Changing Forests

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Collective Action, Common Property, and Coffee in Honduras

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I dedicate this book to

La Campa

My parents
Janice R. Tucker and Tom H. Tucker

And the memory of
Robert McC. Netting

Preface

Mario Ardón Mejía, a Honduran sociologist, took me to La Campa for the first time in 1992. I was looking for a research site, and he invited me to accompany him on a previously scheduled trip to visit farmers involved in an integrated pest management project. I saw many interesting and promising sites throughout western Honduras. La Campa was not on the itinerary, but when we got close, he suggested that we stop by to see some friends. The visit was brief, but intriguing. By the time the trip ended, I knew that I had to go back to La Campa. I returned in September 1993 for a year of dissertation fieldwork studying the political ecology of communal forest management. As I returned to La Campa in subsequent years, export coffee production emerged as a major economic activity and became part of my research. Although La Campa has experienced many changes that could have led to deforestation, the people have maintained forest cover and made choices that have helped it to expand. This book explores the complex, often contradictory relationships between the people and their natural resources, and why forest cover endures.

Doña Alejandra and Don Manuel are gone now, but I want to thank them for welcoming me to La Campa. When I first stepped off the bus in the Centro Urbano of La Campa to begin my research, I had no idea where to go. They saw me from their front porch and invited me over. I drank my first cup of coffee with them that afternoon, and they offered me all that anyone could—friendship, kindness, a place to sleep, eat, sit, and simply talk. It is remarkable that they offered these immense gifts freely to all who came to their door.

It is also too late to show this book to Don Claudio García. The last time we talked, he told me that I would not see him again, and I did not wish to believe him. I think he realized how much I valued his friendship and trust. Thank you, Don Claudio, for your willingness to share your recollections of a lifetime of hard work, difficult decisions and unexpected repercussions, and even more for your example of integrity in the face of adversity.

I am deeply grateful to all the people in La Campa for their friendship, support, and patience. I have asked more questions about obvious points than anyone had a right to do, and it must have been perplexing when I didn't immediately grasp things that were apparent to even the youngest child in La Campa. I have tried to do justice to all that they have tried to teach me, although I suspect that I was not the most able student they might have encountered. If I have misunderstood or misrepresented anything, I apologize.

Many people deserve special thanks. I did begin to write a list of everyone who should be acknowledged, but I soon realized that it would be almost as long as this book. I am especially grateful to the people of the Centro, Arenales, San Matías, Monqueta, Jilguarapis, and Cruz Alta for the endless hospitality they have shown me over the past years. Four serving alcaldes as well as a number of former alcaldes and past members of La Campa's *cabildo* have generously shared their knowledge and experiences. They opened the archives for me, an amazing repository of more than 80 years of municipal life, strife, and quotidian detail.

Martha Lizeth Moreno and Jessica Fonseca have helped me collect forest mensuration and household survey data over the course of 8 years. I thank Victor Archaga for introducing them to me. They have made work a pleasure, and their dedication and good humor have greatly eased the challenges of fieldwork. They tracked down, over the course of many days, some of the official sources that I use here. Jessica sacrificed time with her young children in order to assist me, and Martha juggled numerous competing commitments to continue our collaboration. I am privileged to have them as friends and colleagues.

The foresters and office staff whom I met at the Gracias Management Unit of COHDEFOR were unfailingly helpful. They helped me sift through the piles of documents in the archives and patiently answered questions. I admire their courageous assessments of COHDEFOR's checkered past, their pragmatism, and their commitment to improve forest management in Honduras, even if we may differ on some of the details.

The Center for the Study of Institutions, Population, and Environmental Change (CIPEC) has provided an incomparable environment to pursue interdisciplinary collaboration. Emilio Moran gave me the chance to work at CIPEC and has consistently offered valuable advice; I am grateful for both. Elinor Ostrom has been a constant source of inspiration; I cannot thank her enough for her insights, helpful comments, and example of collaborative scholarship. J. C. Randolph has been a guide to me for the world of forestry. His collaboration has allowed me to address complex questions about the interrelationships between people and forests, and I could not have hoped for a better colleague. Darla Munroe, Harini Nagendra, and Jane Southworth have been incredible collaborators, and I have learned much from them about remote sensing, GIS, and modeling. I wish them all the best as life disperses us to different corners of the world. Sean Sweeney helped create the figures for this book, and patiently worked through successive refinements. Joanna Broderick helped edit the manuscript, and transformed it into a consistently formatted and presentable work. The book is better for her skilled attention to detail.

The faculty and staff of the Department of Anthropology at Indiana University have given me an outstanding professional home. I am grateful to be a part of such a congenial group of colleagues, and especially appreciate the thoughtful inputs from Eduardo Brondízio, Anya Royce, and Rick Wilk during the process of writing this book.

The Workshop in Political Theory and Policy Analysis at Indiana University has exposed me to new perspectives on institutional analysis and given me the opportunity to participate in vigorous intellectual debate. I look forward to many more exciting

conversations in the Workshop and collaborations with its multidisciplinary community of scholars.

I benefitted greatly from the graduate training that I received at the University of Arizona. When I was trying to decide where to go for graduate school, I called Bob Netting's office (never expecting that he would pick up the phone) and ended up talking with him for almost an hour about shared interests. I found in him the mentor I had been seeking, and learned more than I can say from his insights, challenging questions, and provocative comments. I miss his intellectual fire and incomparable humanity. Tom Sheridan has been a touchstone for me over a number of years, and he has shown me the potential of anthropological skills to make a contribution to real-world challenges. Ana Alonso has been a gracious advisor and friend; I especially appreciate her example of imbuing teaching and scholarship with concern for building a more just world. I am grateful to all three for their guidance, and hope to follow their examples.

The research encompassed in this book received generous support from a number of sources. A National Science Foundation (NSF) Doctoral Dissertation Improvement Program Grant (SBR-9307681) and a University of Arizona Graduate Research Grant funded my first two periods of fieldwork. NSF grant SBR-95219218 to CIPEC, established by founding Co-Directors Emilio Moran and Elinor Ostrom, provided funding for the remote-sensing analysis, forest mensuration research, and ground truthing. An Indiana University Summer Faculty Fellowship helped to support a summer of fieldwork, and a College of Arts and Humanities Institute Research Fellowship granted me a teaching leave that opened time for me to work on this book. Through the Inter-American Institute (IAI) Small Grant Program and an IAI Collaborative Research Network Program Grant, I have been able to develop my research on the impacts of coffee production on the people and forests of Honduras. It has been a pleasure to work collaboratively with Edwin Castellanos and Hallie Eakin on both IAI grants.

My mom read every draft of this book, and let me know when my writing became muddled in scholarly detail. My dad always had an encouraging word. I am unable to find the words to express my gratitude for a lifetime of unwavering love and support.

Percy and Alec, thank you for your steadfast love and patience.

Bloomington, IN Catherine M. Tucker

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Chapter 1
Introduction

The bus jostled and jolted over the dirt roads. Dust wafted over cramped passengers clutching bags of vegetables, wiggling toddlers, and an occasional chicken clucking from the restraints of a string bag. At last the bus began to groan up a steep hill and trees crowded closely. After miles of denuded hills and open pastures that characterized much of western Honduras, I welcomed the sight of La Campa's pine-covered slopes and mountains. This is where I would be conducting research on communal forest management. La Campa had expelled the national government's forest management corporation and ended logging in 1987. The people reclaimed rights to govern their communal forests, despite a law that declared all trees to be state property. In other parts of the world, state intervention in communal forests had undermined local management and accelerated deforestation (cf. Jodha 1992; McKean 2000; Nagendra 2002). I wanted to understand how the people of La Campa had dealt with the national government and why their forests endured.

I soon discovered that the forests had not endured so much as recurred. During a long walk with a guide to a mountain village, I admired a thick stand of pine trees along the path and wondered aloud at their age. "Those trees are about 40 years old," my guide asserted. "My father planted maize here as a young man, and no one has cleared it since."[1] I was curious whether it was typical for land to be left fallow for long periods, and began to ask people about the history of La Campa's forests and fields. They explained the agricultural cycle of forest clearing and regrowth, and traditions of communal land governance that for generations had encouraged long fallows. To my eyes, the old fallows were indistinguishable from forest, but the people knew the history of the landscape with more detail than I knew the streets of my home town. When I started to explore the people's experience with state-led logging, I discovered a drama that had played out over the course of 14 years. The people who led the grassroots movement had put themselves at risk to oppose the loggers and the state, and most of the population had supported overt resistance. Given their determination to stop logging, I expected to discover that forest conservation was a priority. Instead, I learned that most people had more pressing concerns. They worried about producing enough food to feed their families, the price of fertilizer, lack of income, and the difficulty of obtaining health care. Although people varied in their perceptions, I heard many statements similar

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to what one young mother expressed: "You have to work very hard here to get anything. It is a poor place, and it's difficult to obtain economic resources. … Everything is expensive, and you can't produce enough to get what you need; maybe maize and beans, but not other food or clothes that you might want."[2]

My first period of fieldwork in La Campa lasted 11 months (September 1993–July 1994). My husband and I rented a one-room adobe house in the village of La Campa, which residents call Centro Urbano or Centro to distinguish it from the *municipio* (a political unit similar to a US county). Following a Honduran tradition, the municipio is named for the settlement that serves as the seat of municipal governance. I met with municipal authorities, attended the monthly council meetings, and surveyed all of the 108 households in the Centro and its adjacent neighborhoods. Most residents had at least one agricultural field in the moist, cool highlands. No roads penetrated La Campa's mountains, and only one marginal road connected La Campa to the department (state) capital to the north and the neighboring municipio of San Manuel de Colohete to the south. I could not afford a horse, so I hiked to most of La Campa's villages, and crossed the mountains to neighboring San Marcos de Caiquín (hereafter Caiquín) and Santa Cruz. Over time, I gained the stamina to climb, without stopping, up the steep escarpment that separated the lowlands from the highlands. Elderly people, accustomed to the climb throughout their lives, could still beat me up over the rocky cliff.

Farmers taught me how they planted, weeded, and picked maize; they produced nearly a dozen varieties. I accompanied men and women as they went to collect firewood; I learned to wield a machete but never managed to balance a load of firewood on my head like the other women. I measured and weighed pieces of firewood to estimate annual rates of extraction, and learned local names for many trees and plants. Nearly every growing thing had a use. Their traditions reflected an indigenous Lenca heritage and intimate knowledge of their environment. I lived in La Campa for 4 months before I discovered that Lenca agricultural rituals were still practiced in secret, which provided another clue to the people's attitudes toward natural resources.

Over the months, I encountered many apparent contradictions. In the highland forests, it was possible to walk for an hour between villages without seeing more than a few homesteads and perhaps a dozen scattered fields. In the lowlands, however, the landscape presented a patchwork quilt of fields, pastures, fallows, and communal forests. The mountain forests looked verdant but the lowland forests had sparse, scraggly pines. I learned that the lowland forests were the ones that had been logged, and their conditions reflected the lingering effects of erosive logging practices as well as centuries of local use. These degraded forests had few protections to support their regeneration. A prohibition on commercial timber harvesting held firm, but people collected firewood from communal forests freely. The only constraints appeared to be municipal laws prohibiting the use of chainsaws and the sale of firewood or timber outside the municipio. Although people expressed concern for forest conditions, they also noted that trees were abundant. Indeed, beyond the houselots and villages, stands of pine and oak dominated the landscape.

Elders recalled denser, more diverse forests than what I was seeing, and they regretted the loss of the massive trees and seemingly endless forests of their childhoods. Their shared memories indicated that La Campa had experienced forest degradation and a loss in total forest cover over the previous half century. People concurred that the greatest degradation had occurred during the period of state-led logging. The destruction of their forests by outsiders had compelled the majority of residents to organize against logging. Comments also revealed an appreciation for forests and their many uses. One man exclaimed, "There is an infinity of things from the forest!" Although the people had brought logging to an end, I did not find a well-organized effort to protect communal forests. Instead, a number of farmers explained that they had fenced off parcels of forest to protect them from incursions. Their reasons varied; some held them as a reserve for future agriculture or their children's inheritance, many used them as private woodlots or grazing areas, and a few planned to leave their forest parcels untouched, especially if they sheltered springs or streams. Several farmers simply said that forested land provided many benefits. A household survey showed that nearly 80% of the households held fallow or forested land. Fallows varied in reported age from less than a decade to more than 50 years.

My interest in La Campa originated in part because the people appeared to have avoided at least some of the negative outcomes that could have been expected when the Honduran government nationalized the nation's trees and promoted timber extraction. From a theoretical perspective, La Campa presented elements conducive to successful common-property arrangements. These included (1) secure land rights through legally recognized community titles, (2) a long history of participatory local governance, (3) easily accessible mechanisms for mediating disputes, and (4) experience with self-organization and collective action. They appeared to value forest resources, given their opposition to logging. Moreover, the people shared many experiences and had frequent face-to-face interactions, which help to develop trust and social capital that facilitate cooperative management of natural resources (Dietz et al. 2003). At the same time, they did not seem to perceive trees as scarce, and the perception of scarcity is typically a prerequisite for collective efforts to protect a resource (Baland and Platteau 1996; Gibson 2001).

By the time my first period of fieldwork came to an end, I had discovered a series of conundrums and apparently contradictory trends. My observations confirmed that La Campa had more forest than many nearby municipios, but the prohibition on commercial logging did not seem to provide sufficient explanation. Forested land was still being cleared for agriculture, although other parcels were being left fallow. While a segment of the population complained about forest degradation, local authorities who appeared most knowledgeable asserted that La Campa's forest area was stable or increasing. One Honduran forester (who did not have a vested interest in La Campa) told me that parts of the municipio were regenerating beautifully despite the period of avaricious timber extraction. I observed degraded areas as well as forest regrowth, but the view on the ground made it difficult to discern an overall trend in forest change. Moreover, traditional practices of temporary, shifting maize fields with slash-and-burn methods were fading due to

opposition from national policies and transitions in farmers' preferences. Farmers were demanding permanent land rights to maize fields; they had begun to cultivate land for extended periods and hold on to fallows that in former times they would have abandoned. The process of privatization appeared to increase commitment to the communal forests used as woodlots; residents organized to fence these forests and expel unauthorized claimants. Nearly 100% of the population still depended on subsistence production of maize and beans to feed their families, but farmers were adding market-oriented coffee production to their activities. In other parts of Honduras and Latin America, processes of commodity production, market integration, and dissolution of traditional practices have been implicated in the degradation of natural resources (e.g., Humphries 1993; Stonich 1989; Tucker 2000). La Campa's council made seemingly contradictory choices; some decisions appeared to protect forests while other decisions allowed new clearings. The council advocated forest conservation yet granted large parcels of mountain forest to aspiring coffee producers. Across the population, residents expressed concern for future supplies of firewood even as they asserted the abundance of trees. They had no viable alternative for fuel, so tree cutting continued.

These contradictions drew me back to La Campa again and again. Over the course of 14 years, I applied a variety of data-collection methods and analytical approaches to interpret what was happening. I conducted three household surveys (in 1994, 1997, and 2003) and well over 200 interviews with local authorities, foresters, representatives of government and nongovernment agencies, and experts on relevant topics. Informal conversations with La Campa residents and participant observation generated over 1,000 pages of field notes. On several occasions, I studied historical documents in the national library and regional offices of the Honduran Forestry Development Corporation (COHDEFOR), and I spent 6 weeks studying La Campa's municipal archives in 1995. Through collaborations with foresters and botanists, I obtained forest data and observations (1997, 1998, and 2000) to address my questions about forest conditions. In order to gain insights to forest and land-cover change processes, I began to work with remote-sensing experts in 1997. We developed a time series of analysis of land-cover change over a 13-year interval with four Landsat TM images (1987, 1991, 1996, and 2000) (Munroe et al. 2002; Southworth and Tucker 2001). Analysis of the images required collection of on-the-ground observations of land cover (training samples[3]), which were collected in 1997, 1998, and 2000. Additional interviews with landholders helped to reconstruct land-use histories. During every visit, I participated in daily life and special events. Informal conversations over meals, during work in fields, and while walking through forests with La Campa residents provided insights to lives and perspectives that were not apparent from the results of more formal interviews and surveys. Many of these insights, along with people's words and experiences, have become part of this book. To protect people's anonymity and privacy, I have changed the names of everyone except outside actors and external authorities whose names are part of public record.

Across these years, I gained an appreciation for the histories that had shaped La Campa's people and their land. Archival work and oral history gave the impression of comparatively slow change during the preceding century. I, however, witnessed

transformations at a pace that appeared to be unrivaled since the Spanish Conquest. In 1993, one bus per day passed through from San Manuel de Colohete to take people to Gracias. There were fewer than ten vehicles in La Campa; only the priest, telegraph operator, alcalde (mayor), and a few better-off farmers owned pickup trucks. By 2001, the number of residents with vehicles tripled, and up to five buses passed through each day to Gracias. Each of the municipio's villages finally obtained a 6-year primary school, and the number of students attending La Campa's only secondary school (which had opened in 1993) almost doubled. Increasing educational attainment, combined with employment opportunities in schools and development projects, reduced many young adults' dependence on agriculture. The production of coffee expanded sharply between 1990 and 2000 to become La Campa's most important commodity and income source. Its expansion occurred in conjunction with land privatization, increasing social heterogeneity, and the gradual transformation of prime mountain forests and fields to coffee plantations. At the same time, municipal authorities began to enforce new local and national laws that protected forests. The Catholic Church added support for youth programs that provided a forum to disparage indigenous traditions, and accentuated tensions between elders who held faith in earthly spirits and young adults who embraced dominant Christian ideology. The turn of the millennium brought satellite telephones to La Campa, and communications were revolutionized. For the first time, residents could contact people outside of La Campa without having to travel to Gracias or send a telegram. In 2003, electricity reached the Centro, and mountain villages will soon be linked to the grid (perhaps by the time this book is published). Electricity facilitated the construction of an Internet center supported by the municipal government and international funding; La Campa gained unprecedented access to information about the rest of the world. Cellular telephones also arrived in the first years of the new millennium. For the average household, however, the most important advance is probably potable water. Villages endeavored for years to build water supply systems. Today, nearly all of La Campa's villages and hamlets benefit from clean drinking water provided through communally built, locally managed systems.

Rapid change presents a challenge for an ethnographer. It is difficult to write about the ways of life of a people when they appear to be undergoing major transitions. Anything I write today as representing people's lives and beliefs may be changing by tomorrow. I recognize that my focus on change reflects a broader trend in scientific and anthropological endeavors that has recognized ecological dynamics, globalization processes, and social transformations as paramount issues. Scientific interest in chaotic transformations has emerged in association with rapid social and environmental change, and new insights to ecological and social processes have disproved previous constructions of social equilibrium and ecological climax communities (Worster 1997). These scientific advances have contributed to my perceptions of transformations in La Campa. It is somewhat ironic that part of my research rests on data that show enduring and increasing forest area through time. La Campa's forests are surviving in a context of ongoing transformations; they are *not* stable units. Instead, these forests exist as dynamic patches on a landscape with some contiguous areas of relatively constant forest presence.

Through this book, I explore the conjunction of sociocultural, historical, and political factors that have encouraged La Campa's people to retain forest cover, even as it experiences transitions and reflects historical degradation. People's choices and actions over time are resulting in processes of forest change that do not fit neatly into Western categories of deforestation or conservation. While Westerners and environmentalists tend to understand conservation in terms of keeping people out of forests, La Campa's residents want to maintain forests because they are useful and integral to livelihoods. Sociocultural, political-economic, and ecological dimensions have interacted to shape social change and forest transformations, but in different ways through history. As cultural practices, state interventions, and linkages to markets have changed, so too have people's perceptions of forests. In recent decades, national policies, top-down programs, and nongovernment organizations have also increased their influence in rural Honduras, with mixed ramifications. La Campa's experience shows that transformations in livelihoods and forests reflect a range of choices made by many people in adaptation to local and external processes. By examining the nexus between local and higher-level contexts, I consider why transformations in forest cover have been transitory or cumulative. I suggest that La Campa's experiences entail promising as well as cautionary dimensions for broader efforts to encourage sustainable forest management.

Forest Change and the Challenge of Sustainable Management

During the past several decades, forest-cover change has received increasing attention. Most of the attention focuses on deforestation, due to its ramifications for climate change, soil and watershed conservation, biodiversity, food security, and survival of forest-dwelling cultures (Anderson 1990; Bonnie et al. 2000; Nelson 2005; Pimental et al. 1997; Shvidenko et al. 2005). Studies have revealed much about the causes and consequences of forest degradation and loss, and recognized that human impacts vary across regions (Angelsen and Kaimowitz 1999; Geist and Lambin 2002; Imbernon 1999; Laurance et al. 2002; Moran 1992; Rudel 2005). Despite numerous programs and policies designed to reduce deforestation and foster sustainable forest management, no reliable approaches have been found to work in all situations. It has become clear that facilitating sustainability requires more than understanding causes of deforestation or preventing forest destruction. It requires sensitivity to sociocultural, institutional, environmental, and political-economic contexts as well as to the motivations of the actors whose decisions and behaviors shape the fate of a forest (Brosius et al. 2005). There are no formulas or panaceas to assure sustainable management (Ostrom 2007), and more comprehensive study is needed to understand the diverse sets of conditions in which people conserve forests, foster regrowth, and control degradation.

Although deforestation is often thought to result in permanent forest loss, it can be a transitory stage within larger social and ecological processes. In frontier zones, for example, researchers have observed that a forest transition occurs

through time. Early in settlement, colonists clear forests for agriculture and forest cover declines dramatically. Later, areas that prove to be too marginal or unprofitable for agriculture are abandoned; as economic development occurs, forests begin to regrow (Rudel 1998, 2002). Forest transition theory integrates natural processes of forest succession with demographic change and economic development. It has useful aspects for interpreting longitudinal change and recovery in forests, but it is not clear how well it applies to areas where people have used and transformed forests for generations as in western Honduras.

Dominant approaches to sustainable forest management generally aim to limit human-caused change, but they depend on assumptions of what is "natural." Western thought tends to dichotomize "humans" and "nature," thus conceptualizing humans as unnatural agents rather than as an integral part of the natural environment (Dove 2001; Moran 2006). Yet humans have been changing their environments for millennia, and most of the world's forests have been transformed by the humans who live in and near them (Corlett 1994; Keddy and Drummond 1996; Williams 2003). Changes continue as human actions, climate, and biophysical processes interact. We know that human-forest relationships are dynamic in space and time. Not only do we find patterns of change over long time periods (as in the forest transition theory), we also find complex patterns of forest regeneration and maintenance in relatively small areas and short time periods (Munroe et al. 2002; Tucker and Southworth 2005). Nonetheless, many studies of forest change use aggregate data for large regions or entire nations. Summary statistics provide an oversimplified perspective on forest transformations by overlooking the variability in change processes at local levels. Such data can misrepresent reality, because they create a composite representation rather than reveal the contexts of a specific place. To further complicate matters, conceptualizations of "forest" and "sustainability" vary. Forests carry many fluid and malleable meanings for people as they interact with changing social and political-economic contexts. The concept of sustainability carries its own thorny challenges, because exactly what is to be sustained and how it is to be done are issues subject to wide interpretation. Within this text, I adapt the Brundtland Commission's recognitions that sustainability entails meeting current needs without compromising the ability of future generations to meet their needs (Brundtland 1987). Even if people agree on what constitutes sustainable management of a given resource base, which is not usually the case, considerable uncertainty remains about the level of extraction or use a resource can bear without suffering degradation, particularly given climate change and unforeseeable human or natural disasters. Sustainable forest management is difficult because in many ways it is a moving target.

