of capital was available in the Uplands. The Southern Uplands were commercially well developed prior to and during coffee cultivation, and a diversified group of commercial elites was significantly involved in the expansion of coffee cultivation (Williams 1994). Cattle-based wealth and commercial business institutions were two of the primary sources for coffee financing in the late nineteenth century (Bureau 1892a, Lanuza 1983). By 1892 foreigners had also assumed a major role in the financing of coffee in the Uplands, particularly in the export sector (Bureau 1892a). Despite the relative lack of detailed data, it appears that the participation of elite Nicaraguan merchants and foreign capital ensured that the Southern Uplands was a

region whose development was not constrained by lack of capital and credit lending.

CONCLUSION

The Southern Uplands was integral to the development of Nicaragua's coffee economy. By the mid-1860s coffee cultivation was well-established, and coffee from the Uplands was being exported to Europe and North America via Corinto, San Juan del Sur, and along the Rio San Juan trade route (Radell 1969). In 1892 the Uplands accounted for over eighty percent of coffee trees cultivated in Nicaragua (Bureau 1892a). The importance of the Uplands as a coffee region declined somewhat by 1898 as coffee cultivation expanded throughout the country (Niederlein 1898), but the Uplands were still the economic center of Nicaragua's coffee economy. By the 1909 coffee census it was still the primary producing region in the country, with over two-thirds of Nicaragua's coffee coming from the four departments in which the Uplands are located (Charlip 1995, Williams 1994).

This chapter has analyzed the various elements which shaped the development of the Southern Uplands coffee region. It is difficult to determine which of these factors was most important in this process, as the Uplands benefited from an almost optimal range of circumstances. The Uplands was a physically suitable environment for coffee, had already been introduced into the market economy, and had a ready supply of both land and capital. Transportation was an initial limitation, but developed almost

simultaneously with the expansion of coffee cultivation. Labor was another potential limitation, but proximity to the largest concentration of population in Nicaragua as well as extensive government intervention to ensure reliable labor for harvest overcame major labor shortages. The government also played a key role in developing coffee in the Uplands, using national policies and promotion efforts to encourage a shift to coffee cultivation. Given the convergence of these factors, it is not surprising that the Uplands became Nicaragua's first and most important coffee region. This understanding provides a framework for comparison with Nicaragua's second coffee region, the North-Central Highlands.

CHAPTER V

THE NORTH-CENTRAL HIGHLANDS COFFEE REGION

Isolated from the historic population and commercial centers of Nicaragua, the North-Central Highlands of Nicaragua evolved as a coffee region only in the last decades of the nineteenth century. Commercially-oriented cultivation in the Highlands most likely began in the 1870s, though Karl Scherzer noted coffee being grown among other crops on small farms in Matagalpa during the 1850s (Scherzer 1857). The establishment of coffee in this region was conditioned by many of the same factors as elsewhere in Nicaragua, yet the dynamics of different historic and economic processes effectively contributed to the creation of a distinct functional region of coffee cultivation.

DEFINING THE NORTH-CENTRAL HIGHLANDS

The six variables which were so important in defining the Southern Uplands as a coffee region are also essential to any analysis of the North-Central Highlands coffee region (Figure 7) during the nineteenth century. Social, economic, and political factors all affected coffee cultivation in the Highlands, though in different degrees. The unique interplay of these factors helped define the North-Central Highlands as the second of Nicaragua's important coffee regions.