Even where people live in forest environments without causing obvious destruction, human activities can mimic natural processes and introduce subtle changes. Although pristine forests no longer exist, it can be difficult to assess how humans have shaped what we observe today (Schmithüsen 1997). Forests may best be understood as the mutable result of ongoing coevolutionary processes between human populations and the biophysical environment (Gomez-Pompa and Kaus 1999). The tropical dry forests of Central America offer a case in point. People have exploited and transformed these forests for thousands of years, and it is unlikely that any of them have escaped

human interventions (Williams 2003). Compared to rain forests, tropical dry forests have received much less attention, but they provide crucial environmental services and forest products for human populations. People depend on watersheds, timber products, nontimber products, and recreational opportunities provided by tropical dry forests (Murphy and Lugo 1986). Management of these forests, given their long history of human transformation, cannot be about protecting undisturbed ecosystems. Instead, effective management implies maintaining the vegetation and environmental services upon which people and other living organisms depend, and mitigating drastic transformations that could threaten the survival of forests and their dependents. La Campa's experiences contribute to understanding the management challenges and possibilities for long-exploited tropical dry forests.

National policies often aim to exclude or fundamentally alter patterns of human use in forests, even when the forests are integral to human livelihoods. In Honduras, the national government has sought to end slash-and-burn agriculture due to the risks of fire and erosion. By focusing on the elimination of slash-and-burn agriculture, policies and government programs overlook other human-related causes of forest fires, including the burning of garbage, intentional burns to encourage the growth of forage for livestock, and unintentional forest fires sparked by hunters, loggers, or road workers who heat their meals. Between 1975 and 1992, only 9% of Honduras' forest fires were attributed to slash-and-burn agriculture, but it was still blamed as the main cause (Hernández 1992). Policy makers seem to ignore that slash-and-burn agriculture can contribute to the regrowth and maintenance of pine forests; once a slash-and-burn field is abandoned, pines sprout and grow vigorously. Under traditional systems, pine trees reach maturity before they are cut again. If forest fires are eliminated or drastically reduced, it is not known what effects this could have on the regeneration of the pine forests that provide most of Honduras' commercial timber.

Around the world, misperceptions about human roles in historical and current forest conditions have contributed to inappropriate policies and errors in judging human impacts. In parts of West Africa, Europeans misinterpreted the landscape by assuming that precolonial forest cover had been more extensive. In believing that people were deforesting the land, Europeans overlooked behaviors that increased tree cover, such as planting trees and creating groves around settlements (Leach and Fairhead 2000). A widespread assumption that more people mean less forest was rendered false in Kenya, where tree cover increased on a deforested landscape as the population grew (Tiffen et al. 1994). In western North America, the policy of fire suppression prevailed as "best practice" for decades, despite knowledge that low-intensity forest fires of human and natural origins were an integral part of the ecosystem for millennia. When fire is removed from the system, debris accumulates and can fuel exceptionally destructive wildfires as occurred in the southwestern United States in the 1990s (Pyne 2001). One lesson is that we need to better understand the roles of humans as part of forest ecosystems, especially where humans have helped to create the forests that we imagine as untouched.

Cultural norms, values, and belief systems influence the ways that people use forests. A number of researchers have argued that indigenous peoples and traditional

populations have belief systems and intimate knowledge of the environment that contribute to sustainable management (Alcorn 1993; Nepstad et al. 2006; Toledo 2001). In Mexico and Central America, maps of forests and indigenous territories show a remarkable coincidence (Ayres 2003); debates turn on whether forests endure because of sustainable management practices, or because the land is too sparsely populated, isolated, or undesirable to outsiders. Whatever the answer, indigenous peoples nevertheless transform their environments and may adopt practices that are not necessarily sustainable (cf. Peres 1994; Redford and Stearman 1993). La Campa's residents are descendants of the indigenous Lenca people, and although they have lost their language, they retain agricultural traditions and beliefs that distinguish them from the dominant mestizo culture (Chapman 1992). Traditional methods of Lenca agriculture evidently minimized soil erosion and augmented soil fertility (Ardón Mejía 1993). A recent case study of Lenca coffee growers suggested that indigenous practices reduce the environmental degradation frequently associated with coffee production (Bass 2006). In La Campa, people view forest use and maintenance as an integral part of life. This perspective resonates with that of indigenous peoples in other parts of the world (Alcorn 1993), but it is not necessarily conducive to protecting forests from overexploitation and degradation.

Political Ecology, Collective Action, and Common-Pool Resources

Concepts from political ecology and collective-action theory provide a basis for this study. Political-ecological approaches have proved particularly useful to explain why it can be difficult for people to manage natural resources sustainably (Hershkovitz 1993; Jansen 1998; Sheridan 1988). While the term "political ecology" has acquired diverse meanings, researchers who employ it are broadly concerned with the intersections of human experiences and substantially contested and transformed biophysical environments. For the purposes of this book, I define political ecology as an approach that merges political economy and cultural ecology to analyze how interrelationships among local, regional, and national processes impinge on social and environmental conditions (Blaikie and Brookfield 1987; Greenberg and Park 1994).[4] Through this perspective, changes in forests can be viewed as part of a chain of relationships that link forest users within local contexts to national policies, markets, and global processes. It is possible for national and international processes to encourage wise resource management, or for local groups to develop apparently sustainable practices despite contradictory pressures from higher-level contexts. More often, political interests, market structures, policies, inequitable social relations, and ecological factors (among other dimensions) interact to create perverse incentives and pressures for unsustainable resource use.

Three recent books have incorporated a political-ecological approach for examining human-environment relationships in Honduras. Each examines a different locale and the complex factors that drive environmental destruction. Stonich

(1993) examines the contexts of soil degradation in the Department of Choluteca in southern Honduras. She examines how social inequities and political-economic relationships have exacerbated environmental and economic problems, and how government programs attempted to diffuse tensions. By encouraging poor and landless farmers to colonize and clear land in Honduras' largest remaining forested area (the Mosquitia along the northeastern Caribbean coast), the government instead reproduced inequitable relationships and fostered deforestation. Jansen (1998) studies a community in the Department of Santa Bárbara. He concurs in part with Stonich, reiterating that farmers wrestle with a complex set of social and biophysical constraints that compel them to degrade the land. He notes that

> *[T]he social causation of environmental change in mountainous areas of Honduras should be understood in terms of a complex mixture of local patterns of access to resources, forms of state intervention, the heterogeneous paths of technological change and knowledge generation, divisions of labour, and the specific interactions of emerging commodity markets and the organization of production*. (p. 26)

Loker (2004) investigates the social and environmental ramifications of the construction of El Cajón Dam in Honduras' central departments of Yoro and Comayagua. He considers how globalization processes are impacting the displaced population, and their struggles to rebuild their lives in significantly transformed circumstances. These three studies make important contributions to understanding the social and political dimensions of environmental deterioration in Honduras. The situation in La Campa provides a contrasting case in that environmental destruction appears to be partially counteracted by local actions and institutions that mitigate deforestation and provide opportunities for conservation.

The theory of collective action offers crucial insights to understand how and why La Campa has yet to suffer widespread deforestation and land degradation. Collective action theory has provided a series of indicators associated with situations in which people are likely to work together to manage and conserve common-pool resources (Ostrom 1990, 2007). Common-pool resources are characterized by subtractability (they can be depleted if use exceeds the rate of regeneration) and difficulty of exclusion (it is hard to keep people out). Many natural resources, including forests, pastures, and oceans, are common-pool resources; their characteristics pose challenges to conservation. Collective action offers one approach to govern common-pool resources. Through collective action, a group of people work together to achieve shared goals, which cannot be accomplished as efficiently by one person or a few individuals (Edmondson 1997). Together, political ecological approaches and collective-action theory provide complementary tools for examining La Campa's experiences with forest management and transformation.

The emergence and persistence of collective action to govern common-pool resources relates to characteristics of the resource in question, as well as characteristics of the people involved. Forests are more amenable to collective governance when at least some of the resources are predictable in time and space, when the resource base is not overly degraded, and when the forest area is small enough so users can assess and monitor its condition (Ostrom 2005). Resources placed under

collective governance are generally sparse or dispersed, located in marginal or low-productivity environments, and require coordination among a large group of people to be monitored effectively (Netting 1976). Working together to manage a resource base requires time, energy, and willingness to cooperate. Such effort does not make sense until people perceive a threat to the resource, or a valuable resource is perceived as scarce (the value of a resource may be spiritual or symbolic rather than economic) (Gibson 2001). Even when a valued resource becomes scarce, collective governance is difficult unless the users interact face-to-face regularly and trust each other. Shared identity, experiences, and history also contribute to people's ability to work together (Dietz et al. 2003). The potential for long-term success increases when people value the resources for future as well as present uses (a low discount rate).

Successful collective action to govern a common-pool resource can manifest itself in the formation of common property, which is best defined as joint private property (McKean 2000). Common property can provide secure ownership rights and protect resources from degradation when certain conditions are met. It is critical for the owners to hold recognized rights to the resource and establish clear boundaries. Common property is more likely to endure when a majority of the users participate in making and revising at least some of the rules, and when they have easily accessible, low-cost mechanisms for conflict resolution (Ostrom 1990). Well-managed, long-enduring common-property forests, pastures, and irrigation systems tend to occur in a context of minimal intervention by higher-level government, which allows local groups to develop institutions for resource management that fit their own circumstances (McKean and Ostrom 1995). As used here, institutions are the rules that define what can be done, what must be done, or what must not be done in a given situation (Ostrom et al. 2002). Institutions are *rules-in-use*; they include formal (written) rules, informal (unwritten but known) rules, and the norms and values that guide behavior. Studies of common-pool resource management around the world have shown that the development of effective and appropriate institutions is critical for successful conservation; this is true regardless of the property regime in force. Common property, however, can face particular challenges because success depends on all members' following the rules; otherwise, people will withdraw from the system. Therefore, successful common-property systems need to have a way to monitor compliance and punish people who break the rules.

Even when common-property systems meet ideal conditions for effective collective governance, they are vulnerable to intervention by higher-level governments. National governments, concerned with protecting natural resources, have frequently chosen to nationalize common-pool resources. They justify this move with the rationale that natural resources are subject to the "tragedy of the commons" (Hardin 1968). This scenario assumes that people are unable to work together to manage common-pool resources; it asserts that the only way to prevent degradation is to place resources under the control of the government or private individuals (McCay and Acheson 1987). When governments expropriate common lands or impose privatization, preexisting common-property arrangements are negated. The joint owners of the common property are often dispossessed and, as a result, lose incentives to continue to protect the resource base.

Instead, they must rush to extract as many of the resources as possible before other people do. Few governments, if any, have been able to rapidly and effectively impose new sets of rules and sanctions to protect common-pool resources from excessive use by former (typically angry) common-property owners and eager interlopers. The usual outcome is open access, in which there are no rules and anyone can extract resources freely. Instead of preventing a tragedy of the commons, government policies often have promoted tragedies by nationalizing common-pool resources and outlawing common property. Common-property regimes rarely survive the level of state intervention that La Campa had confronted. Examination of these events takes place in Chapter 4 and shows that the outcomes for the forests and La Campa's common-property institutions were mixed. Nevertheless, the discussion explores how La Campa's people stretched the boundaries of theoretical expectations by ousting the national forestry development corporation, retaining some of their common-property forests, and achieving a forest regrowth trend in subsequent years.

One of the greatest conundrums for scholars of common property is to understand how market integration and globalization processes influence the collective ability to manage and conserve common-pool resources. Many of the world's common-property systems have already been eliminated, and others that remain usually have limited legal standing. We do know that where market incentives and/or improved technology increases the economic value of any resource, it tends to become privatized. While some studies show that market integration leads to degradation of natural resources (Gowdy and McDaniel 1999; Henrich 1997; Pendleton and Howe 2002), others show that outcomes vary depending on the local contexts of market integration (Gössling 2003; Sierra et al. 1999). For example, the pace of deforestation can fall if market integration brings new wage labor opportunities as an alternative to agriculture (Godoy et al. 1997). Still other studies point out that the pace of change is most critical; people are better able to adapt and adjust institutions for sustainable management if change occurs at a moderate rate (Dietz et al. 2003). In La Campa, expanded coffee production and market integration have been accompanied by greater exposure to ideas, communication networks and information, and improved infrastructure. Market integration has had multiple and varied implications for community members and their common-property forests, which will be explored in Chapters 5–7.

Situating the Study Site

La Campa is 1 of 28 municipios located in the Department of Lempira in western Honduras (Figs. 1.1 and 1.2). Topographic complexity and easily eroded soils characterize the region (Pineda Portillo 1994). According to United Nations' poverty estimates, Lempira is Honduras' poorest department. An estimated 49.2% of the adult population cannot read or write, 94.5% have no access to primary health care, and 61.3% of the children suffer from chronic malnutrition (UNDP 2003).

Fig. 1.1 Map of Honduras departments

La Campa's western edge reaches near the foothills of Montaña de Celaque (2,869 m) (Pineda Portillo 1994), the second-highest point in Honduras.[5] On the east, precipices mark La Campa's border with the Department of Intibucá. The interior of La Campa includes rolling lowlands (900–1,200 m) dominated by pine-oak forests and agricultural fields, and mountainous highlands that rise to the peak of Montaña Camapara (1,829 m). The highlands are cooler, more humid, and less densely populated than the lowlands. The highland pine-oak forests have greater species diversity than the lowland forests, evidently related to the moister climate and lower rates of human exploitation through the last century. The mountainous area offers a favorable climate for export-quality coffee production.

The municipio of La Campa has 8 satellite villages in addition to the Centro Urbano (hereafter Centro or La Campa Centro to distinguish it from the municipio), and 13 small settlements. The number of recognized satellite villages has changed over time as the population has increased and new settlements have formed or separated from larger villages. The number of villages and total land area also changed when Caiquín separated from La Campa to become an independent municipio. Each of La Campa's villages has a central commons (often a soccer field) bordered by a chapel, a school, and a few houses; most of the households are dispersed along paths and scattered among fields and forests. The Centro presents an exception (Fig. 1.3); its houses and municipal buildings are clustered in a deep valley beside the Río Grande de La Campa, at the base of a dramatic escarpment that divides the lowlands from the highlands.

Fig. 1.2 Map of Department of Lempira

Conceptualizing Community

I use the term "community" to refer to all people who live in the municipio of La Campa, nearly all of whom were born there. Their community rests on shared rights to communal land, participation in municipal governance and decision making, and above all, residence and heritage that link them to each other and the land. Referring to the residents of La Campa as a community does not imply solidarity or homogeneity (cf. Agrawal and Gibson 2001), although at certain moments they work together to accomplish collective goals. The people vary in economic resources, education, and political opinions. Although a majority of the population belongs to the Catholic

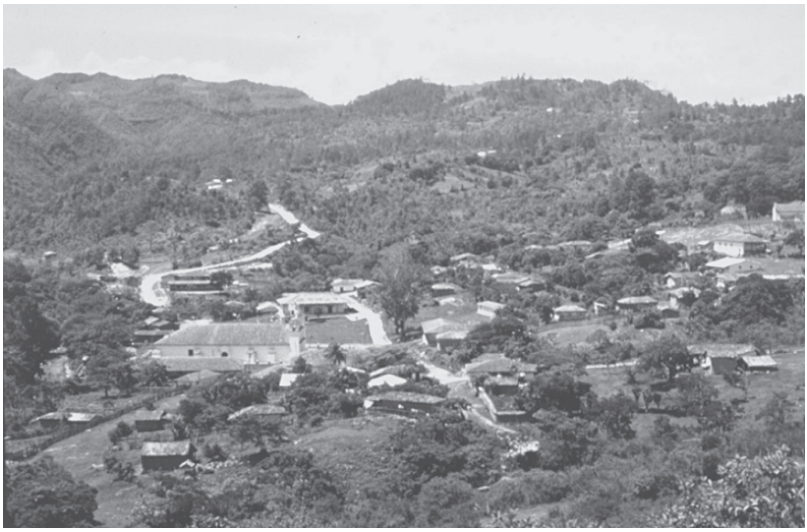

Fig. 1.3 La Campa Centro

Church, people differ in the degree to which they accept the dominant Church doctrine or practice syncretic rituals and beliefs in secret. Within the municipio, social alliances and organized groups form in relationship to shared experiences, livelihood strategies, or proximity of households or fields.

Although each village has its own elected council, people from different villages interact regularly for municipal council meetings, special events, religious celebrations, and municipal duties (e.g., road repairs and boundary maintenance). Many households based in the lowlands own agricultural fields and coffee plantations in the highlands; they often move to the highlands during planting and harvesting seasons. All residents can use municipal common lands for collection of firewood and useful plants. As a result, people's ties to each other and their land are crosscutting and interlinking at the level of the municipio. They identify themselves as "people of La Campa," or "Campeños."

Overview of the Book

The discussion of social and forest transformations in La Campa focuses on the past 3 decades, but the context for understanding the Lenca people and forest use stretches over 500 years. Although the historical record has many gaps, the initial conditions for human-forest relationships were established in the colonial period, when La Campa was founded and processes of conquest ruptured the social fabric. The book therefore encompasses three broad phases: (1) the premodern period, which considers historic perturbations in western Honduras

from the period of conquest into the middle of the twentieth century; (2) the period of state-led logging and intervention in La Campa, which caused major degradation in forest cover; and (3) the recent period in which export coffee production transformed property rights, and people's perceptions of the forest gained new conservationist and economic dimensions. Each phase entails perspectives and experiences that influenced human use of forests, and shaped subsequent transformations.

The assessment of La Campa's forest use and change processes begins in Chapter 2 with the events of conquest and colonialism, which transformed people's lives and their relationships with the natural environment. It highlights the glimpses of Lenca culture, and La Campa's early years as revealed in archival documents. Given that the first seat of Spanish government in Central America was founded only 16 km north of La Campa, the indigenous people of the region were subjected to severe exploitation and social disruption. By considering early censuses, land titles, and official records from the sixteenth through the nineteenth centuries, Chapter 2 indicates that forest conservation during this phase reflected low population pressure and abundant forest resources rather than purposeful efforts. Nevertheless, what is known of Lenca beliefs and rituals indicates reverence for the natural world; therefore, the discussion considers whether spiritual convictions, rituals, and myths provided an early context for conservation. The chapter concludes by examining the role of collective action in La Campa's successful effort to secede from the municipio of Gracias and become a separate municipio.

The establishment of La Campa as a municipio empowered local institutions for community governance and decision making over natural resources. Chapter 3 considers the interrelationships among community governance institutions, forest use, and agricultural practices during the twentieth century. A communitarian tradition, which evolved from governance structures imposed by the Spaniards, is seen as a framework for communal labor, social solidarity, and common-property management. Insights from common-property theory show that La Campa's communal forest management developed many of the elements associated with sustainability. The dynamic nature of the people's forest use is revealed by exploring the forest-field-fallow cycle, which reflected dependence on slash-and-burn agriculture. The discussion also explores the people's diverse set of subsistence and risk-mitigation strategies that included production of artisanal goods and participation in regional trade networks. Examination of municipal records and oral histories reveal that forests surrounding settlements experienced degradation. The responses and failures of the municipal government to address the problem are considered in light of social perceptions of "endless forests" and overall maintenance of forest cover at the municipal level.

Abundant forests characterize La Campa for most of its history, and people did not perceive timber as a potentially valuable market commodity. Chapter 4 explores how these circumstances and perceptions changed as La Campa attempted to achieve development through logging. It traces the difficulties that ensued when the Honduran government nationalized trees and created COHDEFOR to manage forests. Furthermore, it discusses people's reactions to the abrogation

of their traditional forest governance rights, and state failures to manage forests sustainably as it ignored community forest-management institutions to implement logging concessions and resin tapping. Through reconstruction of this phase in La Campa's history, the chapter imparts the social processes that coalesced so La Campa's population could overcome internal divisions and work together to end logging. The analysis examines the policies and actions of state representatives that exacerbated tensions, and the national economic difficulties that constrained the state and indirectly helped the people to reassert common-property rights outside the letter of the law. With perspectives from collective-action theory and institutional analyses, I examine how La Campa's experiences contrast with theoretical expectations that state interventions destroy common-property regimes. The chapter concludes by pointing to a serendipitous outcome: the destruction of lowland forests by state-authorized loggers convinced many Campeños that forests were finite, and spurred a nascent conservationist ethic.

The expulsion of COHDEFOR and the resumption of common-property forest governance led to initial efforts to conserve forests. But La Campa's marginal position under forest law and the severe degradation of its lowland pine forests created a situation in which the people had little to gain by investing in forest protection. Chapter 5 combines perspectives from political ecology and common-property studies to analyze the dramatic transitions in economic strategies, property rights, and forest management that occurred following the prohibition of logging. The analysis follows the rise of private property as farmers moved to coffee, agricultural land became scarce, and a national land-titling program promoted privatization of La Campa's communally owned lands. These processes coincided with national policy incentives that encouraged export-coffee production and linked coffee expansion to funds for road construction. Through this period, La Campa presents an anomaly: despite the common conception that state intervention and market integration lead to deforestation, analyses of satellite images show expanding forest cover during the 1987–2000 interval. The analysis explores the results with respect to the logging prohibition, decisions made by municipal authorities, and natural successional processes in forests.

The process of forest regrowth occurred through the 1990s despite the expansion in shade-grown coffee production. Coffee plantations are not natural forests, but when they incorporate shade trees and low chemical inputs, they provide some of the advantages of forest cover while also contributing to livelihoods. By evaluating this trade-off in light of the community's persistent poverty, it is possible to argue that coffee plantations represent a better option for the environment than annual crops or pasture. Yet coffee interrelated with social transformations and increasing economic heterogeneity, which posed challenges for community-development priorities and collective action. These challenges were magnified with the advent of the coffee crisis of 1999–2003. Chapter 6 focuses on how the coffee crisis impacted coffee growers and the evidence for resilience in their adaptations. Household case studies and survey results reveal that the drop in coffee prices impacted households in different ways, and implications for forest cover varied as well. Once more, La Campa's experiences appear to be an exception to the norm: many of Central

America's small coffee farmers faced bankruptcy and hunger, but most of La Campa's farmers weathered the crisis by marshalling social resources and finding ways to diversify their income. The analysis assesses the factors associated with different decisions adopted to confront low coffee prices. The results support the argument that vulnerability to market volatility can be mitigated by diversified livelihood strategies. The discussion focuses on the critical question of why many Campeños were able to diversify successfully, and finds answers in their traditional agricultural practices, social networks, and access to land and forests.

Chapter 7 looks carefully at the major challenges that confront La Campa in the present, including land concentration, socioeconomic heterogeneity, and changes in community governance institutions. Higher educational attainment and recent processes of migration are discussed as bringing new dimensions to people's relationships with their forests and each other. At the same time, the chapter traces evidence of enduring resilience and capacity for collective action, especially the creation of a watershed reserve, potable water projects, and new cooperatives. Nongovernment organizations and international donor agencies emerge as major facilitators of local organization and entrepreneurial activity. By considering La Campa as a dynamic social-ecological system, the discussion assesses elements that support resilience and sustainable natural resource management; it also examines current circumstances that represent challenges to resilience and sustainability. A synthetic assessment summarizes the dynamic relationships across time and space in people's uses of forests and fields. The processes in La Campa's forests reveal a high level of dynamism that reflects the diverse interactions between people and trees through time. Characterizing this landscape simply as "reforesting" or "deforesting" would misrepresent the complexity of the processes that are shaping the forests and people's lives. The fact that overall forest cover has been maintained, and appears to be expanding, suggests that forest transformations (e.g., clearing and regrowth) may be compatible with conservation and social resilience in a landscape that has already been profoundly transformed by millennia of human interventions. The conclusion points to the lessons and contradictions apparent in La Campa's experiences with forest conservation. It remains one of the most extensively forested municipios in western Honduras, but the people could not definitively end state interventions, prevent forest degradation, or elude the risks of market integration. Instead, they have worked as individuals and as members of a community to improve their lives, and part of that effort has been to use forests and maintain them.

Chapter 2
People and Forests in Historical Perspective

> *The forests of today show how people have been and still are dependent on them, and how they make use of and interpret their environment in terms of survival and social advancement. The transformation of forest vegetation that we observe indicates specific social needs, cultural values, and changing economic and technological processes. Forests represent a legacy and they are a testimony of the evolution of societies and their respective perceptions of nature.*
>
> (Schmithüsen 1997, p. vii)

> *History matters. It matters not just because we can learn from the past, but because the present and the future are connected to the past by the continuity of a society's institutions. Today's and tomorrow's choices are shaped by the past.*
>
> (North 1990, p. vii)

Human impacts on the forests of western Honduras trace back nearly 10,000 years. By the time the Spaniards arrived, the forests had already experienced profound transformations at the hands of indigenous peoples and civilizations. Prehistoric evidence comes from archaeological studies of the Mesoamerican region, while historical documentation dates to 1536 for the part of western Honduras that includes La Campa. Specific references to La Campa are sparse, but it was located near an important Spanish settlement, Gracias a Dios (hereafter Gracias), for which better records exist. La Campa's people would have been affected by many of the events that occurred in and around Gracias. The changes that occurred through conquest and colonialism impacted the people, their cultural traditions, and the institutions they used to manage land and forest resources. Moreover, the imposition of Spanish policies and exploitative arrangements shaped community governance, use of natural resources, and the development of religious syncretic traditions. In this chapter, I consider prehistoric and historical processes of change and cultural contexts that provide the foundation for understanding forest conditions, collective action, and property rights in the present.

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

People and Forests in Prehistoric Mesoamerica

The first people to roam into Honduras more than 10,000 years ago saw forests unlike anything seen today. Instead of sparse forests dominated by pines, it may be that they found dense forests of semideciduous hardwoods. Throughout the Mesoamerican region, people hunted wildlife and gathered a variety of plants to eat. They used fire to clear undergrowth. By 10,000 years ago, people in lowland Panama had begun a progressive pattern of forest transformation with the use of fire (Pohl et al. 1996). Similar processes of forest disturbance probably occurred in other lowland areas, but the archaeological record is slim. Around 5,000 years ago, people began to adopt agriculture. The first domesticated crops were varieties of squash (cucurbits), followed by maize and beans (Smith 2005). As people began to settle in villages, they felled and burned trees to create clearings for crops. The burning enriched the soils for several years of planting, after which people abandoned old fields to clear new ones. By 2500–2000 BC, the people of western Honduras were growing maize, avocado, and palms (Pohl et al. 1996). Across the centuries, human use of fire and agriculture reshaped the forests. Pines, among the first trees to regrow in sunny, open areas, took over abandoned slash-and-burn fields. The balance among tree species changed as pines became more common than hardwoods, and by the time complex societies developed in the region, pine dominated the lowland forests and hillsides.

In western Honduras, the Maya civilization emerged around AD 400 as the Maya people conquered or assimilated neighboring peoples. The area around the Mayan center of Copán experienced increasing deforestation as people developed an intensive agricultural system with irrigation, terracing, and cultivated fields. Carbon analysis from ancient Mayan hearths shows that fruit trees, pine, and other species typical of young forests represented the most common types of firewood (Lentz 1991), suggesting mature forests had been eliminated near the city. At its height in the 700s, the population in the Copán River valley reached densities that have not been equaled since. Around AD 860 Copán's population began to fall for reasons that remain undetermined. Sediment core analysis shows that the time interval of the collapse coincides with the driest period in the past 7,000 years; a series of droughts, resulting food shortages, and associated social unrest may have destabilized the society and contributed to the decline of the Maya civilization (Peterson and Haug 2005). The survivors abandoned the city to disperse throughout the countryside. Forests began to regrow. Pines reached maturity and senescence, while hardwoods grew in the shade and regained prominence in spots where pines died off. Descendant Maya groups probably visited Copán's remains for ritual purposes (Newson 1986), but when the Spaniards arrived some 600 years later, the ruins were obscured by trees, brush, and layers of decaying leaves.

Following the collapse of the Mayan centralized state, the Lenca emerged as a major cultural group throughout central and western Honduras and eastern El Salvador. In contrast to the postclassic Maya, who lived in the lowland areas surrounding Copán, the Lenca tended to live in the highlands. The Lencas' preference for higher elevations may reflect ancient resistance to the Mayan state, defensive

purposes, and subsequent efforts to evade Spanish domination (Newson 1986). Lenca society had a marked social hierarchy composed of nobles, priests, warriors, and commoners. Women produced pottery and textiles. They lived in fortified settlements and fought wars periodically against neighboring peoples who spoke different languages. In times of peace, "they exchanged birds, cloth, feathers, salt, cacao, achite [achiote], which is like vermilion with which to paint themselves, and other things" (Herrera y Tordesillas [1601] 1728, p. 283). Although some of these exchanges probably took place to mark the cessation of hostilities, people had to trade to obtain goods such as salt and cacao, which were only available in certain areas. As with other Mesoamerican peoples, the Lenca cultivated maize, beans, and squash. Like the Maya, the Lenca believed that individuals had animal companions (naguals) to whom they were tied spiritually and physically. The belief in naguals has endured to this day among many Lenca communities (Chapman 1992).

Identifying Lenca populations in colonial history poses a challenge because the term "Lenca" was not in common usage at the time of the Spanish conquest. The peoples of central and western Honduras reported by the Spanish included the Potón, Guaquí, Cares, Colo, Chatos, Dules, Paracas, and Yaras. Unfortunately, archival documents present contradictory or vague references to these peoples, their characteristics and their languages. Newson (1986) suggests that the groups most likely to be Lenca include the Cares, Colo, Guaquí, and Potón.[1] Each of these groups presents Lenca attributes given their geographic location and cultural characteristics, insofar as they can be determined from colonial sources.

The first document that referred to the Lenca appeared in 1543.[2] It names three villages assigned as an encomienda, a group of villages under the authority of a Spaniard. Two of the villages are described as Lenca; however, the location of these villages is not known. In 1553, Mercederian missionaries received charge of the "partido de los Rencas" [*sic*] and reported in 1591 that they had taught the people of several villages in their native tongue of Lenca, in compliance with a Spanish mandate (Newson 1986). Throughout the colonial period, Spanish documents referred to the Lenca, Cares, and Potón as distinct peoples who spoke different dialects. The Cares lived around Gracias; therefore, La Campa's population would most likely be included in this group. In the nineteenth century, the Potón identified their language as Lenca. By the late 1800s, scholars identified "Lenca" as a major Honduran culture group, and recognized that place names throughout western and central Honduras had shared roots in the Lenca language (Herranz 1994). Linguists consider Lenca as a separate language family with up to six different dialects (Thomas 1902; Witkowski and Brown 1978); it does not appear to be affiliated with other Mesoamerican languages.[3] The last Lenca speakers found by linguists were interviewed in 1965 and 1970; Lenca languages ceased to be living languages in the early twentieth century, before they could be described adequately (Campbell 1976; Campbell et al. 1978). Similar to the many peoples who became classified as Maya under Spanish domination, it appears that the Lenca were also composed of different peoples whose cultural and geographic characteristics were grouped together as Lenca. This historical cultural diversity appears to continue today; researchers have noted a range of customs, practices, and sociocultural characteristics (Stone 1948).

The Spanish Conquest

La Campa appears intermittently in archival records that document the Spanish conquest and the colonial period. Although documents rarely mention forests or changes in human-environment relationships, insights can be drawn from early censuses, land titles, and records left by Spanish chroniclers and missionaries. The processes of change that began with the conquest continue to resonate in the present because the current social, political, and economic relationships among the people of La Campa and dominant political powers began to emerge at this time. Moreover, many of the dramatic events that marked the early years of Honduras' colonial period occurred in the vicinity of La Campa, and would have impacted the people's lives and their interactions with natural resources.

In 1536, the Spaniards made their first attempt to found a settlement in western Honduras. The area was named Higueras for gourd-producing trees that grew throughout the region, which Spaniards called *higueras* or *hibueras* (Aguilar Paz [1972] 1989). Earlier settlements along the northern coast and central valley, which comprised the area called "Honduras," were struggling to survive, and the Spaniards sought to exploit Higueras' human and mineral resources. The initial effort failed in the face of determined resistance by the indigenous population, which had anticipated the Spaniards' advances and retreated to the mountains. The Spanish expeditionary force had hoped to settle in an agreeable location where they could live off the indigenous people's labor, but they discovered bare fields and abandoned villages. Lacking food and resources, this first expeditionary force retreated to Guatemala. Another contingent of Spaniards and indigenous allies followed within months, and founded Gracias near the end of 1536. The location turned out to be unfavorable because there was no indigenous labor force in the vicinity (Chamberlain 1946), and in 1537 the Spaniards relocated Gracias to a valley nearer inhabited indigenous settlements. Immediately, the Spaniards began to divide the land and indigenous peoples among themselves (Carranza 2004). By that time, the indigenous population had suffered high mortality from epidemic diseases introduced by the Spaniards, but even so, they mounted fierce opposition to Spanish domination. An estimated 30,000 indigenous troops from many different peoples united under a Lenca leader, Lempira, to fight the Spanish invasion. According to Spanish chroniclers, the indigenous people believed Lempira was invincible, and he proved to be a clever strategist. The war spread from western Honduras to the central valley, the northern coast, and into El Salvador (Chamberlain 1966; Herrera y Tordesillas [1601] 1728). For nearly 6 months, the Spaniards fought with flagging courage against indigenous attacks, while a newly assigned Spanish governor, Francisco de Montejo, attempted to maintain discipline. In late 1537, one of Montejo's foot soldiers succeeded in killing Lempira. Accounts vary as to whether the Spaniards ambushed Lempira en route to an illusory peace conference, or whether he was killed in battle. The war ended as indigenous forces disbanded after the loss of their leader (Chamberlain 1966).

Following Lempira's death, Montejo decided to move Gracias again, this time to a temperate valley with abundant water and closer to the surviving indig-

enous population. With its third founding in 1539, Gracias became the administrative center for the province (Lunardi 1946; Pedraza [1539] 1946). It was only 16 km from today's Centro of La Campa, or a few hours on foot or horseback. Given their proximity to Gracias, the original inhabitants of La Campa would have been early targets of Spanish domination. The Spaniards consolidated their power through forced resettlement of the population into *pueblos de indios* (indigenous towns) and *reducciones* (consolidated settlements of the dispersed Indian population). With the creation of nucleated settlements, the Spaniards sought to pacify the population, as well as collect tribute, exploit labor, and impose Christianity and European cultural standards upon the indigenous people (Vasquez 1714; Weeks and Black 1991). Through the encomienda system, pueblos de indios were assigned to Spanish encomenderos (holders of encomiendas), who had the responsibility to Christianize and protect the people along with the right to demand tribute and labor. Although the indigenous people could retain land, they lost autonomy. Encomenderos used their power to demand forced labor and tribute while generally ignoring their obligations to care for the people. Although the Spanish Crown ordered that the indigenous people be treated well, the stipulation was never enforced. Indigenous people fled into the mountains. Famine eventually drove many back into villages, while others died of starvation (Newson 1986).

Epidemic diseases brought by the Spaniards combined with war, slavery, forced labor, malnutrition, and displacement to decimate the indigenous population. In 1539, Cristóbal de Pedraza reported from Gracias that "more than 6000 people, men and women, young and old, were killed or taken away, and 3000 of them were made slaves …" (quoted in Chapman 1978, p. 5). Montejo ([1539] 1983), who based his government in Gracias, reported drastic population declines between 1536 and 1539 for five settlements in the region: Taloa shrank from 400 to 40 houses; Cárcamo's 500 houses were reduced to 20; Araxagua declined from 250 to 40 houses; Opoa's 200 houses fell to 30; and Lepaera dwindled from 400 households to 70–80. He concluded, "… there is not one pueblo destroyed, but all have been destroyed" (p. 282). The indigenous population of western and central Honduras declined from an estimated 600,000 people in 1500 to approximately 32,000 by 1550; the decline continued into the eighteenth century (Newson 1986). Nevertheless, all of the settlements mentioned by Montejo, except Araxagua, survived; today they have become municipios in the departments of Lempira and Copán.

Gracias became the most important Spanish city in the region during the early years of the colonial period. In 1544, the Crown chose it to establish the Audiencia de los Confines. The Audiencia was the seat of Spanish power in the Central American region and governed Higueras (western Honduras), Honduras, El Salvador, and Guatemala. The first president of the Audiencia, Alonso Lopez de Cerrato, reported in 1548 that the population could not pay even half the tribute owed, so he moderated the tribute demands and amount of service required (as cited in Newson 1986). Encomenderos resisted these changes. Meanwhile, the Spanish authorities in Gracias failed to support priests' efforts to convert the

indigenous population to Christianity. Priests sent reports to Spain complaining that the indigenous population suffered grave abuses at the hands of the encomenderos, who often refused to release people from forced labor to receive Christian indoctrination. Similar abuses occurred throughout Latin America. The Spanish Crown attempted to reduce abuses of the indigenous population with the passage of the New Laws of the Indies in 1542 (Chapman 1978), but no apparent improvement occurred. In 1548, evidently irritated by the shortcomings of its officials in Gracias, the Crown ordered the Audiencia de los Confines to move to Guatemala. The transfer of power took place in 1549. Gracias lost influence but continued as an important regional administrative center during the colonial period.

The Origins of La Campa in History and Legend

People lived in the area that is now La Campa long before the arrival of the Spaniards, but the turmoil of the conquest has shrouded their prehistory. Lempira's war against the Spaniards was launched from strongholds not far from present-day La Campa, and the war evidently caused dislocation as people left their villages for mountain strongholds. Colonial documents and indigenous oral history agree that the earliest settlement in what is now La Campa was located in the mountains and called Tecauxina (also Tecauxinas and Tecaucina, now known as Cruz Alta; Fiallos 1991). It may be that the Spaniards founded Tecauxina (Chapman 1992) on the site of a prehispanic indigenous settlement; archaeological evidence suggests that both indigenous people and Spaniards lived there (Ardón Mejía 1989). In 1536, Pedro de Alvarado, a Spanish chronicler in western Honduras, mentioned a pueblo called Tiquixima, which may have been be a reference to Tecauxina (Castegnaro de Foletti 1989).

The origin of the name "La Campa" presents a puzzle. It seems to have Spanish derivation, but the closest word is "el campo" ("the field" or "the countryside"). Nor is "La Campa" or "Lacampa" (as it appeared in early documents) overtly indigenous. Some people in La Campa say that the name derived from the Spanish "vamos a campar" ("let's camp here"), because of the site's agreeable location by a river. Membreño ([1901] 1994) asserts that the root of the name comes from the Mexican (Nahuatl) "acapan," which means "in cane water" (or "in the water of the cane," from acatl = cane or reed, atl = water, and pan = in). Western Honduras has many locations named with Nahuatl terms because the Spaniards brought a large contingent of indigenous troops from Mexico to help conquer the region. However, the derivation of La Campa from "acapan" seems a stretch given that other place names derived from the same roots retain greater similarity to their original form, such as Acapa. Another possibility is that the village was named after a Spaniard with the last name of "Campa" who had directed the construction of the colonial church (Castegnaro de Foletti 1989). The Spanish surname "Lacampa" also exists, and suggests another possible origin of La Campa's name. A former alcalde of La Campa,

Don Alcides, reported that a historian in Gracias had found a document written by an architect named Campa, who wrote that he had designed and directed the construction of a church, which appeared to be the one in La Campa. The author lauded the people of the village for their dedication and organization. Don Alcides thought the document had been lost upon the historian's death.

There are two versions of the founding of the village of La Campa. One version emerges from Spanish archives, and the other through oral history. Following the death of Lempira, Montejo tried to attract indigenous people back into settlements and relocated villages to places that were convenient for the Spaniards (Chamberlain 1966), and the process of relocating indigenous people continued under the Audiencia de los Confines. La Campa came into existence sometime between the end of Lempira's war and 1582, when the village is first mentioned. It was probably created through the forced relocation and resettlement of indigenous people living in the mountains in and around Tecauxina. A Honduran sociologist, Mario Ardón Mejía, told me of a colonial document stating that the priest assigned to Tecauxina objected to the village's inconvenient location in the mountains and ordered the people to move to the valley.[4]

The people of La Campa have a different version and explain the founding of their community through the legend of the "Discovery of San Matías." One elder told it with particular flare:

> *Long ago, the people lived in the village of Tecauxina up in the mountains. The people were very religious, and they had a little chapel where they prayed. One day, a hunter came down from the mountains to see what he could find to hunt in the valley. His dog caught the scent of an animal and chased it along a river. The hunter followed as fast as he could and passed a place where two rivers came together. The whole place was thick forest, with big pines and all kinds of trees, so he couldn't see what the dog was after. Then the dog treed the animal in an amate tree by the river. The hunter saw that it was a big lizard, a garrobo. As he went to shoot it, he saw a statue at the foot of the tree. He didn't know what to do with the statue, and so he went back up to Tecauxina. It was a long walk up the side of the cliff to tell the people what he had found. Many people went to see the statue, and they carried it back to the chapel and put it on the altar. Everyone was sure it was a saint, but they didn't know which one. The next morning, the statue was gone. The hunter and other villagers went to look for it, and found it under the same tree. They carried it back to the chapel again. That night they took turns watching it, but the next morning it was gone again. They wondered who could have taken it! They found it again under the tree, and carried it back. More people guarded it that night. But it disappeared again! Now the people realized that it must be some kind of living thing, and it must be leaving because it didn't like its new home. The village had a leader, and he was very wise. He said that the saint must want them to move to the valley, because it had plenty of water. Tecauxina didn't have a permanent source of water. So the people took their things and moved to the valley where the two rivers came together. They made a camp, built shelters, and constructed a church for the saint. They used great pines; some were a meter across! Then a priest came, and the people asked him to identify the saint. The priest said that it was San Matías [Saint Matthias], and the people rejoiced because now they knew the name of their patron saint. They made chicha [fermented maize beverage] and roasted maize; they prayed, sang, and celebrated. They danced with a garrobo, stuffed of course, and played the reed flute. We still do that today, but now the Church forbids chicha. I remember when I was a little boy everyone made a big jug of chicha to celebrate the saint's day and everybody drank it, even the priest.*

Other villages have similar legends of how their patron saints convinced people to move to a new home. In Tambla, south of La Campa, the patron saint left the church repeatedly to go to an attractive plain, and eventually people abandoned their homes to build a new village there. Other patron saints of Lenca villages, similar to San Matías, moved at night to the spot where they wished to live, or became so heavy that they could not be moved out of a place where they wished to stay (Aguilar Paz [1972] 1989).

These stories may have been a way for a dominated people to justify their compliance with forced relocations; they could also have been promoted by priests as part of the effort to encourage the Catholic faith. In La Campa's case, the "Discovery of San Matías" reinterprets history to transform the people's experience of subjugation to one of autonomous decision making and spiritual insight. Instead of being forced to move to the valley, the people moved of their own choice, thus the story empowers the people and credits them with the ability to discern the saint's will. The legend fixes La Campa's Catholic faith firmly within a syncretic tradition. The Lenca valued the garrobo for its tasty meat, and the amate tree was revered for its affinity to water. The conjunction of the garrobo, the amate, and the image of San Matías merge Lenca and Christian symbols; the legend reinforces the validity of Lenca traditions with the drinking of chicha and incorporating the garrobo into a celebratory dance for the saint. The story displaces Spaniards from their historical centrality. The priest appears, but only to identify San Matías. The legend reveals major elements of the people's relationships with their natural environment: forests provide sustenance, trees produce timber for construction, and water availability underlies many decisions about land use. It also implies the fundamental dynamic between humans and forests: humans transform forests as part of their lives and livelihoods.

Land Rights, Population, and Implications for the Forests

During the early years of the colonial period, La Campa was a small settlement. Epidemic disease, war, and relocation must have taken their toll on the population. In 1582, a Spanish census listed La Campa as a pueblo de indios with 20 tribute payers (*tributarios*) under an encomendero, Marcos Cana (Leyva 1991). If each tribute payer had a wife and two or three children, La Campa's population included approximately 80–100 people (Newson 1986). The same census reported that 30 Spanish *vecinos* (married adult males counted as permanent residents with full legal rights) lived in Gracias. Twenty-two of these men held encomiendas within the region governed by Gracias, which covered most of western Honduras, including what are now the departments of Ocotepeque, Lempira, Intibucá, and Copán. The small indigenous population, combined with the low Spanish population during the first few centuries of the colonial period, would have been favorable for forest expansion. With a sharply reduced indigenous population and few Spaniards to work the land, the area in agriculture

declined as compared to the period prior to the Spaniards' arrival. Spanish demands for indigenous labor interfered with villagers' planting and tending of crops, and the region struggled to produce enough food to feed its inhabitants. With fewer people and less activity on the landscape, pine forests must have expanded into former fields and clearings around depopulated and abandoned villages. Only around Spanish settlements, mines, and ports did the intensity of land use increase, and trees were felled to build mines, construct buildings, and create pastures for imported cattle and horses. Around La Campa, large swaths of pine-oak forest remained as *realenga* (open Crown lands) into the 1800s.

Every indigenous community was to be granted land for common use by the population. According to a 1573 royal decree, indigenous communities had rights to one *legua cuadrada* of land as ejido (government-granted common land) to be shared among all residents (Carlos IV de España 1805). A *legua cuadrada* encompassed approximately 1,600 ha, although the exact measure varied through Central America. Land granted to indigenous communities as ejidos usually included communal forests, pastures, and fields. The actual expanse of land differed from community to community. Some communities claimed more than a *legua cuadrada*, but others, particularly those adjacent to Spanish settlements, could not claim or maintain the ejidos they deserved by law (Newson 1986).