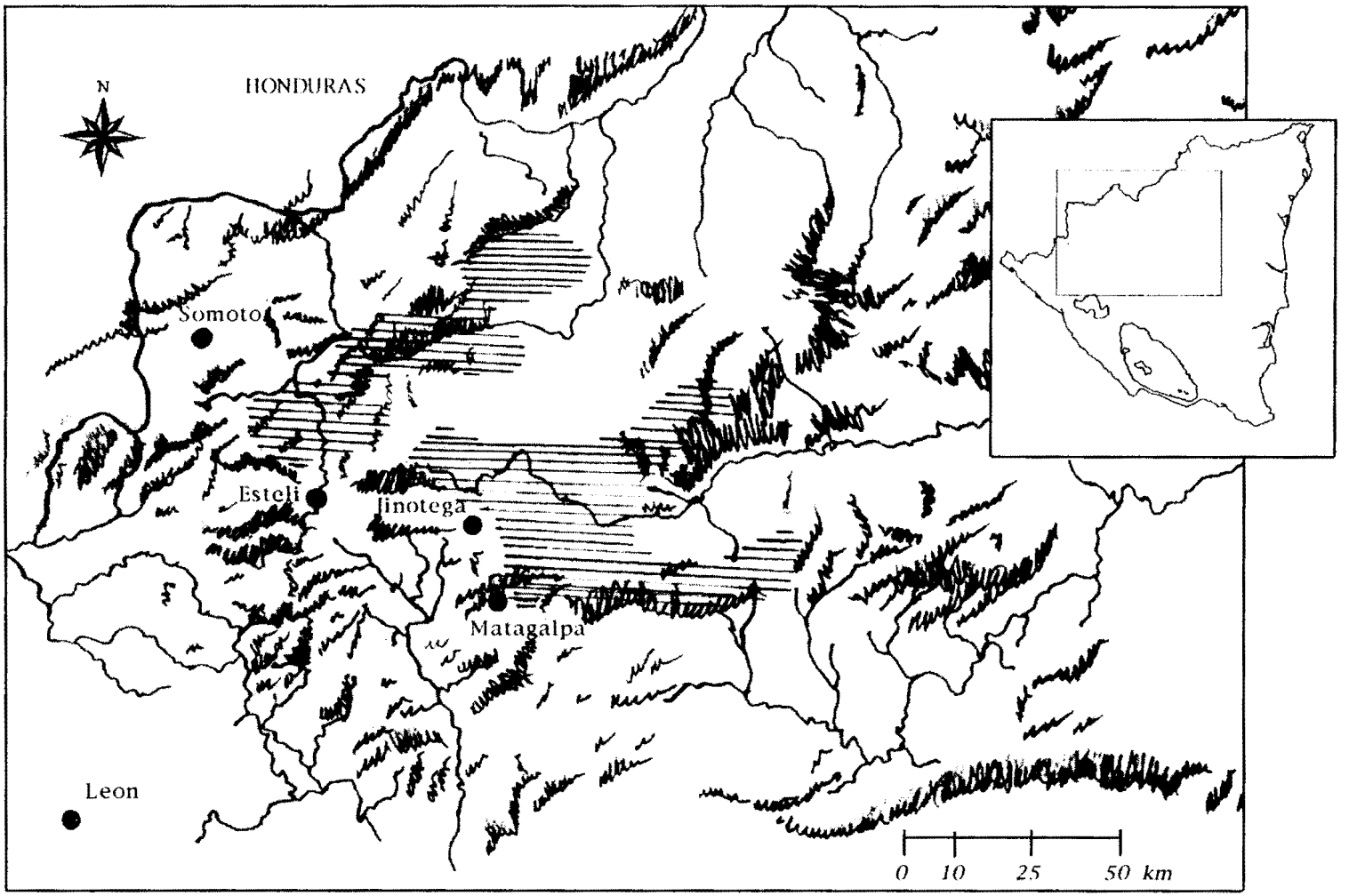

Figure 7. Coffee Cultivation Areas in the North-Central Highlands

Pre-Coffee Economy

The best characterization of the pre-coffee economy of the North-Central Highlands is that of an undeveloped frontier. When the Spanish arrived in Nicaragua, the Highlands were settled by a mix of Indian groups practicing subsistence agriculture (Denevan 1961, Stanislawski 1983). It appears that Indians occupying the Highlands had less developed trade networks than their counterparts in other areas of Nicaragua (Newson 1987). After establishing control over indigenous Nicaragua, Spanish interest in the region focused largely on precious metals. After appropriating extant gold and silver from native groups throughout the country, the Spanish turned to placer mining and exploratory below-ground mining in the areas of Santa Maria de Buena Esperanza and Nueva Segovia (Newson 1987, Radell 1969). Meager results meant, however, that the mining economy of colonial Nicaragua was short-lived, and permanent Spanish colonial development in the Highlands was minimal.

Though areas of sedentary native agriculture were easily incorporated under Spanish control, the region remained a frontier, subject to repeated aggression from less settled native groups to the east (Denevan 1961). The resulting instability meant that agricultural cultivation was variable and shifting. Distance from the Leon-Chinandega cattle economy and unsuitable terrain meant that the Highlands were generally excluded from the cattle economy which sustained Nicaragua throughout most of the colonial era and

early independence. Cattle ranching spread extensively into the southern areas of the Highlands surrounding Chontales as well as into some of the modified grasslands near the Honduran border in the Segovias (Denevan 1961, Radell 1969), but by the mid-1800s only scattered cattle pastures could be found in the bottomlands surrounding Matagalpa and Jinotega (Scherzer 1857)(Figure 4). Renewed attempts at tapping the mineral resources of the Highlands began in the nineteenth century, but these efforts were generally ineffective and had only minimal lasting economic impact on the region as a whole (Denevan 1961, Scherzer 1857). Scherzer's (1857) observations of economic activity in the area surrounding Matagalpa, the leading population center of the Highlands, noted a predominance of maize cultivation in the region, with only minimal amounts of cattle grazing, some tobacco cultivation, and scattered coffee trees. Immediately prior to the coffee boom in the North-Central Highlands, the region largely remained as it had for hundreds of years: sparsely settled and isolated from the commercial economy of Nicaragua.

Transportation

Given the nature of its physical geography and the underdeveloped state of the pre-coffee economy, it is not surprising that transportation hindered the development of the North-Central Highlands coffee region. In the nineteenth century, almost all effective transportation in Nicaragua stretched along the lowland corridor between Granada and Chinandega

(Lanuza 1983). Mule trails were the most common means of transport throughout both Nicaragua and Central America during the nineteenth century (Dunlop 1847, Lanuza 1983); intra-regional transportation in the North-Central Highlands also took place primarily on mule trails. These trails proved to be both inefficient and expensive. The mountainous terrain of the Highlands was often difficult to negotiate with mules, particularly during the rainy season, when the trails were virtually impassable (Radell 1964, Williams 1994). Due largely to the challenges of transport, coffee was introduced into the region only in close proximity to the towns of Matagalpa and Jinotega. According to Radell (1969) almost all coffee in the Highlands was planted within sixteen kilometers of these two towns until the 1890s.

Prior to the introduction of coffee, the only linkage between the Highlands and a major trading center was the 184 kilometer mule trail between Matagalpa and Leon (Radell 1969). This mule trail remained the only means of transporting coffee out of the Highlands until just after the turn of the century. By the 1890s, railroads had been established throughout Nicaragua, particularly in the western districts nearest the Pacific coast (Charlip 1995, Radell 1964). The North-Central Highlands, however, were excluded from railroad expansion. This was possibly due to a number of factors, but isolation from the highly developed central core of the country and the region's imposing terrain are two of the most likely. In the early 1900s a private company was established to improve transport to the coastal

regions from Matagalpa. The plan called for a trackless steam-powered locomotive to haul coffee on trailers from Matagalpa to Leon. A pathway for the train was quickly cleared, but the line encountered difficulties with both the terrain and securing adequate water for the boiler during the dry season; only a few trips were made before the venture was abandoned (Radell 1964). However, the train linkage had an enduring beneficial effect for the Highlands. Though the train failed, the pathway cleared for it was converted to a carreta road, which was a significant improvement over the previous mule trail; the new carreta route significantly reduced transport costs and stimulated some expansion of coffee cultivation (Radell 1969). This route remained the only significant trade linkage between the Highlands and Leon until well into the twentieth century, and transportation difficulties were one of the major obstacles to continued expansion of coffee cultivation throughout this time period (Denevan 1961, Williams 1994).

Government Promotion

Despite the Nicaraguan government's active role in promoting coffee cultivation from 1835 onward, the impact of governmental activities in the North-Central Highlands was not significant until the 1870s. It was during the 1870s that continued high prices for coffee on the world market encouraged the government of Enrique Carazo to expand coffee cultivation in the Highlands (Alvarado 1935). One of the primary paths chosen for this was to encourage foreign settlement in the region (Radell 1969). In 1875,

legislation was passed allowing for foreigners to obtain land without losing their native citizenship. This was followed by measures which gave away *tierras baldias* (government-declared vacant lands, regardless of prior unofficial or indigenous occupancy) in lots of up to 350 manzanas in size for agricultural use (a manzana equals approximately .58 acres). Foreign immigrants to the Highlands were also exempted from local taxes and military service to the Nicaraguan government. To specifically entice coffee cultivation by foreigners, the government also passed subsidy laws in 1879 and 1889. These laws provided a five cent subsidy per coffee tree to any person willing to plant more than 5,000 trees in the North-Central Highlands (Delgado 1973). Two cents of this was payable after two years of cultivation and the remainder when the trees matured to productivity (Bureau 1892a). The latter date of 1889 was also the year in which the government offered tierras baldias in parcels of up to 500 manzanas to foreign settlers agreeing to plant more than 25,000 coffee trees. These government activities were generally successful. By the mid-1890s, some accounts claim as many as 146 foreign settlers in and around Matagalpa (Radell 1969); these immigrants were primarily from Germany, England, and the United States (Denevan 1961). This influx of foreign immigrants, most of whom came with a substantial amount of capital, initiated the formation of large-scale coffee estates in the Highlands (Radell 1969).

In addition to its focus on foreign settlement as a means to stimulate coffee production, the government also encouraged native Nicaraguans to participate in the emerging Highlands coffee economy. In 1877 the government implemented a system of cash premiums for the export of coffee; these premiums lasted well into the twentieth century (Charlip 1995). The subsidies of 1879 and 1889, though directed primarily at foreigners, also applied to Nicaraguan citizens (Bureau 1892a). This subsidy was directed primarily at growers in Nueva Segovia, Chontales, Matagalpa, and Jinotega (Delgado 1973, Niederlein 1898). In the latter 1890s and early 1900s, these subsidies helped encourage a number of Nicaraguan farmers to settle in the Highland frontier. By the time of the coffee census in 1909, several new towns had been established east and northeast of the towns of Jinotega and Matagalpa. This in turn forced many of the native occupants even farther into the frontier, further opening up the region (Denevan 1961). The conscious efforts of successive governments to encourage coffee cultivation not only stimulated settlement, but also proved to be vital to the region's emergence as a coffee zone. Government policies brought land under cultivation, enticed foreign settlers (and their capital) to the region, and changed the economic focus of the region from subsistence agriculture to coffee produced for export.