La Campa did not receive a formal recognition for its ejidal land until 1732[5]; but in 1724, the people sought title to a section of unclaimed land located to the north of the Centro. La Campa sent representatives to the judge in Gracias responsible for surveying land in the province (*juez subdelegado de medidas*) to present a petition:

> *I, Pascual Peres, current Alcalde of the pueblo of La Campa in the jurisdiction of the city, Gracias a Dios, my principal regidores [council members] and the rest of the común [residents] of this pueblo … come before your honor, Juez Subdelegado de Medidas in this jurisdiction, and declare that there is an area to the north of our pueblo that is called Quesuncelca; it is realenga and baldía [open for communal use],[6] without an owner; and because the children of the pueblo need it for their work with sugar cane and to raise some cattle and horses, we request and beseech your assistance to send a surveyor to mark the indicated plot of land, for the residents request it and we are prepared to cover the cost for the value of the caballerías[7] it contains, and obtain title. …*[8]

In 1725 the title was approved and recorded in the capital, Santiago de Guatemala. La Campa purchased the four *caballerías* and 24 *cuerdas* (approximately 190 ha) that comprised Quesuncelca (also called Suncelca) for slightly more than 26 oz of silver.[9] It indicates that La Campa could muster a surplus income in excess of the heavy tribute obligations that indigenous communities owed to the Crown. Moreover, the people had sufficient knowledge of the legal system and land titling process to present a successful request to the regional government. The surveyor's report noted that the people of La Campa had already planted many plots of sugarcane in the area, and the rest of the land was covered with pine trees, but appropriate for grazing. Quesuncelca had a lower elevation and milder climate more suitable for sugarcane than the Centro, and even today Quesuncelca (now called Cañadas after its largest village) is known for its sugarcane production. Quesuncelca had the additional advantage of being several kilometers closer to Gracias, which was the

nearest local market. The context suggests that Campeños were raising sugarcane to sell,[10] and the income may have provided the cash to pay for the land. Campeños, however, credit San Matías with providing historical economic benefits to the community. Given the image's miraculous discovery, San Matías is widely believed to have the power to grant miracles and heal disease. To honor San Matías and share his miraculous power, a select group of faithful Campeños carried the image of San Matías to other communities in the vicinity for people to venerate (cf. Chapman 1986). Offerings of animals, food, and other useful goods were collected and taken to La Campa. An additional source of income may have come from La Campa's production of artisanal pottery, which appears to have prehispanic origins. Archaeological remains show that early colonial pottery was thick and crude, but during the colonial period, La Campa began to produce a thin, fine pottery that shows Spanish influence (Castegnaro de Foletti 1989). It was traded throughout the region (Ardón Mejía 1989).

Unlike many pueblos de indios throughout Honduras that lost land during the colonial period (Newson 1986), La Campa residents had use of *realengas* and *baldíos* (Crown lands considered vacant "wastelands") surrounding their community and did not face competition for this land from neighboring communities until the 1800s. Population growth occurred gradually. Confession records from 1796 to 1797 provide a list of everyone who confessed and took communion (*gente de confesión*) aged 10 years and up. In 1796, the lists noted 342 people attending confession in La Campa. The priest listed confessors by family in the order of husband, wife, sons, daughters, and *agregados* (additional members; their relationship to the rest of the household is unexplained), with widows, widowers, and their children indicated at the end. Although the report does not include children under the age of 10, the information provides valuable insights. La Campa's population included 83 households headed by a married couple (the priest included the names of four husbands with the annotation "absent from the pueblo"). Eight bachelors were noted separately.[11,12] For 1797, the list has 389 confessors (Table 2.1). The priest grouped people into family units separated by lines, and indicated parents and children

Table 2.1 Population of La Campa, 1582–1801

Year	Tribute payers/confessors	Total population
1582[a]	20 tributarios	~100[b]
1797[c]	389 confessors (10 years or older)	–
1801[d]	143 tributarios	671

[a] *Relación hecha a su Majestad por el gobernador de Honduras, de todos los pueblos de dicha gobernación. Año 1582*. Cited in Leyva (1991)

[b] This estimate of total population follows Newson's (1986) calculations that each tribute payer had a wife and an average of three children

[c] *Curato de Gualcha y pueblos anexos: Colusuca, Coloete, La Campa, Caiquín, y Valle de Sunsulaca, 1797. Archivo Eclesiástico de Comayagua, Caja 1: 1758–1799, Padrones*. University of Texas at Arlington Special Collections, Roll 1. Maritza Arrigunaga Coello, compiler

[d] *Población de las Provincias de Honduras, matrícula de 1801* (Leyva 1991)

by marriage and family status. Adult females outnumbered adult males (148–98); 68 women were listed as widows, and only 2 men were widowers. Forty-three of the widows were grouped in pairs or as groups of three or four with their children, implying that they formed separate households.[13]

The disparity in the gender balance indicates a high mortality rate for adult men, which could have resulted from forced labor and tribute demands. The Spaniards required men to work as burden carriers (*tamenes*) and serve in mines at great distances from their homes; many died (cf. Newson 1986). A glimpse of the situation comes from a petition submitted by the indigenous community of Piraera, which was located south of Gracias, near the current border with El Salvador. The people pled to be exempted from supplying 40 men each month to work in the port of Omoa on the Caribbean coast. The port was a 16-day march to the north, and many men died in the unaccustomed tropical climate. The people noted that this obligation was in addition to the tribute they already owed each year: 530 tostons[14] and 25 maravedis for the Caja Real (royal treasury), 200 tostons to the governor of Honduras, 10 tostons for various religious collections, 15 fanegas[15] of maize, and 19 chickens, as well as several smaller payments.[16] In a similar petition from 1795, Lepaera's indigenous community complained that forced labor in tobacco fields caused them great suffering; they received only 1 peso per week for their work and two small tortillas to eat each day. The demands on their labor prevented them from planting their own crops, but regardless they had to pay 100 fanegas of maize every year as tribute. To meet this obligation, they had to purchase maize at 2 reals per almud (unit of measure for dry goods) and haul it to Gracias, where officials counted each almud as only 1.5 reals worth of maize.[17] The documents reported that residents were abandoning the pueblos to avoid the misery they faced with the excessive tribute and labor demands. La Campa most likely confronted similar demands, or perhaps worse given that it was located much closer to Gracias than Piraera or Lepaera.

Based on the confessional records, La Campa had approximately 120 households by the late 1700s, and about 30 of those households were headed by widows or bachelors. Shortly thereafter, a census conducted in 1801 reported 671 residents and 143 tribute payers in La Campa.[18] Assuming that each household planted 1.5 manzanas (1.05 ha) of maize to meet its annual needs (based on Campeño farmers' recollections of the total maize area planted with slash-and-burn agriculture prior to the advent of fertilizer), each household had about 16.5 ha available for their use. The calculation is rough, because it is not known whether Campeño men, like men of Lepaera and Piraera, had difficulty planting their own crops due to forced labor obligations, or whether they might have tried to plant more than needed in order to meet tribute obligations. At any rate, the proportion of the population to the land area suggests that each household had about 15 times as much land as needed to produce an annual crop of maize. This estimate includes only the legally titled ejidos and Quesuncelca, and La Campa's population also used unclaimed *realenga* on its borders. With such low population density, long forest fallows would have been easy to maintain. Slash-and-burn fields had several decades or more to grow back to forest before being cleared again.

Community Governance and Communal Land: The Roots of a Communitarian Tradition

La Campa's current municipal government and communal land rights have their origins in Spanish models transplanted to the Americas. Little is known of prehistoric Lenca community organization and concepts of property. According to chroniclers, the Lenca lived in central settlements surrounded by agricultural fields (Weeks et al. 1987). It is not clear whether land was held communally, privately, or in some combination. During conquest, the forced relocations of indigenous peoples into pueblos de indios disrupted preexisting forms of governance and facilitated the imposition of Spanish governance models upon indigenous communities. The Spaniards imposed a model derived from rural Castile, where agricultural communities governed themselves and their communal land areas through village councils. Under the Castilian model, each community had ejidos for people to use for agriculture and other needs. Every community had a governing body formed by an alcalde and regidores. These community authorities were charged with enforcing Spanish laws, punishing minor offenses, and overseeing community land. They received a salary paid out of the community's tribute (Newson 1986).

Ejidal land could not be sold or partitioned, and individuals could not own specific parcels or pass them on to inheritors. Similar to rural Spain, the person who planted a field in the commons controlled it until the harvest passed, then the land returned to commons (Vassberg 1984). In colonial years, low population density in La Campa meant that people probably had few limits on choosing locations for their fields. The main constraint was the labor required to clear land and tend crops. Over time, rules and local customs developed regarding land use and de facto private claims to communal land. By the twentieth century, municipal documents report de facto owners of sugarcane fields, orchards, and houselots, and these properties could be sold, exchanged, or inherited among community members. Slash-and-burn fields were temporary, but fields and lots with perennial plants or permanent structures were treated as private property.

Honduras gained independence in 1821. At this time, La Campa was incorporated as an indigenous community within the municipio of Gracias, as were the neighboring indigenous communities of Caiquín, San Manuel de Colohete, San Sebastián (formerly Colusuca), and Santa Cruz (formerly Erandique). The system of community governance imposed by the Spaniards endured in the postindependence period. La Campa continued to elect regidores to handle local issues, but as a community under the municipio of Gracias, it also had to provide service to the municipal government in Gracias. La Campa's elected leader, called an auxiliary alcalde because he was subordinate to the alcalde in Gracias, had to attend municipal meetings and relay information. The population also had to provide labor and pay fees to Gracias.

Due to poor transportation infrastructure and the power of local elites, Honduras did not develop a centralized national government during the period following independence. Civil wars and political instability characterized Honduras throughout

the nineteenth century. Eighty-five different presidents governed Honduras between 1821 and 1876 (Lapper and Painter 1985). The political uncertainties and wars may have disrupted small rural communities affected by the struggles or forced conscription of men into the fighting forces; however, this period has sparse documentation for La Campa. The cities of Comayagua, Tegucigalpa, and San Pedro Sula developed as regional powers vying for dominance. Gracias faded in importance, and western Honduras became a hinterland where local elites and rural communities exercised considerable autonomy.

During the 1800s, the population grew and demand for agricultural land for milpas (maize fields) and pasture expanded accordingly. La Campa and Caiquín residents began to compete for land that lay between their communities; both claimed prior use rights established in antiquity. They had legal recourse to add to their ejidos under an 1836 law that expanded indigenous communities' land rights from one to two *leguas cuadradas*. The communities turned to the authorities in Gracias to resolve the dispute and claim the two *leguas cuadradas* permitted. La Campa's auxiliary alcalde's petition argued,

> *Whereas security of property is an essential requirement to avoid damaging disputes … currently the pueblo that I represent believes itself harmed by that of Caiquín which disputes part of the land that we recognize as our own … since we lack the corresponding title, we find it difficult to defend the part that the community of Caiquín intends to take away. The pueblo of La Campa legally and legitimately recognizes ownership of the land that it possesses, but it does not have the document that would serve to prove the dominion that has been transmitted for many years into the present.*
>
> *I ask and beseech Your Excellency, in the first place, for protection of our land, and secondly, may it please Your Excellency to order that our land be surveyed according to the same borders recognized by the pueblo, hence resulting that we be given title.*[19]

An official in Gracias responded on the same day:

> *In sight of the preceding petition, the government agrees to grant as ejidos to the pueblo of La Campa the land that its residents say they have possessed for many centuries, as long as the area does not exceed the two leguas cuadradas indicated in Article 15 of the June 23, 1836, Law. The interested parties may request survey and auction of any excess land there might be, according to the regulations in force.*[20]

The surveyor required 3 arduous days to mark the borders. Residents of La Campa and Caiquín accompanied the surveyor to draw the boundary through the disputed area, and reached a compromise acceptable to both sides. At the end of the process, the surveyor noted that much of the land claimed by both communities remained outside their legal allotment, because both claimed more than two *leguas cuadradas*. The surveyor reported "pine-covered hills with sparse undergrowth, adequate to graze livestock but little else," and described the challenges of traversing the steep hills and forests. The description implies denser, more extensive, and less accessible forest than exists now.

The border conflict with Caiquín provided an incentive to formalize use rights with a land title. Scribes in Gracias made at least two copies of the title. La Campa retained one for its community archives, and the other went to the capital, Tegucigalpa, for official records and eventual archiving. Although the official

demarcation left out much of La Campa's territory, the official recording of the land title in 1865 expanded La Campa's legally recognized land rights.

Subsequent to the legal titling of two *leguas cuadradas*, La Campa pursued legal titles to some of the *realengas* that they used beyond the borders of their ejidos. La Campa acquired Tontolo in 1882 from Manuel Trejo, a citizen of Gracias. He had purchased Tontolo as *realenga* from the nation in 1870 and paid 177.62 pesos for 13.3 caballerías[21]; he sold it to La Campa for 600 pesos.[22] In 1925, the national government granted La Campa 2,500 lempiras to purchase Otolaca,[23] but it was delayed due to political upheavals. In 1973, La Campa purchased Trapichito with funds from a timber sale (discussed in more detail in Chapter 4) (see Fig. 2.1). In contrast to ejidos, which were granted by the state to indigenous communities and nominally remained within the state's purview, land purchased by municipal authorities on behalf of La Campa belonged to the community. In practice, there was no distinction between ejidal and communal lands until the national government implemented a land titling program directed at indigenous ejidos (Chapter 5).

The history of La Campa's landholdings presents a number of gaps and uncertainties. At one point in time, Otoloca evidently included Jilguarapis; the land passed through several owners before returning definitively to La Campa.[24] Moreover, La Campa's borders have varied over time, and the boundary markers I located in the field did not always fall where the titles' survey maps indicated.

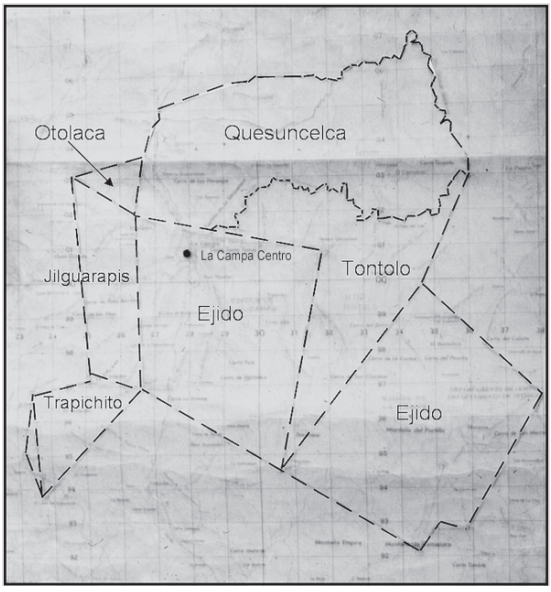

Fig. 2.1 La Campa ejidos and common lands, borders approximate (enhanced version of a copy of a hand-drawn map kept in La Campa's municipal office)

Although land purchases added to La Campa's landholdings, La Campa may have lost some land along its edges through purchases by private individuals. The legal establishment of the municipio of La Campa and subsequent border disputes also shaped its present boundary lines. In trying to ascertain details that land titles excluded, I had several extended conversations with Don Alcides, a former alcalde with a broad grasp of La Campa's history. He confessed to a number of uncertainties as well, because La Campa has few documents from the period prior to gaining municipal status. Supposedly, an alcalde during the mid twentieth century decided to clean out a cabinet in the municipal offices to make more space, and burned piles of historical records. Don Alcides noted: "We don't even know what was lost; the papers probably went back to the colonial period. Thank goodness he didn't burn the land titles."[25]

The history of La Campa's land titles shows that La Campa's authorities were proactive in seeking official land rights, but it is not clear whether they were more proactive than others. La Campa's success in maintaining and gaining land contrasts with the common perception that indigenous communities lost land through the colonial and postindependence periods. La Campa was located near an important colonial city and on the edge of a large hacienda (Hacienda Catulaca), yet it appears that Spaniards and Ladinos had no interest in the area surrounding La Campa, and it experienced few incursions or competition for land until the nineteenth century. The Quesuncelca title mentions that Catulaca respected the Crown mandate that prohibited Spanish-owned cattle from grazing within 1.5 *leguas* of a pueblo de indios (Carlos IV de España 1805). The topography and the absence of valuable mineral resources probably protected La Campa more than any other factors. To La Campa's west lay the impassable peaks of Celaque; to the east, a mountain plateau scarred by gorges inhibited passage. To the south, footpaths (widened to roads only in the past 30 years) led through pine forests to the nearest neighbors, the pueblos de indios of Caiquín, San Manuel de Colohete, and Colusuca (which became San Sebastián). No other important settlements appeared in La Campa's vicinity until Ladinos moved into Guanajulque in the postindependence period.

La Campa's success in expanding its legally titled land also reflected Honduran policies that permitted common-property ownership. In other parts of Central America during the latter part of the nineteenth century, liberal reforms promoted centralized governments and export-led growth. El Salvador and Guatemala enacted policies that expropriated indigenous lands and transformed communal properties to private holdings in order to convert "unused" land to productive uses. As peasants and indigenous peoples lost land, they formed a labor force at the disposition of large landholders, coffee growers, and emerging industries. By contrast, the Honduran state attempted to expand production through mandates and incentives; indigenous and peasant populations retained land rights (Lapper and Painter 1985). Elites expanded control over the poor, rural population through legal and financial leverage, but Honduras did not acquire a landless labor force until the twentieth century. Honduras lagged behind its neighbors in urbanization, industrialization, and income from exports, a situation that has been attributed in part to the low productivity of peasant agriculture (Euraque 1996; Williams 1994).

During the twentieth century, the Honduran government continued to acknowledge indigenous communities' land titles, and made small but symbolically important concessions to laborers and the rural poor through recognition of unions and land-reform programs. The government recognized labor unions in 1954 (the last nation in Latin America to do so) as the result of a massive strike by banana workers and intervention by representatives of the United States' American Federation of Labor. The government and the owners of the banana companies (Standard Fruit and United Fruit) accepted unions overtly, but tried to undermine their autonomy by co-opting the leadership. The government also legislated a social security system for the labor unions (Peckenham and Street 1985). Unions expanded rapidly, especially in the banana industry. During the reformist military government of Oswaldo López Arellano (1972–1975), union membership exceeded that of all other Central American nations (Euraque 1996). Land-reform programs of 1963 and 1972 were enacted in response to determined demonstrations, well-organized land occupations, and legal pressure from rural peasants and their allies. Over the course of 2 decades (1963–1982), nearly 55,000 land-poor or landless rural households obtained approximately 245,000 ha from large landholdings (Kincaid 1985). The beneficiaries had to follow a complicated procedure to gain the land. Landholders resisted redistribution of even the least desirable, idle segments of their land, which were usually all that the law permitted peasants to request on the justification that the land was not being put to productive use. The reforms benefited barely 14% of the rural population, and not all managed to hold on to their land. While the reform programs and unionization process did not challenge the fundamental inequities in Honduran society, they may have diffused social tensions. In comparison to neighboring nations, the Honduran government responded with a degree of openness to social unrest instead of relying primarily on violent repression. The combination of symbolic reforms and the appearance of a somewhat responsive government may have contributed to Honduras' relative stability through the 1970s and 1980s (Kincaid 1985; Thorpe et al. 1995). Although the Honduran military and national government also employed repression to eliminate opposition and people "disappeared" (Comisionado Nacional de Protección de los Derechos Humanos 1994; Valladares Lanza and Peacock 1999), Honduras nevertheless avoided the civil wars that shook Guatemala, El Salvador, and Nicaragua.

La Campa Becomes a Municipio

By the early twentieth century, the residents of La Campa and Caiquín became frustrated with their obligations to provide labor and fees to Gracias, because they received little in return. The neighboring communities of San Sebastián and San Manuel de Colohete had gained municipal status in 1896 and 1901, respectively (Fiallos 1991), but La Campa and Caiquín had fewer residents and lacked the prerequisite infrastructure. In 1916, La Campa hired a lawyer to argue its case and attend to bureaucratic procedures in Tegucigalpa. By 1920, La Campa's case had

advanced favorably. When it became obvious that La Campa would succeed in its bid, the people of Caiquín sent their auxiliary alcalde to La Campa with an offer: they wanted to be part of the new municipio as long as La Campa recognized Caiquín's separate land titles and autonomy in land-use decisions. Despite their history of discord, both communities recognized that they had something to gain by unification. La Campa would become one of the department's larger municipios and obtain proportionally more financial support from the national government. It would also have a larger population base to carry out municipal projects (see Fig. 2.2). Caiquín would be free of servitude to Gracias; as part of La Campa it could participate more directly in municipal government and place its own residents on the council. La Campa accepted Caiquín's proposal. When municipal

Fig. 2.2 Municipal borders of La Campa, 1921–1995

status became official on January 19, 1921, Caiquín's council made land-use decisions within its territory, served in Caiquín's town hall, disciplined Caiquín's residents on minor transgressions, and defended its land against Campeño interlopers. La Campa's residents (who controlled the municipal council due to their larger population) tolerated Caiquín's autonomy, but expected Caiquín's residents to send representatives to municipal council meetings, respect municipal ordinances, pay municipal taxes, and stay off La Campa's land. Caiquines resented Campeños' dominance of the municipal council. Several Caiquines became delinquent paying municipal taxes; they were fined by the council. Within 20 years of joining La Campa, Caiquín's people renewed their struggle to form an independent municipio.[26] La Campa, unwilling to lose even a recalcitrant portion of the municipal population, quietly resisted the process. Meanwhile, farmers along the La Campa-Caiquín border renewed their conflicts over land rights. In the years following the survey of 1864, the communities had failed to maintain the boundary line and had not erected permanent border markers. The surveyor had designated agricultural clearings as markers along the border, but with time the clearings had reverted to forest or changed their dimensions. Rumors on both sides alleged that the stone border markers had been moved; the discord has resonated into the present day.

As a municipio, La Campa gained local autonomy over labor obligations and tax decisions, and it could represent its own interests directly before the departmental and national governments. The first elected *municipalidad* (municipal council) included the alcalde, *síndico fiscal* (second in line to the alcalde, responsible for overseeing land allocations), and three regidores (council members) who served as advisors. Interestingly, the *síndico fiscal* was customarily the person who came in second in alcalde elections. This meant that alcaldes had to work closely with a political rival; the mechanism helped to limit corruption and ensure transparency in decision making. Council members could be elected from any village in the municipio, so power did not become concentrated in the Centro. Moreover, each village in the municipio selected several auxiliary alcaldes (village representatives) to attend council meetings, organize labor and communal activities in the village, and help enforce the law within their villages. In addition to attending council meetings, communicating council decisions, and enforcing the law in their villages, auxiliary alcaldes were charged with the sensitive tasks of collecting taxes from their neighbors and arresting anyone who violated municipal ordinances. A *suplente* (substitute) was elected to cover an auxiliary alcalde's duties in case of illness or disability. In addition, every village named alguaciles (assistants to the municipal alcalde) in proportion to their population for rotating service in the offices in the Centro.[27] Through the first half century of the municipio, almost every man served periodically as an alguacil. Each village sent one auxiliary alcalde or alguacil every week; the on-duty representatives arrived in the Centro on Sunday afternoon to relieve their predecessors. For the full week, the on-duty auxiliary alcaldes and alguaciles were responsible for running errands, supervising ongoing community projects, detaining lawbreakers, guarding prisoners in the municipal jail (usually drunks who had disturbed the peace), and assisting the alcalde and council as necessary. They slept in the town hall at night, until their relief came the following Sunday. The

national government abolished the position of alguacil in 1941 and instated a paid position of concierge instead.[28] La Campa appealed the decision by explaining that the municipal government could not afford to pay a concierge, and needed to have alguaciles. La Campa continued the custom until the 1970s, when it adopted the position of concierge. Today the concierge's duties involve guarding the municipal offices and its keys, capturing delinquent livestock grazing in the Centro, and carrying messages for the council.