Labor and Population Structures

Another of the necessary elements for understanding the establishment of coffee cultivation in the North-Central Highlands is the issue of labor. What was the population base of the Highlands, and how did this population affect the establishment of coffee production? As is true for the rest of Nicaragua, population data for the Highlands, particularly in the nineteenth century, is of questionable accuracy, with different methodologies and areal definitions contributing to the lack of quality information. The most reliable population estimates for the Departments of Matagalpa and Nueva Segovia show approximately 50,000 inhabitants of these two districts in the mid-1800s; this was about one-fifth of Nicaragua's total population. By the early 1870s regional population was around 52,000 and was more or less one-fifth of the national total. In the early 1870s population density was eleven per square mile in Matagalpa and eight in Nueva Segovia (Levy 1873). This figure is actually somewhat deceiving: inhabitants of the region remained clustered around the principal towns, especially Matagalpa and Jinotega. The implications of this clustering for the coffee economy were twofold. In absolute numbers, the available labor pool for establishing large-scale commercial coffee cultivation throughout the Highlands was small. Accordingly, early coffee cultivation occurred primarily on small and medium size farms of less than 200 manzanas in size which required only family labor throughout the year or used minimal amounts of wage labor to

complete the harvest (Williams 1994). In addition, population clustering meant that almost all coffee cultivation in the Highlands occurred within close proximity to the town centers of the region. Before the immigration-caused expansion of cultivation in the 1890s, almost all coffee was grown within a few kilometers of Matagalpa and Jinotega (Radell 1969). The numerous North Americans and Europeans who visited Nicaragua in the nineteenth century were almost completely unanimous is agreeing that the lack of agricultural workers was the primary shortcoming of the Nicaraguan economy (Lanuza 1976).

This shortage of workers was also noted by the Nicaraguan government, and active measures to ensure labor availability were taken throughout the decades of coffee expansion. The laws passed by the Nicaraguan government (more than a dozen of them by the 1880s) generally focused on specific methods of binding workers to farms and labor contracts. Agricultural justices were established to oversee the labor situation; these judges were vested with progressively broader powers of arrest, the ability to levy fines, and extradition from neighboring regions (Delgado 1973, Lanuza 1983). Workers were held liable for contracts signed with estate owners, and were required to serve a certain number of days per year on public works projects. Work on these projects was also a common means of punishing workers who failed to fulfill their contractual duties (Charlip 1995). In the Highlands, governmental attempts to regulate labor were generally

ineffective until the 1890s. Distance from the central state structure in Managua and the open frontier to the east and northeast meant that it was easy for workers to flee rather than abide by a contract or face punishment (Lanuza 1976). The indigenous communities of the region, the most concentrated and populous in Nicaragua at the time (Levy 1873, Scherzer 1857), provided strong resistance to labor regulations. The issue of forced labor became the flashpoint for a whole range of indigenous grievances against the government (Gould 1994). Armed resistance broke in 1881, and the military remained in the region to oversee administration of the law through the decade (Williams 1994).

By the 1890s the labor situation eased slightly for growers. The 1893-1911 regime of Jose Santos Zelaya instituted a host of measures designed to put an end to the labor problems throughout the country. These measures included a national identity card, new vagrancy laws with military service as a punishment, and an increased number of agricultural justices as well as increased state enforcement structures (Teplitz 1973, Williams 1994). The Highlands, however, remained problematic. A turn of the century survey of coffee farms in Matagalpa showed that almost twenty-five percent of laborers signing contracts had abandoned their obligations (Teplitz 1973); the nearness of the agricultural frontier remained a problem in the Highlands. Charlip (1995) asserts that labor remained an area of contention for coffee growers

well into the twentieth century, despite increasing population, elimination of native resistance, and the continued growth of the region's coffee production.

Land Tenure and Access

When analyzing any agrarian landscape land is inevitably one of the variables which must be considered. Important factors related to land include general availability of land, types of land tenure, and size of landholdings. In the nineteenth century, Nicaragua had such an abundance of land that it was nearly inconceivable for someone to actually purchase land (Dunlop 1847); it was much easier to simply occupy the land. The North-Central Highlands were no exception to this general rule. By the nineteenth century a low population density and an open frontier to the east combined to ensure that land throughout the Highlands was abundantly available to anyone willing to settle and claim it (Levy 1873, Denevan 1961). The primary exception to this rule was previously claimed land; in the Highlands this meant indigenous land.

Indigenous-controlled land, primarily that claimed by the Matagalpa Indians, was the most contentious aspect of the North-Central Highlands in the nineteenth century. By 1881, the indigenous population of Matagalpa was an absolute majority of the population, numbering nearly 35,000. This also meant that indigenous communities occupied some of the best agricultural land in the region. With the active encouragement of Highlands coffee cultivation beginning in the 1870s, the Nicaraguan government made

concerted efforts to appropriate prime agricultural land under indigenous control; this was primarily accomplished through taxation, confiscation, and auction of land (Williams 1994). The defeat of indigenous resistance in the 1880s also forced many natives to the agricultural frontier as their communal lands were appropriated (Radell 1969). The establishment of effective government control over indigenous lands, though actually exercised over only a small portion of the Highlands between Jinotega and Matagalpa, was one of the key elements inducing settlers and investors into the Highlands in the late 1880s and early 1890s (Radell 1969, Williams 1994).

The arrival of these new settlers changed the landholding patterns of the Highlands. Whereas previous land ownership in the region had been in the form of indigenous lands and unoccupied state lands, new settlers sought private ownership in order to secure their claims. State lands were made available to foreigners free of charge several times throughout the late nineteenth century (Radell 1969), and in the years 1889-1891 almost 24,000 manzanas of state land was privatized in the Department of Matagalpa alone (Williams 1994). Jeffrey Gould, cited in Williams (1994), has worked extensively on the indigenous history of the Highlands, and has concluded that the Indians of Matagalpa lost over ten percent of their community land between 1895 and 1911, mostly to new or expanding coffee farms; of 8,000 manzanas claimed as a result of the 1889 land distribution, 5,100 were indigenous land. This transfer of land from the state and indigenous

communities to private ownership was one of the major elements of land disposition in the late nineteenth century Highlands.

Nevertheless, the process of transferral for landholding structures in the Highlands is not well defined. The historical land records for the Highlands are generally incomplete, but a broad picture of coffee landholding sizes in the region can be pieced together. Prior to the advent of large-scale coffee cultivation land was held communally or by the Nicaraguan state. Land was therefore concentrated in large holdings, but nevertheless accessible to all. By 1909 coffee was the leading product of the Highlands and landholding size in the Highlands had assumed a completely different character. Minifundios and small farms dominated the coffee landscape of Nueva Segovia and Esteli, while they were just less than half of the total coffee farms in Jinotega and Matagalpa (Williams 1994). The latter two departments were areas where coffee had first been introduced and foreign cultivation had been most encouraged, therefore it is not surprising that these districts had a high percentage of medium- and large-scale farms as well as, possibly, latifundios. The percentage would most likely have been higher if not for the continued push of new smallholders on the eastern frontier (Denevan 1961, Radell 1969); Esteli and Nueva Segovia also remained frontier districts in 1909. The best conclusions to draw from the available land records in the North-Central Highlands throughout the late nineteenth and early twentieth centuries are that land was continuously in the process of being

privatized, was converted to coffee cultivation by both large and small landholders, and that indigenous access to the land was primarily on the agricultural frontier.

Capital and Credit

Though the availability of capital is an integral element of any agricultural system, the amount of capital needed to invest in a coffee farm varied considerably in Nicaragua, and was largely dependent on whether a new farm was being established or an old one converted. Charlip (1995) has interpreted the data included in Levy (1873) and maintains that investments could range from small infusions of cash to large sums of capital, ". . . depending on the number of manzanas planted, the level of attention given, and the level of technology used" (p. 290).

One of the more common forms of obtaining capital in Nicaragua was a type of short-term lending based on advance payments for upcoming harvests. Commercial banking was most likely not a source of capital for coffee farmers in the Highlands. In 1892 there were only two banks in Nicaragua, both based in the Pacific lowlands (Bureau 1892a). It appears unlikely that these two banks, or the small number of private bankers, engaged in any mortgage lending in the Highlands frontier region. Mortgage loans were usually obtained from private parties rather than commercial institutions. The hipoteca type of mortgage was used specifically for coffee-oriented lending (Charlip 1995). In the late nineteenth century the sale and

re-leasing arrangements of the pactos de retroventa developed as a direct result of the coffee economy, and were common in the Highlands. Though terms of the loans and repurchases could vary considerably, the pacto was a popular form of lending in the Highlands because it provided longer-term financing than the traditional short-term advances based on crop harvest (Williams 1994). However, the pacto de retroventa was a risky type of lending activity; many borrowers subsequently lost their land through inability to repurchase the farm (Charlip 1995).

Another element of the capital and financing situation in analyzing the Highlands is the role of foreign capital. Most foreign immigrants to the region had some form of capital before arriving, usually between five and twenty-five thousand dollars (Radell 1969). With the Nicaraguan government making land freely available, subsidizing cultivation, and providing tax exemptions, foreigners were free to use their capital to create large-scale coffee haciendas and pay the labor subsequently required. Williams (1994) has identified twelve large-scale (over 100,000 trees) coffee farms in Matagalpa and Jinotega at the time of the 1909 coffee census; ten of those twelve were owned by individuals with non-Spanish surnames, which would appear to indicate a prominent role for foreign growers in the emerging coffee economy of the Highlands. It is also likely that foreign capital subsidized Highlands *beneficios*, the processing centers for coffee after harvest. Despite the paucity of capital and credit data for the Highlands, it can

be concluded that foreign settlers probably played a significant role in coffee financing, and that smaller growers were able to gain access to capital through various means.

CONCLUSION

Though coffee was introduced into the North-Central Highlands in the 1840s or 1850s, it was only established as an important commercial crop in the region two decades later. By the 1870s coffee had assumed a place of primary importance in Nicaragua's export economy, and within a relatively short period of time government incentives had fostered development of the North-Central Highlands as a significant region of coffee cultivation. By 1892, the Departments of Matagalpa and Jinotega accounted for approximately twelve percent of the more than three million coffee trees under cultivation (Bureau 1892a). That percentage rose to over twenty-five percent by 1898 (Niederlein 1898). When the first coffee census was taken in 1909, the Highlands was well-established as one of Nicaragua's two primary coffee regions; nearly one-third of the coffee in Nicaragua came from the North-Central Highlands' four departments (Charlip 1995, Williams 1994).