The auxiliary alcaldes and alguaciles comprised the *consejo* (advisory board) to the council, and they offered their opinions and presented requests during council meetings. Other municipal offices included *jueces* or *justicias* (judges for minor offenses) and the *juez de policia* (municipal police officer), which rotated among the regidores. The police had to investigate cases of civil transgressions and mete out punishment. In recent years, the police position has become a separate post in the municipal government. The position of *juez de paz* (justice of the peace) is responsible for addressing serious transgressions; he also mediates civil disputes and adjudicates conflicts over land. Criminal cases generally transfer to the department capital for adjudication.

Since Caiquín had separate land titles as a pueblo de indios, it elected in addition a local council composed of an auxiliary alcalde and regidores to help manage affairs within its territory. The size, composition, and responsibilities of the municipal council have evolved through time with demographic change and revisions of national municipal laws, but the basic structure has endured.

Traditional Subsistence Crops

Maize, beans, and squash, the triumvirate of Mesoamerican agriculture, have been important staple crops throughout La Campa's history. As in other Mesoamerican cultures, the Lenca planted these crops together in the milpa, and the practice continues today. The multicropping methods imitate naturally occurring plant associations, which indicate indigenous people's intimate knowledge of their environment. Spaniards' accounts from the 1500s to 1600s mentioned that indigenous groups planted crops in a variety of combinations, such as maize-chile-melon-sweet potato-beans, cotton-beans-chile-tomato-chia (or *chan*, a flowering plant whose seeds make a tasty beverage), trees-medicinal plants-flowers, and maize-beans-chia (Ardón Mejía 1993; Chapman 1978). Through crop associations, Mesoamerican agriculturalists were able to "reduce their risk of total loss in the agricultural cycle, manipulate the microclimate, and guarantee the sustainability and improvement of the resource base" (Ardón Mejía 1993, p. 96).[29] In addition, Lenca people evidently raised other native crops, such as yuca (cassava), tobacco, cacao, achiote, and chayote or *pataste* (Chapman 1992). All of these plants can be found today in La Campa, except for cacao, which requires a moist, tropical environment.

During the colonial period, the Spaniards introduced wheat, sorghum, sugarcane, and new types of fruit (Ardón Mejía 1993; Chapman 1992; Newson 1986).

Although indigenous groups were encouraged to produce wheat, Spanish colonists produced most of it themselves in response to scarcity and high market prices (Newson 1986). The Lenca of western Honduras, similar to other Honduran Indians, did not adopt wheat cultivation to any notable extent (Chapman 1992). Since maize produces significantly higher yields per unit of land compared to wheat (Netting 1993), indigenous groups had little incentive to switch to wheat even though bread became a popular treat (Chapman 1992).

Colonial sugarcane production in Honduras could not compete with Caribbean production, and establishing large sugarcane plantations required exorbitant investments. Haciendas grew limited amounts of sugarcane to produce minimally processed sugar for consumption, but production never met local demand (Newson 1986). Over the centuries, sugarcane disseminated throughout Honduras, and most La Campa households raise some sugarcane for subsistence or simply a sweet snack.

Fruit trees have been a persistent part of Lenca agriculture, and were probably cultivated around dwellings. Fruits native to the region included mamey (*Mammea americana* L.), zapotillo (*Manilkara bidentata* [Mill.] Fosberg), papaya (*Carica papaya* L.), and jocote (*Spondias purpurea* L. and *S. mombin* L.). Spanish documents from the 1500s report avocado (*Persea americana* Mill.), guava (*Psidium guajava* L.), pineapple (*Ananus comosus* [L.] Merr.), zapote (*Calocarpum sapota* [Jacq.] Merr.), and granadilla (*Punica granatum* L.) (Chapman 1992; Newson 1986). A number of these fruits, along with those known as *paterna*, *guanijiquil*, *consonrico*, *chimís*, and *nance* (*Byrsonima crassifolia* [L.] HBK) grow wild in La Campa. Residents distinguish these naturally occurring fruit trees from those that must be cultivated from seeds and nursed to maturity, such as citrus fruits, varieties of banana, and avocado. Varieties of mango (*Mangifera indica* L.) appear well suited to the area; residents raise them in gardens but they also grow along paths. A 1920 La Campa document, written to substantiate eligibility for municipal status, reports that "the majority of residents possess an orchard of banana and coffee, orange and *lima*[30] trees."[31] The list only includes crops introduced by the Spaniards, which had market value. It is almost certain that people's orchards in 1920 contained the wide variety of native plants and trees that are found today.

Rituals, Beliefs, and Natural Resources Among the Lenca

Due to population collapse, profound disruptions of society, culture, and loss of their language, no aspect of the Lenca beliefs and practices can be considered a pure survival from the prehispanic era. Nonetheless, the people managed to develop uniquely syncretic Lenca traditions forged in the violent clash between Spanish and indigenous cultures, Catholic doctrine, and native faith. Similar to communities throughout the Catholic world, Lenca communities celebrate their patron saint's day. Although this tradition appears to be entirely Catholic in origin,

Lenca communities integrated aspects of their culture into the celebrations. Two special expressions of Lenca syncretism are found in traditions of *guancascos* (villagers taking their patron saint to visit another village) and *pagos a la tierra* (payments to the earth; hereafter pagos). Both of these traditions affirmed Lenca cosmology and reinforced social relationships. Pagos had the additional role of expressing and confirming Lenca beliefs regarding human-environment interrelationships, and therefore will be explored in depth.

For believers, the Lenca belief system constitutes an integrated whole. God, Christ, and the Virgin Mary reside in heaven, attended by a host of saints who intercede on behalf of suffering humanity, while earthly spirits do God's will by caring for the resources upon which humans depend for sustenance and livelihood. People owe devotion and respect for all parts of spiritual hierarchy and demonstrate their faith by attending mass, performing sacraments and rituals to please God, and conducting rituals to appease earthly spirits.

Festival of San Matías

La Campa celebrates the Day of San Matías during a 9-day period, usually starting around February 15 and continuing through February 24.[32] It represents the annual high point of religious and social celebration for La Campa. While any patron saint's day draws people from surrounding villages to join in the revelry, the Festival of San Matías draws pilgrims from throughout western Honduras. The celebration appears to date to the colonial period. It begins with a Mass or the praying of the Rosary (depending on the availability of a priest). The Consejo de Fábrica (a group of men charged with overseeing and organizing church rituals and special events) lower the large image of San Matías from his niche and place him on a wheeled stand on the floor of the sanctuary. The Guardia de la Santísima (a group of devout women charged with caring for and decorating the church and the images of the saints for religious events) decorate the sanctuary with ribbons, flowers, pine boughs, and ornaments, and clean all of the saints with special attention to San Matías. After San Matías has been prepared, a man dances the Baile del Garrobo in the church yard, accompanied by music from a bamboo pipe and drum. The dancer, who covers his head with a traditional mask, dresses in black. He holds a stuffed garrobo in one hand, and brandishes a whip in the other. As he dances, mischievous children dart in front of him, and he snaps the whip in their direction but takes care not to hit anyone. The Baile del Garrobo recalls the miraculous discovery of the image of San Matías, and the tunes of the dance are performed only during the festival. On following days, representatives of La Campa's villages bring one of their saints to celebrate the festival with San Matías. Some statues reside in the sanctuary with San Matías, while other images are given shelter in the municipal building or a house.

Alguaciles and assistants set up frames for kiosks around the municipal building, which are rented to vendors who come to the festival. The number of kiosks grows

over subsequent days as the Centro fills with vendors who sell all manner of goods, religious souvenirs, and knick-knacks. By February 22, the Centro becomes nearly impassable as vendors, temporary kitchens, and crowds of pilgrims fill nearly every available space. Centro households rent rooms, porch space, and backyards for visitors to sleep, and charge for the use of latrines and showers. Many Centro women sell tortillas and coffee or complete meals to visitors from their homes. San Matías is carried in procession around the village, and long lines form to make offerings or request miracles from the saint. Inside the sanctuary, the walls and pillars become covered with petitions and notes of gratitude, written by devotees, and a large wooden box serves to collect people's offerings.

In 1994, I was able to participate in the entire festival. At the peak of the festival, I counted 176 kiosks, 13 pickup trucks selling goods, and at least 169 vendors selling from open spots on the ground. Mobile vendors, who carried wares on their backs through the crowd proved too difficult to count accurately; they sold candies, drinks, herbs and natural remedies, chewing gum, sunglasses, bead jewelry, watches, and other small items. Campeño potters set up seven stands to sell their wares. At least ten busloads arrived, and more buses made trips back and forth from Gracias to drop off pilgrims. Uncounted trucks and minibuses competed for parking space in the fields and along the road leading to the Centro. Visitors from nearby villages walked or rode on horseback. Authorities estimated the crowds at 3,000–5,000 people.

The festival represents a peak in harvesting from the forests around the Centro. Large quantities of firewood are cut to cook the food consumed by pilgrims and vendors; the population consuming firewood swells to several thousand people instead of the several hundred that usually reside in the Centro. A large number of small pines are cut to serve as poles for kiosks; each kiosk requires a minimum of 11 poles that are 2–4 m long, and 150–200 kiosks are set up. I estimated that approximately 1,000 pine saplings were cut in 1994; given that neighboring kiosks may share corner posts, thicker poles may be used for more than 1 year (Centro households rent out poles during the festival), and some vendors bring their own poles or tents.

Guancascos

The tradition of guancascos is a celebration that involves reciprocal visits of patron saints between two neighboring indigenous communities. It appears to have its origins in prehispanic traditions in which two communities confirmed their commitment to peaceful relationships and promised to serve as allies in case of war. Villages paired in these traditions are called *guancos*; the tradition appears to be Lenca, although some villages that do not appear to have Lenca origins also practice guancascos. During the colonial period, the original traditions evolved into an expression of friendship between two villages' patron saints, but the underlying purpose of affirming peaceful relationships between the

villages endures. If guancos enter into a dispute, the celebration of their guancascos is suspended (Chapman 1986). Until recently, La Campa participated in guancascos with Belén, Santa Cruz, and San Manuel de Colohete. Most Lenca communities celebrated one guancasco; therefore, La Campa's large number of guanco ties was unusual, and perhaps reflects the regional importance of San Matías (Castegnaro de Foletti 1989).

Each guancasco celebration occurred at a specific time each year, and required advance planning between the two villages to confirm the details. The host village might hire a band or musicians to welcome the visiting saint and its congregation, prepare food for a series of feasts to entertain their guests, and plan customary dances and greetings. Historically, guancasco celebrations involved copious consumption of chicha and boisterous activities that the Spaniards perceived critically:

> *Just as grave are the damages that arise from the gatherings that some pueblos have with others for their festivities that some call Guancos. The entire populations of the villages carry the images of their patron saints as far as 34 leguas and on the way commit innumerable acts of disorder ….* (quoted in Chapman 1986, p. 133)[33]

In recent times, the guancascos that endure have become more serious religious events while retaining their social dimension. The most important guancasco for La Campa is with Belén, and is celebrated in conjunction with the festival of San Matías. When I was there in 1994, the guancasco with Belén began on February 23 so that its patron saint, the Virgen del Rosario, could be present on February 24 with San Matías. Historically, the people of Belén carried the image over the mountains to the Centro, but with improved roads and transportation, they traveled most of the distance by vehicle. Arriving in La Campa, the people carried the Virgen in a procession down the road into the Centro, where they were met by a procession of Campeños and pilgrims bringing the image of San Matías to greet them. The procession with San Matías included musicians playing a bamboo pipe and drums. The alcaldes and regidores of each town led the processions; each alcalde carried the Vara Alta, an ornate staff that serves as the customary badge of office. The alcalde of La Campa welcomed his counterpart, the Virgen, and the people of Belén on behalf of San Matías. The alcalde of Belén responded with flowery phrases of thanks and appreciation; both men mentioned the history of goodwill and friendship between their peoples. Then the people carrying the Virgen and San Matías came together, and each image "bowed" to the other in a greeting ritual that the people colloquially described as "kissing each other." The two crowds merged and surrounded the two saints' images, which were carried side by side back to the church as musicians played celebratory tunes, and fireworks were set off. The saints were set together with other images of saints before the congregation. The festivities continued with a Mass, followed by fireworks. The Virgen remained with San Matías until February 27, when she was removed and carried in procession out of the Centro, then gently placed in a box and carried by vehicle back to Belén. By custom, the people of La Campa entertained their visitors with food, drink, dances, and religious observances and offerings during this period.

Guancascos between other villages followed a similar pattern, and when the patron saints were of different sexes, the people referred to them as "fiancés" (Chapman 1986). Just as marriage creates a common bond between two families, the guancascos symbolically created a bond between two communities through the spiritual pairing of their patron saints. When the two villages had patron saints of the same sex, the saints were seen as joined by bonds of friendship. After the end of the Festival of San Matías, the men given the honor of carrying and caring for the image of San Matías historically started the annual round of visits to surrounding communities that venerated San Matías and gave offerings. The caretakers benefited from the hospitality of the host communities, and carried most of the offerings back to La Campa, while taking a portion as compensation for their time and service. Similar practices, known as "visits of the saints," also occurred among other Lenca villages, but La Campa presented an extreme case due to the distance that San Matías traveled (Chapman 1986). This custom ended in 1993, when the caretakers got drunk and allegedly dropped the image of San Matías. Since the caretakers had an overriding responsibility to care for the image with respect, especially due to its miraculous and sacred nature, Campeños felt betrayed and outraged. The priest took advantage of the people's anger to definitively prohibit the custom of San Matías' visits to neighboring villages. The priest, however, had already expressed dislike for the practice because it emphasized the image in a form that official Church doctrine perceived as too close to idolatry.[34]

Pagos a La Tierra

In Lenca beliefs, every place has a spirit that owns it, and the spirit expects to be respected and compensated for the resources appropriated by humans. To do this, the Lenca perform a pago. In other Lenca communities, it is called a *compostura* (literally an "act to put things into balance"). In La Campa, the *compostura* represents one stage in a multistage ritual. One woman explained her rationale for performing pagos in these terms:

> *We should pay the earth, because if someone gives you a gift, shouldn't you repay that gift? Wouldn't you return it? Of course. It's the same with the earth; it gives us food. And it seems to me, we should pay back the gift. The earth has owners, each place has spirits that live there, and the water has owners, too*. (March 21, 1994, personal communication)

If a spirit feels that humans are ungrateful or wasteful of its resources, the aggrieved spirit will cause a family member to fall ill. One Campeño explained to me that when he was a young father, his firstborn son fell gravely ill with a high fever. At the recommendation of a neighbor, the man invited a *sabio* (wise person) to examine his son. The sabio explained that the man's son's illness was caused by the spirit of his milpa, who was angry because he had not received any offering for the man's use of the land. The man had to perform a pago and promise the spirit to make regular payments in the future. His son soon recovered.

Aspects of Lenca practices imply an underlying conservationist ethic. Current theoretical perspectives on common-pool resource management hold that people do not independently develop rules for resource management unless an important resource becomes scarce (Gibson 2001). Yet many rural, small-scale societies act conservatively toward natural resources within a set of practices and beliefs that constrain resource destruction. The question is whether such beliefs should be understood as a conservation ethic. Baland and Platteau (1996) argue that unless practices are intentionally designed for ecological purposes, they should not be thought of as conservationist:

> *A society may be said to be conservationist if resource conservation has been (purposely) achieved through the operation of ecologically oriented motives. When this is not the case, because such an outcome has resulted either from motives unrelated to the ecological concern or from exogenous, uncontrollable events, the society is not conservationist although resources have actually been maintained ….*
>
> *The above distinction between intentional and non-intentional conservation practices is not a purely academic matter. Indeed, the potential for village- or group-level resource management in today's circumstances partly depends upon the people being sufficiently aware of the impact of their own actions on the state of the surrounding resources.* (p. 187)

By contrast, scholars working with indigenous communities argue that beliefs and practices can encode information that serves ecological purposes, even if believers are not conscious of the ramifications. The important thing is the outcome. Rappaport (1984) discusses ritual dimensions of ecology among a New Guinea people, and argues that the *kaiko* ritual of pig slaughter and feasting keeps the pig population in check, and serves as a way to solidify intergroup alliances, facilitate trade, and build community solidarity. Lansing (1991) shows that the traditional system of water temples in Bali served to manage irrigation to control pests and water flow efficiently. Although the Balinese believed that faith in water temples helped agricultural production, few understood the logistical dimensions and practical benefits of the system that was couched in religious symbolism and ritual.

The contexts in which indigenous cultures and beliefs conserve natural resources contrast with the criteria that Western scientists and conservationists use to assess resource management and ecological sustainability, creating a gap between indigenous knowledge and Western science. Recent studies of traditional ecological knowledge and ethnoecological approaches attempt to bridge the gap between indigenous knowledge and Western science by recognizing the elements of traditional beliefs and practices that contribute to conservation. These studies recognize that beliefs can provide a powerful incentive to act in certain ways, which can foster resource conservation or degradation. Toledo (2001) provides a generalized description of the beliefs held by many traditional, subsistence-based indigenous groups:

> *Nature is, therefore, not only a productive source but the center of the universe, the core of culture and the origin of ethnic identity. At the heart of this deep bond is the perception that all living and non-living things and natural and social worlds are intrinsically linked (reciprocity principle).* (p. 457)

For the traditional Lenca belief system, this link between nature and social life was palpable, and became explicit through the practice of pagos.

Types of Pagos

People in La Campa used to conduct many types of pagos (Table 2.2). The historical depth of these practices cannot be accurately reconstructed, but may have their roots in prehispanic rituals, while other dimensions echo the structure of a Catholic Mass (Chapman 1986). Four agricultural pagos took place in milpas, an additional pago occurred if the family planted field beans (*frijoles*).

Table 2.2 Types of *Pagos a la Tierra*

Type of pago	Preferred months	Special characteristics
Milpa[a] (maize field)	January–May	A major pago with a tom turkey
Siembra (maize planting)	April–June	n.d.
Saumo: (ripening of the maize when the first ears may be eaten)	August–September	*Mantucas* (tamales made from newly ripened maize) are served
Tiempo de tapiscar: (harvest time)	October–January	A major pago with a tom turkey
Alza de obra (after the harvest has been entirely consumed)	Variable	Careful cleaning of the bin or storage room where maize was stored. No sacrifice is done
Cañal (sugarcane field)	Variable	n.d.
Frijolar (bean field)	Variable	n.d.
Huerta (orchard) or finca (coffee field, historically with the huerta)	January–May	Tom turkey
Barral (clay bed)	January–May	Rooster or hen turkey
Arenal (sand bed)	January–May	Chicken (usually)
Area used to fire pottery	January–May	Chicken
Pozo or *manantial* (water source)	January–May	Rooster (usually)
Monte or *Montaña* (forest)	Variable	Tom turkey
Hogar y solar (house and patio)	January–May	Chicken (usually)
San Antonio (Saint Anthony, patron saint of domestic animals)	Variable (historically on June 13, the saint's day)	Tom turkey (formerly a calf or cow might be sacrificed for a public celebration)
To heal spirit-induced illness	As needed	Bread is served instead of *buñuelos*
Punto (a symbolic gesture to promise a pago at a later date, offered when a family cannot afford the full ritual, but wishes to appease a spirit)	As needed	A single candle lit in the appropriate location, instead of the full ritual

[a] A single pago for the milpa has now replaced the four pagos (*siembra, saumo, tiempo de tapiscar* and *alza de obra*) previously offered for maize production

Families also performed pagos for the spirits of sugarcane fields (*cañal*), orchards (*huertas*), and coffee plantations (fincas, typically shaded by fruit trees). Hunters used to owe thanks to spirits of the forest where they found success, but hunting has declined with loss of deer, wild pig, and other fauna. Women who produced pottery performed pagos to honor the spirits of the clay bed, sand bed, water source, and forest that provided firewood to temper the pottery. Households also needed to repay the siren who provided their water. When a new house was constructed, a pago was conducted to reassure the resident spirit, and periodically thereafter a pago took place in gratitude for the use of the houselot. Owners of cattle, horses, and mules performed a pago to San Antonio, the patron saint of domesticated animals.

People who remember the full cycle of pagos indicate that some were simpler than others, and required different investments in resources. In many cases, people could not afford to fulfill all of the pagos, but the pagos to the milpa and the clay bed were most important because of their centrality to household subsistence. Some pagos were small, private affairs (such as the *alza de obra* to give thanks after the maize harvest was consumed) while others involved large celebrations with family and friends, such as the pago during the harvest. The pago to San Antonio involved the largest public festival, because everyone's cattle, mules, and horses shared communal pastures. The ceremony was held on a large, open pasture owned by the Catholic Church until the mid-1900s, when it was sold. The entire community gathered to witness multiple sacrifices of tom turkeys. They consumed large quantities of chicha, feasted communally on the sacrificed animals, and followed the ceremony with dancing. Today the public pagos have ended, and the frequency of pagos has been declining due to a number of social factors (Chapter 7).

Organization and Elements of Pagos

Pagos vary in their details across the Lenca regions of Honduras. In Guajiquiro, Department of La Paz, Stone (1948) reported that the Lenca perform agricultural rites that involved cacao, copal, chicha, dancing, and a bonfire; she does not mention a sacrifice of a domestic animal. In the Department of Intibucá, people build an altar in the field, decorate it with special flowers (*zomos*) and set off fireworks (Chapman 1992). Differences in the practices of pagos may have roots in varying prehispanic cultural traditions as well as experiences with the Catholic Church. In La Campa, pagos also differ with respect to the resources of the household and the nature of the spirit to be paid. Spirits of land are believed to be male and typically desire a tom turkey in payment. Spirits of water, clay beds, and sand beds are understood as female, and generally prefer a hen turkey or a rooster. The importance of clay beds and sand beds for pottery making, primarily a female occupation, correlates with the feminine nature of the spirits.

Most types of pagos require the same set of elements: a fowl (a turkey, rooster, or chicken), copal (aromatic resin used for incense), cacao, and chicha (Table 2.3). Turkeys, copal, cacao, and chicha are clearly Mesoamerican elements, and imply

Table 2.3 Elements required for a *Pago a la Tierra*

Element	Explanation
Vino dulce (chicha)	Beverage made of fermented maize and sugarcane extract (dulce de panela). Consumed at key points in the pago and sprinkled on the ground during the compostura (second stage of the pago) to please the spirit
Cera negra (black wax)	Collected from hives of native black bees in pine-oak forests. Used to make the nine candles that are burned in front of the cross during the compostura
String	Used for the wick for the handmade black wax candles
White wax candles	Burned in front of the cross during the *compostura* (depending on the spirit to be honored)
Copal or *incenso de duquidambar* (incense)	Resin from pine trees (Pinus pseudostrobus) burned as incense before and during the compostura. The scent pleases the spirit
Cacao pods	Roasted and ground with maize into a ball (*chibolito de cacao*) about 1.5 in. in diameter. It is dissolved into chicha and mixed with blood to sprinkle on the ground. The scent pleases the spirit
Nixtamal (maize boiled with lime)	Ground with the cacao to form the *chibolito de cacao* (see above)
Banana leaves	Used to wrap the *chibolitos de cacao* and the black wax candles to carry them to the site of the pago
Turkey, rooster, or chicken	Sacrificed to honor and repay the spirit of the earth
Sharp knife	Used to slit the throat of the sacrificial bird
Wooden cross large enough to stand on the ground	Set on the ground where the pago is performed to show respect for Christ (an adaptation to negate priests' claims that the pago is a heathen ritual), except in pagos for water, clay, or sand
Buñuelos or bread	*Buñuelos* are bananas cooked with *panela*, eaten with *chilate* after the *compostura*. Bread is served if the pago takes place to cure an illness
Maíz blanco (white corn)	Roasted, ground, and boiled in water to make *chilate*. It is served with the *buñuelos* or bread
An image of Jesus, the Virgin Mary, or a saint	Used as a decoration on the table where the celebratory meal is served following the *compostura*
Flowers	Placed in front of the image of the saint and on a chair that welcomes the spirit for the celebratory feast

prehispanic dimensions in the ritual. In La Campa, pagos require candles made by hand with black bees' wax (produced by native, wild bees who build hives in hollow trees), candles of white wax, a cross, and sometimes a painting of a saint, preferably San Matías or the Virgin Mary. The Lenca of Intibucá use fireworks and a certain decorative flower, but usually forego the cross and the painting of a saint. Pagos center on the sacrifice and ritual consumption of a fowl. The ritual involves three stages (*puntos*) (Table 2.4), and each stage requires a series of steps performed in the correct order and with due respect for the spirit. The first stage

Table 2.4 Stages of a typical *Pago a la Tierra*

Stage	Activities
First (*Primer Punto*)	Assemble the ingredients needed for the ritual Lay the table for the feast with flowers, image of a saint or Christ, and each ingredient as it is ready Decorate a chair with flowers and colorful cloth to seat the honored sprit(s) Grind cacao pods and *nixtamal* to form the *nueve de cacao* ball Make nine black wax candles from melted wax and string *Encarnadura* (formal opening of the ritual): The *encargado* (leader) prays for God's blessing and the blessing of the spirit(s). Then he blesses each participant with a *retoque* (passing over) of black wax candles and copal incense[a] All present drink chicha in solemn silence
Second (*Segundo Punto*, or *Compostura*)[b]	Participants carry all required elements to the location where the spirit dwells. Wrap the black wax candles in banana leaves Light copal incense Set the cross in the ground (except for pagos for water, clay, or sand) Arrange and light the nine black wax candles (in front of the cross if it is used) Spread copal smoke around the area, pray to the spirit to accept the offering and forgive any wastefulness of the spirit's resources Mix the *nueve de cacao* with chicha in a small clay bowl; spread most of the liquid on the ground in front of the burning candles Pray for the spirit to forgive any waste and disrespect, and request the spirit's blessing Summon the spirit and present the bird to be sacrificed. The encargado speaks to the spirit with great respect and asks that the sacrifice be accepted Sacrifice the bird by slitting its throat. Some blood is captured in a clay bowl with chicha, and the rest soaks into the ground Pluck several of the longest feathers from the bird and spread them over the bloody ground Prayer asking for the spirit's favor while splashing the chicha and blood mixture around the area using one feather All present drink chicha in solemn silence
Third (*Tercer Punto*)	Return to the house, praying and repeating the invitation for the spirit(s) to accompany everyone back to the house Everyone sits down at the prepared table Prayer and an invitation to the spirit(s) to come and sit with the family *Buñuelos* or bread is served with *chilate* (unsweetened maize flour drink) for each person and the spirit(s), who invisibly occupy the decorated chair Prayer to honor the spirits and ask that the food be received Everyone sits and eats the *buñuelos* or bread and drinks chilate, followed by another prayer Preparation of the sacrificed fowl(s) and a savory *atol* for the feast When the food is ready, the participants gather around the table. The encargado prays for the blessing of the food and the acceptance of the offering by the spirit Everyone sits and eats quietly. At the end of the meal, the encargado says another prayer and embarks the spirits back to their home

[a] A young encargado told me that the *encarnadura* (embodiment) begins with making the black wax candles. A more experienced encargado said that it begins with the blessing

[b] If multiple spirits need to be repaid at the same time, this second stage, or *compostura*, must be repeated for every spirit at his/her location

involves preparations of the items required for the pago, which vary depending on the nature of the spirit to be paid. The second stage entails the sacrifice of the bird to appease the spirit, and the last stage is a feast to consume the sacrificed bird in honor of the spirits. A spirit partakes in the feast by sitting at the table and absorbing the essence of the bird and the other foods through their aromas. If all goes well, the spirit departs contented.

A leader (*encargado*) carries out the pago. An encargado must have the talent to talk with spirits and thorough knowledge of the steps of a pago. A sabio has the additional talent of divining or discerning the spiritual causes of ailments; this talent is needed to identify the type of pago required when someone has a spiritual illness. A sabio may also serve as an encargado, but recently most of the sabios in La Campa have been women. I learned of no case in which a woman served as an encargado. Today, La Campa has only a few people with the requisite experience and talent to serve as encargados. In the Centro, three men offered their services until recently when one moved to find work outside the municipio, and another retired due to age. Two of the men explained that spirits are like people, and it is important to talk to them with respect, and behave as if they are standing right beside you. Sabios and encargados do not charge for their services because it is considered a gift to be able to talk to spirits, and spirits might take offense if someone tried to profit from the gift. Nevertheless, they expect to be given a gift in appreciation for their efforts. Some sabios become exhausted at the effort of talking to spirits, while encargados expend their time and energy to conduct the 8–18 hour rituals. By custom, sabios are left a gift of food or money, while encargados receive the breast of the sacrificed fowl and some additional gift of money or service.

From a conservation perspective, the most interesting aspect of the pago is the explicit intention to make amends to the spirit for any waste or disrespectful use of the resource in question. Encargados pray repeatedly for the spirit to forgive any transgression or wastefulness committed by human acts. The prayers speak to the spirit as the owner of the place, and request that it accept the sacrifice of the bird that is being offered. The prayers also thank the spirit specifically for the resource that has been consumed or used, especially water, clay, sand, vegetation, or a crop. I have been fortunate to witness two pagos, and I am struck by the humility of the prayers and the request for forgiveness of waste. Why were the people so sensitive to waste, or afraid of spiritual retribution for consuming resources basic to survival? It is possible that conservative or wise resource practices can emerge from an environmental awareness born of intimate knowledge of a place and its climatic vagaries (Turner and Berkes 2006). Alternatively, it could be that the Lenca experienced prehistoric degradation that prompted concern for waste of timber, water, clay, and sand as well as for soil exhaustion. If so, then the force of the Lenca belief system preserved this concern even when the environmental contexts changed. Another possibility is that pagos emerged as part of religious beliefs designed to ease human insecurities and create a sense of control in the face of the unknown. In contrast to rituals found in some cultures to bring good weather, large harvests, or luck in war, the pago aims to maintain the balance between humans and nature, and offer com-

pensation for consumption. Similar rituals exist in other agrarian cultures, including parts of southeast Asia and Latin America (Barrera-Bassols and Toledo 2005; Samaddar 2006).

Synthesis

The available prehistoric and historical data for western Honduras, including La Campa, reveal that the forests and people have experienced major transitions in the past 10,000 years. During this time frame, the forests have been cleared patch by patch, many times over. If we attempt to conceptualize the patterns of change, the region has experienced several major disjunctures that have led to radical transformations in the natural and social environments. The first major disjuncture occurred with the arrival of humans, who transformed the landscape by clearing forests. The forest cover renewed itself through long fallows and abandonment as people moved over the land, but the original composition of plants and animals no longer exists.

The emergence of domesticated plants, followed by the rise of agriculture and permanent settlements, led to the next major disjuncture. Social transformations and new forms of social organization created mosaics of forest clearings, fields, fallows, secondary successions, and mature forest patches. The eventual rise and fall of complex Mesoamerican societies, including the Maya civilization, involved periods of localized deforestation and environmental transformation followed by the dispersal of the human population. Prehistory suggests that indigenous civilizations failed to constrain their impacts on the resource base, and environmental deterioration along with climatic variations contributed to their disintegration. Social transformations took place in conjunction with forest transformation, as people in certain areas created permanent settlements and developed trade networks and hierarchical social relationships. Trade allowed people to exchange seeds, foods, tools, and ornamental items, and developed the agricultural characteristics of Mesoamerican culture, especially the maize-beans-squash complex and dependence on the tortilla as a dietary staple.

The arrival of the Spaniards and the period of conquest and colonialism represented a catastrophic disjuncture for the people and societies of the region but resulted in a reprieve for forests. In a period of less than 100 years, an estimated 90% of the native population was wiped out; it is not likely that any community or family survived unscathed. The collapse of the population reduced the pressures on the forests, and they expanded. At the same time, the foundations of the traditional social order crumbled, and the Spaniards imposed their cultural and social order on the survivors. La Campa's form of community governance, property rights, land titles, and relationship with the nation-state were initially established during the sixteenth and seventeenth centuries. Even so, the people fought against Spanish domination; they adapted and resisted by developing novel integrations of traditional beliefs and practices with European and Catholic elements. In a millennial perspective, the period of forest regrowth lasted only a few centuries, but the

syncretic practices and unequal relationships of power with higher-level authorities continue to evolve and influence the lives of the Lenca people.

European culture brought new technologies and priorities along with a profoundly different conceptualization of humanity's place in the natural order. Whereas traditional indigenous societies evidently perceived people as part of nature and subject to it, European cultures and the Catholic faith saw humans as separate from nature and dominant over it. Even though the prehistoric evidence and historical records show that indigenous peoples steadily transformed and periodically overexploited their environment, the European world view fostered rapid exploitation of natural resources, the building of mines, and further transformation of forests. The Spaniards also revolutionized society and livelihoods by introducing sugarcane, coffee, bananas, cattle, horses, mules, pigs, and chickens. Today, the Lenca consider these introduced species as an integral part of their household economies. Of course, the Spaniards also carried off New World plants and introduced them to Europe, thus the events of the colonial period represent a precursor to later processes of globalization for Central America.

It could be argued that independence from Spain constituted another disjuncture, but it was less dramatic than previous ones, especially at the local level. The social, cultural, and economic foundations established under Spanish rule survived independence despite the extended period of political uncertainty and conflicts that ensued in Honduras. For La Campa, independence resulted in few dramatic changes. They no longer had to pay tribute or provide labor to Spanish authorities, but as part of the municipio of Gracias, they still owed contributions of their human and productive resources. In terms of their natural resources, forests remained the dominant land cover, although cycles of forest clearing and regrowth occurred with slash-and-burn agriculture. La Campa participated in regional trade networks through which they traded pottery, basketry, and sugar for salt, cacao, copal, and other goods, but the community had become a backwater in an economically unimportant region of Honduras. The nineteenth century did bring the first schools to the area, and Campeños began their enduring competition for land with Caiquín. All of these disjunctures set the stage for the twentieth century, and the transformations for the people and forests discussed in subsequent chapters.

Chapter 3
Governing the Commons and Making a Living

If you don't work one day, you don't eat the next.

Everything has a remedy except death.

Campeño proverbs

Municipal governance, forest management, and household subsistence are interdependent in La Campa. The common-property regime, reinforced by the communitarian tradition, and a participatory form of community governance provide a context for collective action and principles of land use. When La Campa assumed municipal status in 1921, it had a strong basis for communal governance, customs for managing the communal land, and a diversified subsistence economy. The newly installed municipal authorities faced novel challenges of dealing directly with the national government and fulfilling the expectations of autonomy and progress that had motivated the people's efforts to gain independence from the municipality of Gracias. Households depended on slash-and-burn fields to produce maize (*Zea mays*), beans, and a variety of minor crops for food, but they produced pottery and basketry for sale and trade throughout the region. Forests provided land to create agricultural fields, wooded pasture, and resources that people relied on for household maintenance, food, herbal medicines, and traditional rituals.

This chapter explores local government, institutions for managing forests and natural resources, and subsistence strategies in the community. It examines their interdependence, and considers how they changed during the twentieth century. The discussion in this chapter first examines municipal governance and the ways that it reflected and reinforced the communitarian tradition through local institutional arrangements that supported participatory government, collective action, and common property. The next section explores the forest-field-fallow cycle, its intersections with people's perceptions and beliefs, and associated institutions. Subsequently, agricultural livelihoods and risk-reduction mechanisms receive attention; this part considers the close linkages among diverse subsistence strategies, collective action, and local institutional arrangements. It also recognizes aspects of agriculture that have been changing, while other aspects (such as the elements and timing of agricultural activities) have changed little over the last century. La Campa's ties to the broader regional economy are touched upon in relation to pottery

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

production and trade. The chapter closes by examining forest persistence prior to 1970. It explores whether Campeños intentionally preserved forests or simply lacked the contexts conducive to their destruction.

La Campa's Common-Property Regime in Theoretical Context

Through most of the twentieth century, La Campa's common-property regime appears to have been effective. By effective management, I mean that the resource base and specific resources did not suffer permanent degradation, at least some rules and investments helped to maintain the resource base, and the users achieved a level of coordination in its management (Bromley 1992). La Campa presented a number of the characteristics associated with the emergence and maintenance of effective governance of common-pool resources, which can be grouped as (1) characteristics of the resource, (2) characteristics of the users, and (3) institutional dimensions correlated with long-enduring common-property regimes (Agrawal 2002; Dietz et al. 2003).

Characteristics of the Resource Base and Its Users

Forest resources presented aspects that are associated with the emergence of effective common-property institutions. These characteristics included the following: forest resources were in sufficiently good condition to provide benefits to users through collective management; people understood the resource base and could interpret indicators of change in at least some forest conditions; the area was not so large as to exceed their ability to monitor it; and the availability of many forest resources (particularly firewood and timber) was fairly predictable. Characteristics of the people included organizational experience, recognition that the resources were of value to them (Gibson 2001), interrelationships of trust and reciprocity, and a degree of autonomy to develop their own rules toward resource use without higher-level interference (Ostrom 2001). Face-to-face interactions and shared knowledge and experiences helped to build the trust needed to work collectively. Ties of kinship, fictive kinship, friendship, labor exchanges, and obligatory community service formed dense social networks that facilitated shared understanding, including the knowledge of an individual's character flaws. Inept or unreliable men rarely gained posts on the municipal council, although they had to fulfill obligatory labor and service requirements regardless. Women were not required to help with obligatory communal labor, nor did they have the opportunities and duties of serving on the municipal council.

Institutional Dimensions

Enduring common-property regimes tend to entail a set of dimensions, or institutional principles, that appear to be associated with success. In La Campa's case,

these dimensions included fairly well-defined borders, rules that fit local circumstances, and monitoring and enforcement mechanisms. Resource users also had local means to mediate conflict (cf. Ostrom 1990). La Campa had secure land rights through legal titles in the name of the indigenous community. Rules of community membership clearly defined who had rights and responsibilities in using communal resources. The people who shirked their duties, or tried to claim more land than they could work, were publicly criticized and faced sanctions. If interpersonal conflicts escalated, the individuals involved could seek mediation before the council and the local judge (although personal enmities might endure). People shared a common history, and it is only a slight exaggeration to say "everyone knew everyone else." These characteristics of La Campa's society and institutional arrangements constituted social capital: aspects of social structure that serve as resources for individuals and facilitate certain actions, such as cooperation (Coleman 1990; Pretty and Smith 2004). La Campa's social capital rested on the communitarian tradition that supported common-property management and participatory local government. Moreover, knowledge of the environment complemented their social capital. They knew their land well; they explored it regularly looking for good spots to plant maize, pasture livestock, and collect firewood. Competition for the best parcels of agricultural land evidently led to the development of rules about land distribution, and also encouraged people to keep an eye open for illegal land uses. Their familiarity with the land as well as their daily and seasonal subsistence activities provided informal monitoring of the conditions of the resource and the impacts of human activities.

This rather serene depiction of La Campa is, of course, an abstract representation of a more complex reality. Institutional and social change occurred, though gradually. People's lives were affected by the national political context, climatic variability, and problems that arose within the community. La Campa's elders and archival records reveal the early decades of the municipio as a series of challenges. National civil war, drought and famine, epidemic disease, and limited financial resources complicated municipal governance and collective action, strained the limits of local resilience, and undermined hopes for improved health and welfare.

Municipal Government and the Communitarian Tradition

Don Alcides, La Campa's alcalde, stands with a grimace before the bimonthly council meeting. The municipal council is seated behind him, and the auxiliary alcaldes (hereafter auxiliaries in these transcribed field notes), each representing a village, sit facing him. Many La Campa citizens are in attendance, and have filled the benches behind the row of auxiliaries. Only 3 months into his term of office, Don Alcides must address a number of thorny issues during this council meeting. Controversy has arisen over a land grant; four Caiquín residents have cleared forest illegally for their milpas; the Department of Lempira governor has prohibited all hunting in the department; and two farmers on opposite sides of the disputed Caiquín–La Campa border have accused each other of trespassing. But no issue is more controversial than the alcalde's own initiative, based on a campaign promise, to stop the sale and consumption of alcoholic beverages in La Campa. The ordinance, sup-

ported by a majority of the council, many women, and a few like-minded men, has drawn considerable attention but minimal compliance. I sit on the edge of my seat, notebook in hand, straining to catch every word in the tumultuous meeting.

"You are the responsible parties for enforcing the prohibition on sales of alcoholic drinks!" exclaims Don Alcides to the auxiliaries. "Even you get drunk! You have to be police and judge: Handcuff the venders and bring them in!"

Cruz Alta's auxiliary protests loudly that it's difficult to be a judge.

"Get with it, bring in the guilty," orders Don Alcides.

Various auxiliaries speak at once, agreeing with their colleague from Cruz Alta. A regidor points out that the law is hard to enforce.

"What is this?" exclaims the alcalde. "Am I speaking a foreign language? Why don't you understand me?"

Another council member, Don Alcides' staunchest supporter, recommends forcefully, "Punish those who dodge the law or fail to enforce it!"

Don Alcides pulls out his well-thumbed copy of the municipal code and reads excerpts from the description of an auxiliary's duties: "… enforce law and order in the area under your jurisdiction … resolve problems … receive and respond to information, complaints, and issues that disturb the peace, and if you cannot …, bring it to the attention of the municipal alcalde …."

He speaks emphatically to his audience. "You are competent authorities! The law gives you authority! It seems as if you doubt what I tell you."

Cañadas' auxiliary relates, "One old man who sells guaro (homemade cane liquor) says that he has to sell it because he can't work."

"Then bring him in," orders Don Alcides, then adds facetiously, "it's no big deal to die of hunger." The ridiculous comment breaks the tension; laughter ripples through the town hall. (Everyone knows that the alcalde would not allow someone to die of hunger, and the comment puts the problem in perspective because there are alternatives to selling alcohol.)

"One person said that he asked your permission [to sell]," contends an auxiliary.

"No one has talked to me recently, no permission granted!" asserts Don Alcides.

"A brother of mine is selling beer," complains Cruz Alta's auxiliary. "He doesn't obey me nor does anyone else, and I suffer because I don't have any experience …."

The concierge interjects that a number of Centro residents still sell alcoholic beverages; he mentions one name with the implication that the alcalde looks the other way for certain influential citizens. The audience shouts out other names of well-known sellers and consumers. The concierge adds that the only effect of the law has been to drive up the price, but the same people still drink.

"The people are at fault," insists the alcalde. "It's a misdemeanor, and we're going to impose a fine."

"I like to drink," counters another auxiliary. "It's Biblical, at least not in excess, and I didn't bring in a man who was selling because that's the way things are."

"You're afraid [to detain someone]," the alcalde asserts.

Yet another auxiliary complains that he can't find anyone to sell him liquor anymore. Moreover, when he tried to bring in one drunk, the man punched him in the face.

"That drunk was violent," the concierge confirms. "No one dared to get involved."

Don Alcides regresses, "The Bible doesn't say anything about guaro or chichi; it discusses wine, and that's special."

The heated discussion continues. With no resolution in sight, the alcalde turns to the next major issue: the council had granted a parcel of land to a petitioner, but a former user protested that he retained usufruct rights. Don Alcides declares that a municipal grant cannot be abrogated simply because a former occupant steps forward; a land claim requires a fence. "It's not like it used to be, when you made a milpa and no one touched [the land] for years afterward. Not now."

An auxiliary defends the prior claimant, Samuel Mosca, by noting the remains of an earth and stone wall around the disputed land. The alcalde counters that no one has used the land for years; another man supports this observation by adding that people gather firewood on the parcel because there is no sign of occupancy. The village's auxiliary cuts to the heart of the predicament: Don Samuel is complaining because he just sold the land to a third party who was not a municipal resident. Voices erupt around the room; everyone has a comment on the matter. Don Alcides speaks over the bedlam: "Samuel Mosca cannot sell land to people from other places. You can't tell if the people are good or bad."

The council moves unanimously to abrogate the land sale, with strong support from the audience. The council authorizes a written decree ordering Samuel Mosca to return the money to the outsider who had tried to purchase the land illegally.

Moving to the next point, the alcalde orders auxiliaries to bring in the four Caiquín men who cleared forest for milpas without permission. With consternation, an auxiliary dissents because his family clears forest to plant milpas. The alcalde responds that there are two types of land: land suited for forest and land suited for agriculture; permits to clear are allowed for suitable land.

Tension heightens as Don Alcides, council members, representatives, and the principal antagonists address the land dispute on the Caiquín–La Campa border. An auxiliary on La Campa's side asserts: "The land belongs to La Campa but it's always been disputed. And that man [the Caiquín farmer] cut down trees that mark the border!"

Caiquín's auxiliary retaliates, "The land title states that the line is straight but it was marked on a curve!"

A heated exchange reiterates a century of discord. With declarations of allegiance to the original land titles, Campeños and Caiquines agree to inspect the disputed borderline and promise to respect the true boundary if only the other side will oblige. They agree on a date when council members, the feuding farmers, and concerned citizens can examine the contested area together.

Don Alcides turns with relief to the governor's prohibition on hunting. People express concern that they be allowed to deal with bothersome pests; one man complains about a coyote suspected of carrying off chickens. "Be careful of that coyote," advises the alcalde. "It's a sneaky thief." The audience is appeased; the reply implies a tacit distinction between eliminating pests and hunting wild game.

Debate returns intermittently to the major controversies, and several minor problems are delegated to reluctant auxiliaries for investigation. The treasurer reports that the municipal coffers are exhausted. Don Alcides cautions that national funds may not be forthcoming and urges the auxiliaries to organize communal work groups to repair deteriorating public buildings and bridges, and submit petitions to non-government groups for help. Representatives object that without municipal support, organizing residents is a nearly impossible task. By the time the session draws to a close after 3 hours, participants have debated numerous issues but resolved little. (Excerpt, field notes, April 4, 1994)

The municipal council, which is elected periodically, prescribes and enforces regulations that guide communal activities and duties (Table 3.1). The process of decision making involves debate, dissention, and protracted negotiation with active input from residents. Despite occasional discord, the system of municipal governance allows residents to address community problems, natural resource management, and conflicts in a democratic manner. Council decisions and residents' individual decisions interact to influence the utilization of all the municipio's natural and human resources. Obligatory labor and service from citizens represents a major contribution to community organization and government.

At the same time, national policies and regulations have influenced decisions and imposed restrictions. Management of natural resources has occurred within this web of communal duties, state and local ordinances, individual actions, and community organization.