Unlike the Southern Uplands, where a range of favorable factors led to a seemingly inevitable process, coffee cultivation in the Highlands required more concentrated efforts. In some aspects, the Highlands was perfectly suited for coffee cultivation; the physical conditions of the Highlands were perfect for coffee trees, and land was easily acquired since both settlers and the

government ignored indigenous land rights. However, those same two conditions meant that transportation was rudimentary and that the available workforce was minimal. With an underdeveloped local economy and its resultant lack of capital accumulation little impetus existed for economic development. The key element for the Highlands may have been the role of the Nicaraguan government. It was the government which, over successive years and administrations, enticed foreign settlers to come to the region and plant coffee. The government also made numerous attempts to guarantee a labor supply for these new agriculturalists and provide them with land. Without active government involvement, it is unlikely that the North-Central Highlands coffee region would have developed as rapidly or as successfully as it did in the years prior to the first coffee census in 1909.

CHAPTER VI

CONCLUSIONS

In the nineteenth century, the world coffee market underwent dramatic expansion. Increasing demand in the United States and the countries of newly industrialized Europe stimulated coffee production throughout Latin America. Central America, with the ability to grow the delicately flavored mild coffees most valued on the world market, also responded to increased market demand. By the time the Nicaraguan government conducted its first coffee census in 1909, coffee cultivation had expanded throughout the isthmus and all five countries were exporters to the world market.

From the time of its early cultivation, Nicaragua's coffee economy exhibited steady growth and coffee became increasingly valuable to the country (Table I). In the 1870s, at a time when Central America's coffee production began to skyrocket, Nicaraguan coffee cultivation was primarily restricted to the Southern Uplands. Coffee production in the Uplands had increased throughout the 1860s and by 1871 coffee accounted for nearly nine percent of Nicaragua's export economy, although the leading exports from Nicaragua were indigo, oilskins, and precious metals (Levy 1873). The expansion of cultivation into the North-Central Highlands throughout the

TABLE I

NICARAGUAN COFFEE EXPORTS, 1864-1909

Year	Amount Exported (lbs)
1864	90,300
1867	435,000
1871	1,234,400
1879	3,529,300
1880	4,528,300
1881	4,698,200
1882	7,328,300
1883	5,458,100
1884	7,238,400
1885	7,052,500
1886	7,253,100
1887	6,847,000
1888	8,816,600
1889	8,414,500
1890	11,382,000
1891	9,154,000
1897	14,355,702
1901	12,782,600
1903	18,173,900
1905	19,876,000
1907	18,456,500
1909	18,350,000

(Bureau 1892a, Charlip 1995, Lanuza 1983, Niederlein 1898, Radell 1969)

1870s and early 1880s increased coffee's stature in Nicaragua's economy; by 1890 coffee was the most valuable export commodity in Nicaragua (Bureau 1892b). Coffee maintained its primacy in the Nicaraguan economy until well into the twentieth century and is still one of the country's most valuable commodities today. Nicaragua's place in Central America's coffee economy also remained fairly constant throughout its expansion (Table II). Almost ten percent of Central American coffee production for 1885 was from Nicaragua, although Costa Rica and Guatemala were clearly the dominant producers and even El Salvador produced more coffee than Nicaragua. In 1909 both Nicaragua and Central America as a whole had nearly doubled coffee production; Nicaragua still ranked fourth and its ten percent market share was virtually unchanged.

COFFEE REGIONALIZATION IN NICARAGUA

With its two distinct zones of coffee cultivation, Nicaragua provides a unique opportunity to examine the introduction and expansion of coffee cultivation. The Southern Uplands occupy a distinctly different segment of the Nicaraguan landscape than do the North-Central Highlands; physically, socially, and economically the regions are distinct from one another. Coffee cultivation in the Southern Uplands was well-developed prior to the establishment of the North-Central Highlands as a coffee region; this temporal distinction also allows the opportunity to examine regional development over an extended period.

TABLE II

PRODUCTION OF COFFEE IN NICARAGUA AND CENTRAL AMERICA, 1884-1909

Years	Nicaraguan Production (lbs)	Central American Production (lbs)	Nicaraguan Production as % of Total
1884-1889	9,260,000	94,313,000	9.8
1889-1894	12,611,000	123,063,000	10.2
1894-1899	9,039,000	125,046,000	7.2
1899-1904	18,519,000	172,050	10.8
1904-1909	17,857,000	1945,727,000	9.1

(Torres 1993)

Pre-Coffee Economy

The initial introduction of coffee into both the Southern Uplands and the North-Central Highlands was conditioned by previous economic development and commercialization. For farmers and estate owners in the Uplands, transition to the export-oriented cultivation of coffee was a relatively easy process. Not only was the Uplands a center of previous agricultural development, but the local populace was familiar with the concepts of the cash economy and market-oriented production. The transition process was not so simple in the Highlands. Prior to the introduction of coffee, the Highlands was an economic backwater, a frontier region of primarily subsistence farming. While cattle and mining were nominally present in the Uplands, the introduction of coffee was a major developmental event in the Highlands; coffee represented an entirely new concept of production and economy for the majority of the region's inhabitants. Differing levels of previous economic development at least partially account for the growth of the Southern Uplands coffee region while the North-Central Highlands coffee region developed only at a later date.