The form of community government imposed by the Spaniards on indigenous communities provided a basis for collective action and communal land management. Community government in La Campa must have merged indigenous concepts with those of the Spanish, but too little is known of prehispanic Lenca beliefs and social organization to deconstruct the amalgamation of traditions with confidence. Nevertheless, Lenca beliefs contrast with the Western perspective that humans are

Table 3.1 Structure of La Campa's Municipal Government

Position (Spanish)	Position (English)	Description
Alcalde	Mayor/county commissioner/head of the municipal council	Highest authority within municipio of La Campa; elected every 4 years at the same time that presidential elections are held
Vice alcalde (created in 2000)	Second in line to the mayor	Supports the alcalde and leads council meetings when the alcalde is away. Took over the responsibilities previously assigned to the síndico fiscal and first regidor
[Síndico fiscal] (eliminated in 1994)	Chief advisor to the mayor, second in line if the mayor could not serve	This position formerly took responsibility for checking and approving all requests for land usufruct. It was abolished by the national government in 1994. Responsibilities passed to the first regidor
Regidor	Councilor on the county council	Elected position. The number of regidores depends on municipal population according to a national calculation. Each regidor is ranked in order of the number of votes received. La Campa had four regidores as of 2006. The regidores are split equally between the two major political parties (National and Liberal)
Juez de policia	Municipal judge	Nominated by the council. Enforces municipal law, investigates alleged violations of the law, including forest and land-use issues. When transgressions are substantiated, he can impose fines, compensatory labor, or jail time
Juez de paz	Municipal judge and arbiter	Nominated position, mediates disputes and adjudicates intramunicipal, civilian, and domestic grievances and minor criminal offenses. Authorizes prisoner transfers to Gracias for serious crimes
Alcalde auxiliar	Village mayor/ assistant mayor/ village sheriff	Position filled by nomination within each village; responsibilities include enforcing municipal laws, detaining drunk or violent persons, and communicating council mandates to village

(continued)

Table 3.1 (continued)

Position (Spanish)	Position (English)	Description
[Alguacil] (eliminated in 1970s)	Assistant to the mayor and council, and village police officer	Unpaid representative from each village who helped the municipal council during rotating, week-long terms of duty. Position eliminated following national edicts in 1941, but kept unofficially in La Campa until 1970s due to lack of funds to hire paid assistants
Conserje (created in 1970s)	Assistant to the municipal council	Paid assistant. Took over duties of rotating alguaciles: guarding the municipal offices and its keys, capturing delinquent livestock grazing in the Centro, and running errands and doing a variety of tasks in the municipal offices
Tesorero	Treasurer	Hired position. Keeps municipal accounts, collects and records tax payments, makes authorized purchases, bank deposits and withdrawals. Full-time staff in municipal offices
Secretario	Secretary	Hired position. Keeps minutes for council meetings, reads minutes at the start of each meeting, and records additions and corrections. Manages municipal records and serves as full-time staff in municipal offices to assist the public and the alcalde

dominant to nature (cf. Moran 2006). Similar to perspectives held by many indigenous peoples, Lenca perceive humans as part of the natural world and responsible to it. The Spanish communitarian tradition held a complementary view that humans cannot own land or parts of nature as personal property:

> *[N]o individual has the right to take for himself and monopolize those resources of Nature that are produced without the intervention of man. According to this idea, the only thing that an individual has the right to call his own is that which he has wrought from Nature through his personal efforts in the form of crops, flocks, or manufactured goods. Land, therefore, cannot be privately owned, but must remain permanently at the disposition of anyone who wishes to benefit from it*. (Vassberg 1984, p. 6)

Institutions for Land Allocation

Like Spain's rural communities, La Campa considered that its lands belonged to the *común*, or the people of the community. The legal land titles reinforced communal rights because all of the municipio's land fell under ejidal or communal titles. Ejidal titles encompassed the land granted to indigenous communities by the

colonial and postindependence governments. Communal titles covered the land purchased by the community. In municipal practice, there was no difference between ejidal and communal lands. Under the Spanish colonial state, the crown allocated the best lands to specific owners (Defourneaux 1970; Vassberg 1975), but unclaimed lands were deemed realengas pertaining to the crown and later to the nation-state. In general, such lands were relatively undesirable but not entirely unproductive, and people were allowed to use them. La Campa residents took advantage of the unclaimed lands bordering their own land and eventually bought the sections known as Quesuncelca and Tontolo. As in Spain, communal forests and realengas provided land for agricultural activities, various forest products, and open pasture (Vassberg 1984).

Although no one had the right to own land privately, every adult resident, even an unmarried woman or a single mother, could select a plot of land and ask the municipal council for permission to use it for a specified purpose. The *síndico fiscal* examined the requested parcel to make sure that the land had no prior claim and was suitable for the requested use. The *síndico fiscal* had to keep a record of the plots given in usufruct to reduce the chance of overlapping requests.[1] Land granted for houselots became de facto private property. The land belonged to the municipio, but any improvements made on the land belonged to the owner, and these improvements gave the owner the right to sell, loan, partition, or pass on the lot to offspring. Residents could also request permanent use rights for land desired for other purposes, including a finca (defined in La Campa as a parcel dedicated to perennial plants such as fruit trees, coffee, and sugarcane), pasture, or agricultural field. When the municipio was founded, most requests for permanent usufruct specified that the land was needed for a houselot or finca. Houselots were often large enough to include an area for a small maize field and house garden. In order to establish a permanent claim, the petitioner had to build a fence around the land within 6 months of receiving council permission.

Emboletamiento

For annual agricultural fields, people cleared a new parcel of land with slash-and-burn methods almost every year; in most places the soil was too infertile to support multiple crops. Into the early 1900s, farmers could select any parcel they wanted without obtaining permission. Around the time that La Campa became a municipio, the council imposed a permit system known as *emboletamiento*, by which farmers requested a specific parcel from the *síndico fiscal*. *Emboletamiento*, literally "ticketing" of land, was implemented to give people rights to parcels on a first come, first served basis; it helped avoid land disputes by assuring that farmers chose different plots. To be eligible for a permit, residents had to pay municipal taxes and fulfill communal labor obligations. People who shirked their obligations might try to clear land without a permit, but they risked a fine. The *síndico fiscal* was also supposed to enforce national laws that prohibited clearings on steep slopes susceptible to erosion or near sources of water. The council prohibited

clearings near dwellings in case of a breakout fire. Older residents recall that enforcement of these regulations varied.

Emboletamiento conferred temporary rights to use the land. According to a 1924 municipal decree, the lowlands were to be cultivated for 2 years, and highland clearings for 3 years. The municipal council affirmed the ordinance after residents complained that many households failed to plant their parcels for more than 1 year.[2] Despite council requests for residents to respect the law, it was unenforceable because so few plots could produce an adequate harvest after the first year.

The issuing of permits usually began in October with an announcement in the municipal session, and ended early in the new year as farmers began to clear their parcels of trees and brush. There are a few exceptions. In 1943, *emboletamiento* began in March, just weeks before the planting season,[3] and nothing explains the late start. Municipal *actas* (council decisions and meeting minutes) occasionally report the land area granted through *emboletamiento*. In December 1937, the council minutes stated that 76 licenses had been distributed for the next year's milpa clearings, totaling 140 manzanas (98 ha),[4] or an average area of 1.86 manzanas (1.3 ha). For the 1944 planting season, a total of 203 manzanas (142.1 ha) was approved for clearing by 101 farmers, for an average of 2.01 manzanas (1.4 ha) each.[5] Elderly residents agree that most people usually cleared 1 or 2 manzanas, although a few requested as much as 5 manzanas, depending on household needs and the amount of labor they could muster. After farmers cleared land, they had to obtain another permit to burn the cut trees and brush, which usually occurred in April or May, just before planting. The number of approvals granted for clearing and burning appears inadequate for the population of the time, suggesting that some households had fields able to sustain multiple harvests, or had enough land in their houselots for a milpa. The figures may be incomplete, even recognizing that the authorities of Caiquín and one of its villages, Guanajulque, issued permits separately.[6] Residents of the highland villages most distant from the Centro, which were more sparsely populated, may have skipped the permit process by coordinating with their neighbors instead of walking (as much as 3 hours) to the Centro for a permit. However, this would not have prevented other villages' residents from seeking land in the less populated reaches of the municipio. La Campa residents could choose a spot anywhere on La Campa's land (but not on Caiquín's land), and often chose parcels several hours from their homes if it looked like a good spot.

Emboletamiento did not cost residents anything, unless they failed to pay their taxes. If taxes were in arrears, the person had to cancel the debt before requesting land. This permit system continued into the 1970s. While it functioned in La Campa, it ensured that people had agricultural land but prevented them from claiming permanent usufruct to parcels that would soon lie fallow. By the time *emboletamiento* was phased out, requests for temporary agricultural fields had become obsolete due to changing political-economic, technological, and demographic contexts (described in subsequent chapters). Requests for permanent usufruct of agricultural fields had become the norm, and people tried to claim enough land to rotate fields with fallow.

Stubble Grazing

The people of La Campa also practiced stubble grazing, which had some similarity with the Castilian *derrota de mieses* (Vassberg 1984). In its Spanish form, the *derrota de mieses* required that stubble fields be opened for public grazing even when held privately. Thus, land recognized as individually owned through the growing season became communal property between the harvest and sowing (Vassberg 1975). The emergence of this custom in certain parts of Spain appeared to reflect population growth, agricultural expansion onto land formerly used for common pasture, and the resulting need for additional forage (Cabo Alonso 1956; García Fernández 1953). In La Campa, parcels approved under *emboletamiento* for milpas had to be opened for public grazing after the harvest.[7] Land under permanent usufruct did not have to be shared or relinquished; farmers would let their own livestock into the field to graze. The system in La Campa inhibited permanent claims to temporary land grants and jumpstarted the parcels' return to commons because owners had to remove the gate or part of the fence for livestock to enter and exit freely. This custom ended as *emboletamiento* was phased out.

Traditions of Land Use and Distribution

People recognized the land as de facto property of the person who cleared it, and no one else would request to use it until all signs of occupation disappeared and trees were regrown. Traditionally, a fallow milpa remained the property of the person until he or she and any heirs declared publicly that they would not make a permanent claim to the land, even if trees were large and fences had deteriorated. If someone wished to request a permanent claim to one of his or her temporary fields, he or she could do so before the last signs of the fence vanished. This tradition reduced the possibilities of land disputes and assured the regrowth of forests before the land was cleared again. This practice gradually became infeasible to maintain as population grew and demand for agricultural land increased.

The municipal council continues to grant unclaimed land to residents for agricultural activities, house construction, and pasture, but desirable plots are scarce. Many people complain about the shortage of good land; I heard many comments similar to "today everything is fenced and it's hard to find a piece of land." Nevertheless, the common-property regime has until recently guaranteed every adult in La Campa with free rights to as much land as he or she was able to fence and work. Prior to 2000, I did not encounter any landless farmers in La Campa, and the only landless households were those of a few elderly widows, or outsiders residing temporarily in La Campa (e.g., schoolteachers, assistant telegraph operators). Today, the majority of land that remains under municipal control is unsuitable for agriculture (too rocky, steep or dry). Much of this land has been set aside as village woodlots and community livestock zones. The situation supports the observation from common-property literature that land designated for communal use tends to offer low productivity and undependable yields (Fernández 1987; McKean 1982; Netting 1976; Sheridan 1988; Vondal 1987).

In La Campa, however, the definition of communal lands also encompassed parcels used by individuals for their own purposes. They distinguished the results of their labor on land from the underlying value of the land as an indivisible, communal resource, and this understanding related to beliefs in the social value of shared rights and responsibilities as members of a community. These beliefs and values were supported by institutions that encouraged sustainable practices, including *emboletamiento* and long fallows between clearings. At the same time, people perceived the forests as abundant, and this perception discouraged the realization that the resources could become degraded. Thus, the institutions that encouraged forest regrowth reflected the specific circumstances of limited land suitable for agriculture and low population density. If there was a scarce resource to be protected, it was the land viable for slash-and-burn agriculture. The common-property regime, based on the communitarian tradition, also provided a hedge against risk in their unpredictable political and natural environments. Runge (1986) notes for many rural, developing economies: "In the face of this environmental uncertainty, common-property institutions may be innovated which, rather than emphasize the right to exclude, provide for the right to be equally included as a hedge against these uncertain prospects" (p. 65).

Residents' Communal Obligations and Collective Action

All residents had a vested interest in communal land because they shared rights to it. Adult men could voice their opinions regarding its management before the council. Women were discouraged from speaking up in council meetings until the end of the twentieth century. In return for the privilege of access to land and resources, every household had to supply an able-bodied laborer (usually the male household head) to work on communal obligations: road and bridge maintenance, construction and repair of public structures, public health initiatives, and periodic service in community government. Every household also owed municipal taxes, special fees, and school dues.

Labor on Roads and Bridges

Under the national Ley de Caminos (Road Law), all *proletarios* (proletarians, literally peasants) had to provide labor to repair municipal roads, paths, and bridges. People with wealth and resources (*capitalistas*, or capitalists) were required to give a monetary contribution. No La Campa resident met the national criteria for a capitalist. Every year the council drew up the list of all *vecinos* aged 21–60 years[8] (and later, 18–60 years[9]) required to contribute labor and pay municipal taxes. Following this list, auxiliary alcaldes summoned residents to work on communal projects mandated by the municipal council or higher government authorities. The listed men, known as *contribuyentes* (contributors), had to labor a set number of days per year solely on road repair. In 1923, *contribuyentes* owed 4 days per year of roadwork[10]; in 1961, they owed 2 days.[11] Road repair usually began in November after the rainy season ended, but additional work took place

as needed. For example, during September and October 1937, La Campa residents worked on the road to Gracias under governmental order.[12] Council meeting minutes from August 1950 reported that "in fulfillment of superior [government] orders, a bridge is being newly placed over the Río Oromilaca … with cooperation from the citizens of this pueblo."[13] If repairs took longer than residents' required work days, the council mandated additional days of labor until the work was completed.

During recent decades, the need for periodic road repair and improvements has continued unabated, but obligatory duty for public works has been reduced to a single day of labor.[14] Since the demand for labor exceeds this limit, additional days may be requested on a volunteer basis. For most communal projects, public pressure rather than council edicts has become the principal means to compel people to work. The language used by the council to obtain labor in 1982 reflects the change:

> *[H]eavy rains will start soon, and since the bridge over the Río Gualiliquin is in poor condition and it is of great importance, its reconstruction is necessary as soon as possible. Although the municipal budget does not have funds for this work, with the help of the residents it can be reconstructed. The municipal council and its advisory board unanimously agree: Go forward with the repair of the said bridge, requesting assistance from residents ….*[15]

Compared to the early decades of the municipio, today's improved technology (especially bulldozers available with departmental government support) has made a major contribution to road maintenance. In at least one instance, the municipio has obtained military support (labor and technology) to repair the road to Gracias.[16] The demand for communal labor on road repair has therefore declined.

Construction and Maintenance of Public Structures

Work on public structures involved annual maintenance, emergency repairs, and new construction as needed. Every village took primary responsibility for projects within its territory, and the municipal council granted some financial or labor support for large projects—such as constructing new schools and communal meeting halls—when possible. Every year, people cleaned the village cemeteries, usually preceding the observance of All Saint's Day and Day of the Dead (November 1–2). Cemetery walls needed occasional repairs, and in 1961, Centro residents worked together to build a chapel for their cemetery.[17] Until the 1970s, the Centro had a public corral and pasture as well as a wall around the town, and Centro residents provided maintenance.

Large construction projects required contributions from the entire populace. In 1943, the atrium of the church needed restoration, so the council mandated an additional 3 days of labor, valued at 50 cents per day, from all *contribuyentes*.[18] During the 1930s and 1940s, construction of a new *cabildo* (municipal building) placed an unusually high burden on residents. In 1930, after all *contribuyentes* completed 1 week of work on *cabildo* construction, the council ordered a second week.[19] Subsequent demands included contributions of building materials (i.e., lime, bricks, adobe blocks, and sawn timber) as well as ongoing help with construction.[20]

Nearly every year brought urgent demands to raise new school buildings and repair old ones. The council hired carpenters and other craftsmen for certain phases of construction, but residents provided most of the labor and materials. Lack of municipal funds, materials shortages, and labor bottlenecks delayed many school projects. A typical scenario comes from 1950, when efforts to finish Mescalio's school conflicted with the planting season. Despite this, the council ordered every individual in Mescalio to work for 2 days starting on May 15.[21] On July 15, the *síndico fiscal* reported that work had stalled for lack of adobe and laborers to finish the school walls. The council ruled that

> *[T]he auxiliary alcaldes of the village of Mescalio are ordered to summon those who have not worked this year and in case that is not enough, they are to proportionally summon those who have already worked, for they are obligated to help until the proper completion ….*[22]

Mescalio residents eventually cooperated and the new school building was inaugurated on September 15, 1950 (Independence Day).[23]

Building and maintaining schools has remained a challenge for the municipio throughout its history. Population growth has increased the number of school children in *aldeas* and required the construction of new primary schools. In the early 1980s, the Centro replaced its old primary school with a new building.[24] Cañadas suffered a setback when the walls of its school building collapsed as the 1994 academic year began. After months of delays, a national program provided funds to pay for craftsmen and materials to reconstruct the building. Most school maintenance, however, continues to rely on communal labor. In 1994, Centro residents volunteered the labor to install pipes and build a water tank so the primary school could benefit from a new potable water system. Every village in the municipio finally obtained its own primary school and the necessary furnishings during the early 1990s. Most were staffed by a single teacher responsible for all six grades and 50 or more students.

Protection of Public Health and Hygiene

As early as 1923, La Campa became concerned with the public water supply; the council ordered residents to dig new waterholes to collect clean water for public consumption, because "even though rivers run close by the pueblo, these rivers carry a lot of filth originating from many points above their banks."[25] Beginning in 1924, the council followed national edicts to protect public hygiene. Municipal meeting minutes report repeated orders for residents to clean public water sources and streets, as well as keep their houses and yards in a presentable state.[26] During periods of heavy rain, people drained ditches and depressions of stagnant water that propagated insect reproduction and disease. Centro residents, under council ordinances, designated different sections of their conjoining rivers (Río Grande and Río Chiquito) for washing clothes, men's bathing, and women's bathing.[27] With the installation of a water system in the late 1970s, Centro's ordinances fell into disuse, but elderly residents recount faithful allegiance to the rules. One elderly woman recalled that washing clothes by the river was never a chore in the company of her

friends. A few households still use public waterholes or draw water from the rivers, but communal cleanup projects of these areas have ceased. Instead, households linked to the water system must help to clean the reservoir and water tanks.[28]

Every year, just before the Festival of San Matías, the council instructed all Centro households to clean up their houses and yards. Whenever households procrastinated, auxiliary alcaldes reminded them of their obligations and threatened to impose fines. The order has become a formality, and annual cleaning before the festival appears to be custom as much as mandate. In 1994, the council published the annual edict during my fieldwork. Many households had already begun to whitewash their houses, trim their bushes and replace rotting fence posts. My husband and I had rented a house that had not been whitewashed for some time. We learned of the edict when we were politely told to paint the walls because they were a public disgrace. We did. Our neighbors told us that it was a matter of pride to maintain their houses and yards.

Service in Community Government

By law, adult male residents had to serve in municipal offices when elected or nominated. People usually volunteered to run for the offices of alcalde and council member, but if elected, they did not receive a salary. Instead, they were given an exemption from paying municipal taxes for the duration of their terms.[29] Municipal authorities were allowed a total of 3 months' leave to attend to their subsistence activities, but they had to coordinate their absences with each other so the council could remain functional. Council members temporarily took over posts of others during these authorized absences, while the auxiliary alcaldes and alguaciles in each village covered for each other's leaves. The positions of secretary and treasurer, filled by literate personnel hired by the council, received a small salary, but records of municipal debts from the 1920s through the 1940s show that the municipio often owed secretaries' and treasurers' salaries for several years after they left their positions.[30] Today, the alcalde and council members receive salaries for their services, but they must pay taxes and can take only 1 month of leave.

Formerly, residents could be called to assist auxiliary alcaldes and alguaciles in their daily duties, such as responding to inquiries, helping to deliver messages, and taking turns on watch at the municipal building. The municipio and its residents depended upon this assistance to keep the municipal offices open throughout the week. In 1930, the governor of Lempira ordered municipios to provide reimbursement for civilians called to this obligatory service. Since people serving in official positions did not have to be paid for their service, the council at first decided to name additional alguaciles to perform the duties.[31] This decision created further problems because the new alguaciles were exempted from paying their taxes, which compromised the municipal budget. The council requested special permission from the governor to continue using unreimbursed citizen assistance.[32] In the past 2 decades, this type of obligatory service has nearly vanished. Men are still called once per year to form patrols

to police the Centro during the Festival of San Matías, but no other unreimbursed government duties remain for residents who do not hold an official position.

Taxes, Fees, and Special Contributions

Every able-bodied male resident of La Campa between the ages of 18 and 60 had to pay a *contribución vecinal* (resident's contribution), which was essentially a municipal tax, and a *contribución escolar* (school contribution). Women were exempted from taxes, as it was considered that the men paid taxes for their entire households. An additional tax on material possessions, such as livestock and permanent usufruct landholdings, was collected in proportion to a person's resources. In rare cases, the council accepted a resident's plea of utter impoverishment as justification to temporarily forgive pending tax payments. Men who could prove that they were seriously disabled (i.e., due to blindness, loss of a limb, or a severe chronic illness) could request an exemption, and depending on the gravity of the disability the council might grant a full or partial exemption from labor and tax obligations. Exemptions required a personal request before the council, even for those known to be over the age of 60. The audience at a session generally offered opinions on whether an excuse was justified or not. The municipal council now requires written petitions to request exemptions. Even in the present, criteria for exemptions endure. Meanwhile, women's traditional exemption from taxes was reversed in 2006, in part a recognition that Campeño women have increasingly become wage earners, landowners, and coffee growers. Tax contributions continue to be determined according to material resources. In keeping with the communitarian tradition, only material improvements on land can be taxed, not the land itself, unless the owner has obtained a private title.

Urgent public projects and religious occasions required additional contributions. Under council orders, auxiliary alcaldes collected money from residents to cover expenses for special events and emergencies. Usually the contributions were set at a specific rather than an optional amount; for example, in 1943 every household in La Campa was ordered to donate 10 cents toward the cost of illumination during Holy Week celebrations.[33] The community likewise collected money and food goods to pay a priest for any special, requested service, particularly for the masses given during the Festival of San Matías and Holy Week.[34] Collections of money for special masses continue to be the norm; priests' fees have climbed through the years but there are also more households to contribute. In 1994, households paid 25 cents to pay for a mass given on June 12 to honor the Sacred Heart of Jesus (Sagrado Corazón de Jesús). The tradition of supplying food for priestly sojourns, in addition to a payment, continues in outlying villages where priests travel only on special request.