Transportation

In the Southern Uplands, transportation networks were the most developed in the country prior to coffee cultivation, yet were still underdeveloped, slow, and inefficient. Nevertheless, proximity to the trade hub of Granada and Vanderbilt's trans-isthmusian route counteracted the

shortcomings of the system. After the Uplands became involved in coffee cultivation, the transportation network grew to accommodate it; the development of improved roads and railroad linkages reinforced the region's coffee production and solidified its economic health. In stark contrast, transportation severely restricted the development of the Highlands as a coffee region. The one link between the Highlands and a major trading center was the long, tenuous journey between Matagalpa and Leon. This sole external link, combined with the virtual impassability of internal transport, helped limit cultivation to the local hinterlands of towns such as Matagalpa and Jinotega. Inaccessibility to market and expensive transport costs were a major obstacle to the emerging coffee economy of the Highlands. The conclusion to be drawn here suggests that transportation was a major element of development or the lack thereof in both regions. Proximity to transshipment points and a relatively extensive system of transport almost certainly contributed to the rapid development of the Southern Uplands, while isolation, non-existent transport linkages, and greater distance for shipment of goods were hindrances to the development of the North-Central Highlands.

Government Promotion

Government promotion and boosterism also proved to be a significant influence in each region. The Uplands was the first region to benefit from a post-independence governmental emphasis on new export commodities. It is

possible that the Uplands may have expanded coffee cultivation rapidly without government support, but exemptions and subsidies made conversion to coffee almost irresistable for both local elites and peasant farmers. Tax exemptions, military exemptions, and outright cash prizes were all designed to foster coffee cultivation, and growers in the Uplands responded enthusiastically. Coffee cultivation in the Highlands was also intimately linked with government promotion. It is highly unlikely that the Highlands would have developed as a coffee region at the time and in the shape that it did without governmental activity. Not only were the earlier subsidies and exemptions in place when coffee was introduced to the Highlands, but a great deal of legislation was directed specifically at encouraging coffee cultivation in the Highlands. Land giveaways, foreign settlement, and planting subsidies were all methods which the government used to foster coffee culture; these methods were the manifestations of a national policy which, in effect, invented the North-Central Highlands as a region. Nicaraguan government policies ensured that the Highlands would be an area of land colonization, foreign and domestic immigration, and economic development, all of which resulted in regional development and the establishment of coffee culture. In both regions, the involvement of the Nicaraguan government was integral to regional formation. Not only did the government actively promote the introduction of coffee, but it also

established economic foundations which were vital in creating agricultural zones focused on coffee culture.

Labor and Population Structure

Labor availability was also a significant influence on regional formation, though the Uplands and the Highlands were each affected differently. The labor shortages which plagued Nicaragua throughout the nineteenth century were less serious in the Uplands than the Highlands. In the Uplands proximity to the major population centers of western Nicaragua at the very least provided a large pool of available labor during the harvest season, when it was most crucial. The key to tapping this resource lay with governmental intervention into labor administration. National labor laws, though only partially effective, appear to have ensured enough labor in the Uplands for large-scale coffee development to proceed unhindered throughout the late 1800s. Faced with indigenous resistance, an extremely small population base, and the temptation of the agricultural frontier, coffee expansion in the Highlands was even more dependent on governmental administration of labor laws. Without government efforts to enforce labor contracts and round up delinquent workers, the foreign settlers enticed to the region would have experienced difficulties in harvesting and maintaining their newly-formed large coffee estates. These estates, in turn, were important in establishing the Highlands as a region of coffee cultivation. Differing population bases and proximity to freely available land meant that

the Uplands was more easily able to overcome potential labor difficulties than the Highlands; this may at least partially account for the earlier and more rapid development of coffee cultivation in the Uplands.

Land Tenure and Access

From the available evidence, it can be concluded that land was generally available throughout the whole of Nicaragua during the nineteenth century. The Uplands, despite a relatively large population base and prior development, contained available land for expansion until at least the turn of the century. The Highlands region, on the agricultural frontier, had even more vacant land in the course of its development. The Uplands were characterized by a mix of large and small private landholdings prior to the introduction of coffee, a mix which persisted throughout the expansion of cultivation. In the Highlands, pre-coffee landholding was almost exclusively communal; coffee culture changed this immensely: communal lands were privatized with the introduction of coffee culture. This change in the nature of landholding reflected an even greater landscape transformation for the Highlands: from indigenous to mestizo, from subsistence to market-driven. Resultant landholding sizes in the Highlands displayed a mix similar to the Uplands, with both large and small farms found throughout the region. The open agricultural frontier also guaranteed that smallhold farms, including those of displaced indigenous groups, would continue to play a role in the region's development. The nature of land availability and structure (private

holdings, available land, mixed farm size) was essential for the development of both the Uplands and the Highlands. While it can be argued that the Uplands was little changed by the advent of coffee cultivation and that land ownership in the North-Central Highlands was dramatically altered, neither region was faced with serious land availability issues which might have constrained coffee production.

Capital and Credit

The availability of capital was also different in each region. Capital for coffee cultivation appears to have been generally available in the Uplands. Prior economic development (and the resultant elite classes) had established a certain amount of wealth which could be used to initiate coffee cultivation. Private lending, despite sometimes onerous lending terms, was available to virtually anybody with desire to grow coffee. While private lending was also a factor in Highlands coffee cultivation, there was actually less capital to finance lending; the Highlands lacked a distinct elite class which sought to foster development. It was only with the arrival of foreign immigrants that a great deal of capital became available for coffee cultivation. This infusion of foreign capital was a key factor which helped develop the Highlands as a coffee region. Capital is an essential element of any market-oriented agricultural system, yet its full impact in Nicaragua is unknown, particularly the role of foreign capital penetration into the country. Both coffee regions,

however, benefited from the ability of private interests to finance coffee cultivation and processing.

DEVELOPMENT AND CHANGE

So what conclusions can be reached regarding the development of Nicaragua's coffee regions? Which factors appear to be essential not only to agricultural transition and expansion but also to regional distinctiveness in the Uplands and the Highlands (Table III)? Both regions possess the requisite physical resources for growing coffee, yet the Southern Uplands certainly developed earlier and more rapidly than did the North-Central Highlands. In the Uplands, there were almost no limitations on the coffee economy; there was sufficient economic infrastructure, land, labor, capital, and transportation connectivity to ensure the expansion and continued production of coffee. Land was also available in the Highlands, but labor availability was often problematic, economic infrastructure was almost non-existent, capital was late in arriving, and transportation linkages were poor. The implication is that transportation is perhaps the major variable, but the role of government must also be considered. Governmental exemptions and subsidies impacted coffee's introduction and its expansion in the Uplands, yet was most likely not essential to its growth. The opposite is true for the Highlands; without active government intervention this region would certainly not have developed as Nicaragua's second coffee region, or perhaps as any economically distinct region at all.

TABLE III

CHARACTERIZATION OF FACTORS OF DEFINITION AND DEVELOPMENT IN THE SOUTHERN UPLANDS AND THE NORTH-CENTRAL HIGHLANDS

	Southern Uplands	North-Central Highlands
Pre-coffee economy	- relatively well-developed - market-based - commercial agriculture/ cattle	- underdeveloped - subsistence agriculture - minimal market focus
Transportation	- most effective in country - proximal to major trading centers/ ports	- isolated - one long linkage to trading center/ port
Government promotion	- trade subsidies - tax exemptions - government/ elite ties	- trade subsidies - tax exemptions - land/ coffee seedling giveaways - promotion of foreign immigration
Labor and population structure	- settled, populous region - minimal indigenous presence - generally available labor - state labor guarantees	- sparsely settled, minimal population - large indigenous population - labor difficulties - active state intervention to guarantee labor - European, US immigration
Land tenure and availability	- generally available land - mixed landholding sizes	- abundant land (frontier) - communal to private ownership transition - mixed landholding sizes
Capital and credit	- local elites as lenders	- foreign immigrants as lenders

In the case of Nicaragua, one is left with perhaps inevitable conclusions concerning the factors framing these two coffee regions. Land, labor, and capital were vitally important in providing a foundation for coffee cultivation. Previous economic development, though certainly a positive factor in the Uplands, was not an insurmountable obstacle for the Highlands; previous development can be disregarded as a major factor. Government can play a major role in development; this is undoubtedly true in Nicaragua, where the government was an essential player. Which leaves one to consider transportation. Linked to both previous economic development and government influence, transportation does indeed appear to be a vital element in the equation; transportation facilitated the development of the Uplands while at the same time it was a major impediment to development of the Highlands.

Though it is difficult to qualitatively assess the complicated interplay of the various factors which define each coffee region, this study suggests that transportation and government promotion are the factors which most account for the differences in the introduction, expansion, and definition of the Southern Uplands and North-Central Highlands coffee regions. The Southern Uplands, located in the Nicaragua's Pacific heartland, was an important element of the Nicaraguan landscape prior to coffee cultivation, and benefited from early transportation linkages as well as proximity to the national political power structure (dominated by economic elites based in or

near the Uplands). Transportation and government activism changed the Uplands economically, but did not substantially alter the social landscape of the region. Today the region remains at the core of the Nicaraguan heartland, a well-settled, economically viable coffee zone. The Highlands developed only after active government promotion, and transportation links remained poor throughout the time period of this study. Coffee became the justification for development of the Highlands, and the means through which the state exerted hegemony over a large portion of national territory. In the Highlands, transportation and government intervention had a much greater impact than in the Uplands. Not only was the Highlands changed economically, but its demography, landholding structures, indigenous communities, and role in the Nicaraguan state were dramatically altered. This understanding of the importance of government activism and transportation linkages can not only provide a vital historical perspective on the modern Nicaraguan landscape, but also a focus around which future discussions of economic development can center.

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