Cooperation, Enforcement, and Dissidence

The many dimensions of communal responsibilities and activities provided a context for community solidarity. An early council edict required that all families had

to live 1 month per year in the Centro to assist in municipal duties. Each village (at that time Cañadas, Santa Catarina, and La Esperanza) took a turn sending families to the Centro.[35] All households were also required to spend the Festival of San Matías in the Centro.[36] These requirements provided a collective experience that reinforced the communitarian tradition of shared rights and responsibilities. Even when people did not like the work obligations, they provided a venue for people to cooperate toward shared goals. They gained the satisfaction of seeing that their work helped the community. Nevertheless, some residents violated municipal ordinances and tried to shirk their communal duties. The council compelled cooperation through a series of sanctions. Council meeting minutes recorded punishments imposed on people who had broken laws or failed to fulfill their duties. The year 1937 serves as an example. In that year, the *juez de policia* and auxiliary alcaldes imposed fines and arrested people for shirking communal work, failing to pay taxes, disturbing the peace (a synonym for public drunkenness), neglecting to build firebreaks, failing to control runaway fires, letting livestock wander in the Centro, and insolence toward municipal officials. The council fined its own members and other municipal officers for skipping weekly duties in municipal offices, missing council meetings without a valid excuse, disobeying direct orders, failing to collect taxes from village residents or refusing to arrest people who violated a municipal ordinance. Anyone who failed to meet his labor quota for road repair or a communal project had to pay a fine per day missed, or make up the difference with other communal labor.[37] For most violations, the lawbreaker had a choice of paying a fine or working it off. Other forms of punishment also existed; one auxiliary alcalde was denied a leave of absence because he had not collected all the taxes that the residents of his village owed.[38] Similar transgressions and fines appear frequently in municipal meeting minutes into the 1970s. Thereafter, the responsibility for investigating transgressions, applying sanctions, and recording the procedures occurred outside council meetings under the auspices of the *juez de policia*. As Behar (1986) observes for the Spanish village of Santa María del Monte: "Too often assumed as a matter of course, the solidarity of the village community was in the worst of times absent, in the best of times, enforced" (p. 161).

Many of the laws and sanctions applied in La Campa were laid out in the national municipal code, but the council decided when and how to enforce the law with respect to municipal circumstances. In one case, the governor required Campeños to improve the road that connected La Campa to Gracias. When La Campa's own roads needed repair, the council directed residents to suspend work on the road to Gracias.[39] After La Campa's roadwork was completed, the *contribuyentes* who had not fulfilled their labor requirement during municipal road repair went back to work on the Gracias road.[40]

When the harvests failed in 1922 and in 1925, the government ordered farmers to plant a *postrera* (a planting that occurs after the principal harvest, usually in areas with enough precipitation to support two harvests per year).[41] The council told residents that only those with fields in Quesuncelca had to plant, and anyone else who desired to plant there would be given permission. Otherwise, people were not obligated to comply because, as the council noted, it had been proved that *postreras* did not

produce elsewhere in the municipio.[42] The governor's order seemed to be a symbolic action. Farmers did not require higher-level mandates to plant crops that they needed to ward off hunger, and planting another crop in October was almost certainly bound to fail because the dry season usually began in November and continued through March or April. Memories of famine mark the childhoods of many elders in La Campa. The drought-induced famines of 1922 and 1923 were so severe that parents had no food even for their children, and La Campa closed its schools.[43] One elderly woman recalled that as a young girl in the 1930s, her family suffered through a period of famine when there was no maize or beans to be found in the municipio. People survived on bitter roots and plants collected in mountain forests. One of the eldest residents recalled walking for 3 days with no food to eat, before he found someone who would trade him a measure of maize in exchange for his mother's pottery. He was only a boy but no one else in his family had the strength to walk any distance. Even with minimal portions, it barely fed his family for a week.

The council periodically received national mandates that aimed to expand agricultural production and exportation through the planting of *postreras* or market crops.[44] In May 1927, the governor ordered all males between the ages of 18 and 60 to plant the crops specified in Article 4 of the Agricultural Law (maize, rice, wheat, barley, yuca, sugarcane, sorghum, banana, coffee, or cacao) with preference for coffee. Unmarried men had to plant 1 manzana, and heads of household had to plant 2 manzanas. The council told residents that they could request ejidal land in order to fulfill the law; people with arid land would be permitted to plant 0.5 manzana or more of mescal instead of coffee or other crops.[45] It is not clear whether this was ever enforced. In October 1937, the council noted: "in attention to an order from the supreme executive authority and the departmental government that tells us to plant the *postrera* and frijoles, it is agreed to instruct the *vecinos* of this pueblo to plant the *postrera* and frijoles in suitable sites,"[46] referring to Quesuncelca. The order was to be fulfilled by August (when a *postrera* is usually planted), but the council did not remind the auxiliary alcalde to examine fields until October.[47] It is unlikely that any coffee was planted within the time frame, because coffee seeds could not grow large enough for planting within that amount of time.

As the above suggests, the council recorded government edicts and announced them in council meetings but rarely followed up to verify compliance or enforce the edict. This pattern evidently occurred regionally; local disregard for higher-level mandates was similarly reported for a community in Santa Bárbara in the early twentieth century (Jansen 1998). The deficient attention to national edicts contrasts starkly with council enforcement of local ordinances. The council did not oppose the government, it simply neglected to implement many mandates or check for compliance. Scott (1985) points out that such action can be a form of peasant resistance to dominant powers. Although an element of resistance may have been present, La Campa's council decisions appear to reflect pragmatic assessments of the orders with respect to local conditions.

Despite its challenges, the system of municipal government successfully involved residents in government service, decision making, and communal labor. People knew that they had to fulfill responsibilities to the community and realized

that they gained rights and benefits as full-fledged community members. Even though residents begrudged the time needed for communal labor, they saw the results. Most people benefited directly from clean water, roads and bridges, and school buildings made possible by communal work efforts. They resented the drain of taxes and municipal contributions on their meager household finances, but they knew that their taxes constituted the municipal budget. Although the budget was perennially inadequate and generally overdrawn, it paid for public works, teachers' salaries, and modest municipal expenses, such as wages for the treasurer and secretary, office supplies, and civic celebrations. The experiences of working together, participating in decision making and accomplishing common goals through municipal governance provided experience that people could apply to other kinds of group-based activities.

Small-Group Organizations

The formation of groups, and their subsequent dissolution upon realization of group goals, is an integral feature of life in La Campa. Groups coalesce readily, given sufficient motivation. In any generation, a small group of individuals tends to emerge as facilitators and organizers. They demonstrate an exceptional capacity to motivate participation and coordinate activities toward common goals. National laws have mandated, or permitted, the constitution of certain groups for specific purposes. Under Honduran Municipal Law, Article 59 grants every village the right to form *patronatos* (committees or formal groups) as long as they abide by municipal and national laws (República de Honduras 1997). The agrarian reforms of the 1970s encouraged peasant farmers to form cooperatives. Several groups formed in order to take advantage of technical assistance and access to fertilizer. National laws require that schools form a Padres de Familia (Heads of Families) organization, and in La Campa, all parents of school children must participate. They attend meetings, pay dues, conduct fund-raising activities, and provide manual labor for school maintenance. Due to a lack of enforcement, many parents attend the monthly meetings sporadically. But fieldwork observations indicate that most household heads pay their dues, attend critical meetings, and show up to work on important projects.

Villages also form task groups to undertake communal projects. These groups usually seek municipal support, and in turn the council tries to allocate funds for the projects or obtain help from the departmental or national government. In recent decades, the council and organized groups have turned to nongovernment groups for technical and material assistance. Through small-group and village-level initiatives, Campeños have built primary schools, health centers, communal meeting houses, bridges, and potable water systems. Public pressure and consequences for the noncompliant have convinced most people to cooperate. Potential beneficiaries have borne most of the responsibility to provide labor, and they often had to work for years to complete projects. They juggled subsistence, municipal duties, and communal tasks, and persisted through funding shortfalls. A major motivation for

autonomous group formation in recent years has been the desire for potable water. Every village in La Campa has had a group form to build a potable water system, and over the past 20 years the majority of households have participated in a water project and now have water piped to their homes (Chapter 7).

Not all groups meet their goals. A pottery cooperative has struggled to improve profits for the potters, but its members have limited financial experience and include some of the least experienced potters. Highly skilled potters have a large clientele willing to come to their doorstep; they cannot keep up with orders and have no interest in participating in the cooperative.

The variety of tasks and duties associated with municipal government, group participation, and communal land use provided a context that encouraged cooperation for communitywide goals. By requiring many kinds of communal labor, service in government, and compliance with a common-property regime, the municipal government acted in accordance with the communitarian tradition and reinforced it. By calling on communal labor to achieve objectives, the council also proved a commitment to meet people's needs insofar as possible with limited resources. Municipal government not only supported common property, its institutions assisted in the allocation of land and the protection of individual as well as community interests in ways that generally were perceived as fair and reasonable. For example, when someone faced a serious personal problem, illness, or disability, the council generally granted requests for release from communal obligations (labor and taxes) for the duration of the problem. After the age of 60, men were permitted to retire from communal obligations of labor and tax payments.

The Forest-Field-Fallow Cycle

The history of forests and agriculture are inextricably linked in La Campa. Under the slash-and-burn regime that dominated La Campa agriculture until the late twentieth century, forest clearings became planted fields, fields were left fallow, and over time, fallows grew back to mature pine-oak forest. Intermittently, patches of secondary forests were cut again and the cycle repeated itself. Recognizing the cyclical nature of human manipulation of La Campa's environment does not mean to imply that the people and forests existed in a homeostatic (equilibrium) system. Cumulative changes occurred as people's interventions reworked the composition of plants, animals, and land cover. By allowing forests to regenerate, the cycle nevertheless limited erosive processes, allowed soils to recover, and assured that people, animals, and plants had a diversity of microhabitats and resources across the landscape. It also retained the majority of the landscape in forest cover, but as a mosaic of patches at different stages of use or regrowth. Slash-and-burn methods accommodated the typically poor, rocky soils because burning created a layer of nutrient-rich ash to fertilize crops. When farmers slashed and burned a clearing, they did not kill off all the trees in the field (Fig. 3.1). Stumps sometimes sprouted new growth, particularly if they were oak trees. Moreover, fields were scattered

Fig. 3.1 Burning a slashed field

over the hills. Field separation probably checked the spread of crop infestations, and reduced the risk that wild animals (particularly deer, raccoons, birds, and wild pigs) might maraud through several fields at once. People knew that fields attracted game, so hunters staked out fields to protect them from animals and augment their diet of tortillas and beans.

Low population density contributed to the propagation of the forest-field-fallow cycle, because people had enough land available to allow brief periods of planting interspersed with long fallows and forest regeneration. Under these conditions, slash-and-burn agriculture can be a practical way to subsist without causing degradation (Netting 1986). Municipal institutions, especially *emboletamiento*, reinforced the practice of slashing and burning clearings and affirmed communal governance of land and resources.

The forest-field-fallow cycle in La Campa has similarities with the milpa system found in parts of Mexico. Alcorn and Toledo (1998) note that in Mexico, the term "milpa" refers to the whole cycle of production and forest regeneration. The milpa system maintains biodiversity through time as farmers create milpas in mature forests and abandon old fields to fallow. In La Campa today, the term "milpa" refers to a maize field, but people's understanding of forests and fallows nonetheless reveals sensitivity to cyclical processes. Campeños recognize stages of regeneration in fields and forests and have terms for them: a *guatal* has been fallow for only 1 or 2 years; a *guamil joven* is a fallow field that is less than 10–15 years old (depending on the rate of pine regrowth), and it becomes *guamil grueso* once pine trees approach a mature size. When people described an area as *guamil*

grueso, I asked them to estimate the age of the trees, and several times I heard an answer of 50 years or more. An area is rarely referred to as *bosque* (forest) unless people do not remember the last time it was cleared for agriculture. *Bosque* is used to refer to communal forests, but today most of the remaining communal forests are set aside for specific nonagricultural uses, and it is more common to call them by their designated purpose: *astilleros públicos* (public woodlots), *zonas ganaderas* (livestock zones), or *reserva* (protected area).

In discussing land use, many people revealed a remarkable memory for land histories. It was not unusual for people to recount details of the last user, and some could recall that an area had been left fallow for an unusually long period because the land had not produced well. Such memories served people well when they wanted to request a parcel for usufruct. They needed to find a spot that had no rival claimants and good chances of an adequate harvest.

The forest-field-fallow cycle continues today, but many farmers have shortened fallows and cultivate fields for multiple years. The introduction of chemical fertilizers in the 1960s made it possible for farmers to get repeated good harvests from their fields. The transition occurred in conjunction with population growth. The combination of new technology and increasing scarcity of agricultural land compelled many people to request permanent usufruct of fields on relatively flat land or mild slopes. Instead of letting fallow land return to commons, people maintain their rights and their fences during the abbreviated period of forest regrowth. La Campa's processes of change meet theoretical propositions that agriculture will intensify as population grows and new land is not available (Boserup 1967). Moreover, the transition from temporary usufruct to perpetual usufruct of communal land supports Netting's observation (1976) that technological change can improve productivity of marginal land and change people's decisions about whether to leave land in commons or treat it as private land. The change appears in municipal meeting minutes through the requests that Campeños presented to the council; between 1921 and 1990, requests for land for houselots exceeded requests for agricultural fields. In the 1990s, requests to use land for coffee plantations and permanent cultivation became more common.

The Annual Agricultural Cycle for Maize

The annual agricultural cycle is one stage within the longer forest-field-fallow cycle. While the forest-field-fallow cycle has been modified with the advent of permanent field cultivation, the annual sequence of agricultural activities persists. The schedule of communal obligations and projects fits around the peak periods of agricultural production. Beginning in May, the municipal council usually suspends or slows the pace of communal duties and projects so everyone (including council members) can work in their fields. Maize is by far the most important staple crop, with beans following in importance, so maize planting and harvesting dominates the agricultural cycle.

Field Preparation

The work of clearing new fields may start as early as January and continue through April. Farmers who do not have a slash-and-burn clearing, which is now the majority, tend to use fire to burn debris from the last harvest before they plant. The practice of *requema* (reburning) involves raking the old corn and bean stalks, leaves, and other refuse into small piles throughout the field and setting them to flame. Agronomists with the Ministry of Natural Resources advise farmers to abandon *requema*, because it compromises soil structure and fertility by removing decomposing vegetable matter. Most farmers continue *requema* because they have found that insect damage increases when they don't use it.

For farmers who clear an area from fallow, the work involves heavy labor of felling trees and clearing undergrowth. The shortening of the fallow period in recent decades has simplified the work of clearing because the trees are smaller, but underbrush is thicker and harder to cut down. Depending on the size of the clearing, the process can take several days. The farmer may labor alone, but most prefer to work with family members, relatives, or friends as part of a cooperative labor exchange. If the land is a new acquisition, fences must also be constructed to mark perimeters and establish a claim. Once the vegetation has been cut, it must dry out before it will burn well. Farmers usually burn slashed fields in April or May. The older the fallow, the longer it takes to dry. Young fallows (less than 10 years) may be cleared as late as March or early April and still be ready to burn in May. Recently, farmers have begun to follow national regulations that oppose burning a newly cleared field. The principle of conserving organic material means that it takes a long time for the slashed plants and trees to decompose; farmers remain skeptical about the supposed benefits.

Burning a Slashed Field

When a farmer burns a field, he decides when to burn based on the weather and his expectation for planting time. Once the vegetation is dry, farmers wait until one or two spring rains fall before deciding to burn. They do not want to plant until they have some assurance that the wet season has really begun. Light spring rains evaporate quickly from dessicated, slashed vegetation, so burning is not impeded. A field must be planted promptly after a burn so the nutrients do not dissipate with wind, rain, and filtration. Setting fire to the debris in a slashed clearing requires technique, knowledge of prevailing winds, and familiarity with the local environment. The farmers usually arrange for several helpers to assist with the burning, either hiring neighbors, utilizing household labor, or enlisting members of their extended family through labor exchange agreements. Most of this work is done by men, but women and older children may help. The location of a new clearing influences the timing and precautions required for an effective burn. The higher elevations are cool and damp, so farmers prefer to burn at midday or early afternoon after the dew evaporates and before it falls in late afternoon. The higher elevations (above 1,200 m) also experience rapid changes in wind and weather, so farmers take care to choose a clear, calm day with

little chance of rain. The lower elevations (below 1,200 m) are dry and warm, and the danger of fire jumping a firebreak into tinder-dry brush is greater than in the mountains. Farmers therefore prefer to burn clearings in the late afternoon when winds subside. If a fire escapes, the evening dew helps to quell the flames, and dangerous embers can be spotted in the twilight. Due to the relatively dense population in the lower elevations, however, most fields in this area are under permanent cultivation.

One day in early May 1994, I participated in the burning of a slashed field in La Campa's highlands with the landholder, Pedro, a laborer hired for the day, and my assistant. The area had been slashed in February from a 4-year fallow; the dry vegetation was composed of shrubs, brush, and a few small trees. The work began by completing a meterwide fire lane around the perimeter of the clearing, and lopping off overhanging shrubs and branches. Although the law requires a fire break width of 3 m, Pedro informed me that it was not necessary because the mountain dampness inhibits the spread of fires. The dew lifted by mid-morning, but we waited until after 11:00 a.m. when the sun shone directly down on the field. Pedro split a stick of ocote (resinous pine) into thin sticks with his machete, and lit several in a fire built to share a mid-morning lunch before the burn. Flaming sticks in hand, Pedro walked around the field testing the light breezes that were blowing from the west. He first set fire to slash on the northwest corner of the clearing where the breeze would carry the fire across the field. With ocote sticks for each of us, we divided into two teams that headed in opposite directions around the field. We lit small fires about every 2–4 m where slash was thickest and readily caught fire. The fire burned as planned, from the edges to the center. At one point, the breeze shifted and drove flames over the firebreak, setting fire to a small deciduous tree. The hired hand pushed into the brush to fight the breakaway flames successfully, but the intense heat and flames from the clearing prevented him from rejoining us until the burn subsided. It took approximately 90 minutes for the 1 manzana (0.7 ha) clearing to burn down to smoking embers. Before departing, we circled the field to make sure that no live embers remained near the firebreak. On the 3-hour walk back to the Centro, we saw smoke rising from at least eight other fields being burned that afternoon.

Similar to other farmers who decide to slash-and-burn a new clearing, Pedro did so to expand the area he could plant. He had cleared an adjacent plot the previous year, and he planned to continue clearing adjacent areas in the coming years until he had 4 manzanas under permanent cultivation. Pedro's land was part of a parcel that he and his brother had divided between them. After 2 years of planting the newly burned field with a dibble stick, he expected to start plowing the field. Other farmers agreed that a burned field needs to be planted for 2 or 3 years before a plow can cross it without getting caught on debris. Over the course of the past decade, however, the incidence of burning newly cleared fields has declined markedly.

Plowing

Although plows have been used at least since the early days of the municipio, they have become more popular in the past 20 years. Campeños find that plowed fields

produce more maize. Plowing has the advantage of loosening the earth and turning organic matter under the soil to bolster fertility. The cost of an oxen team and a metal-tipped plow is, nevertheless, prohibitive for most La Campa households. A few men in the area know how to train oxen teams, and their teams have high value on the market for rent and for sale. The process of training an oxen team takes time and patience over the course of several years, because two calves must grow up learning to work together. In 2007, a mature, trained oxen team was valued at 20,000 lempiras ($1,058 [US dollars]). For perspective, the daily wage in La Campa is 50 lempiras ($2.66), and the average annual income in Honduras is $1,170 per capita (World Bank 2006). In 1994, 13.8% of the 108 surveyed households owned a team of oxen, and at least 24 (20.3%) households rented a team or obtained the use of one by agreeing to work for the owner for a specified number of days. Owners of oxen teams with plows rent them out at 500 lempiras ($26) per manzana; to earn that amount, a Campeño must work for 10 days. Most people who rent an oxen team must pay the owner in advance, although agreements to exchange labor for use of an oxen team may occur among family and close friends. The majority of households do not plow their fields because the slope is too steep or they cannot afford to rent (or otherwise arrange for) an oxen team and plow.[48]

Planting

Maize planting begins in May if rains are falling consistently. Older farmers claim that rains used to begin earlier and people planted in April. Evidence from early municipal documents suggest, however, that planting in the early half of the twentieth century occurred in May and June, as in the present. An *acta* from 1922 notes that several auxiliary alcaldes requested leaves of absence to work in their fields during the latter part of May,[49] and in 1926, the council suspended communal work on a new town hall from May 15 through July 15 so residents could concentrate on agricultural activities.[50] During 1994 and 1995, planting began in early May, peaked in late May and early June, and concluded by early July. Farmers plant the higher, damper mountain fields before the lower elevations. Across the municipio, *aldeas* follow slightly different planting schedules due to microclimatic variations. For example, Cañadas residents tend to plant earlier because the climate is more humid and temperate than that of the Centro. The timing of planting reflects farmers' experiences with rainfall fluctuations. Most believe that it is better to plant in late May or June than to risk a cessation of the rain after an early planting. The decision to delay planting can be a difficult one, especially for households whose previous harvest fell short of their needs. A late planting signifies a late harvest, and households have to buy or borrow maize in the interim.

Weeding and Fertilizing

Farmers have varying philosophies on when the maize should be weeded and fertilized. Maize sprouts about 8 days after planting, and weeding takes place in the

following weeks. Some farmers stated that they weeded fields 8 days after planting, others said they waited 2–4 weeks. When farmers weed fields, they take time to mound soil around the bases of the young plants for reinforcement (called the *aporco*). Weeds uprooted with the hoe are typically shaken to remove dirt from the roots (to prevent rerooting), and discarded between the rows to dry in the sun. The drying weeds inhibit regrowth of other weeds and may help maintain soil moisture and reduce erosion. Most farmers weed the field a second time; the timing depends on weed growth and the other activities that need to be done. Fertilizing new maize may be done as early as 5 days after it sprouts, others wait for several weeks. Most farmers agreed that weeding should be done before fertilizing, otherwise "you're just fertilizing the weeds"; but farmers who fertilize soon after sprouting do not weed in advance.[51]

Harvest

The harvest of early maize begins in mid- to late August. When the maize is mature, farmers cut the stalks at the halfway point so the tops fall over and rest on the ground. This is called *doblando* (doubling) the maize; the cobs dry upside down, and falling rain drips off the husk rather than seeping into the kernels. Residents consider early days in the lunar cycle as inauspicious for this work. Early maize is harvested about a week after doubling. Late maize ripens in September and October, and farmers "double" the stalks in a stretch of dry weather. Households pick some maize to consume as corn-on-the-cob, *riwas* (a type of tamale made from fresh kernels),[52] and atole as soon as the maize ripens. Households continue to harvest maize gradually if they need to meet subsistence demands. Most of the maize dries for 4–8 weeks after the doubling, then it is ready to be picked for storage.

Livelihoods and Risk-Reduction Strategies

The people of La Campa have a long tradition of highly diversified livelihood strategies. Although they depend primarily on agriculture to provide for their sustenance, they also use a variety of forest resources. Many people produce pottery or other goods, work as temporary laborers, or migrate periodically to find jobs. They need alternatives to agriculture because they have to contend with variable rainfall, insect and animal pests, plant diseases, and fluctuating temperatures. As one farmer observed, "you never know what will happen when you plant."

Variable rainfall poses one of the greatest problems for La Campa farmers. Precipitation not only varies from year to year, but also in its distribution patterns. In addition, the region has pronounced wet and dry seasons. A precipitation gauge was set up in La Campa during 1971; since then the same couple has tended it and

kept records. Precipitation records for 1971–1999 show that annual rainfall varied from a low of 748.8 mm in 1972, to a high of 1785 mm in 1996 (Fig. 3.2). The average precipitation for the critical 4-month period of May–August is 805.5 mm, but it has varied from 519.3 (1972) to 1096.8 mm (1984).[53] Farmers also report problems with insects and animal damage to crops. The household survey in 1994 discovered that all the farmers had suffered some damage to at least one of their crops from wild animals, and more than 70% had lost part of their harvest to insects or disease.

Campeños mitigate their risks through collective action, household-level activities, and traditional practices. As members of La Campa, most people aim to fulfill their communal duties to build a good reputation and maintain their rights to use the land and its resources. By participating in community activities and organized groups, they build social networks and reciprocal relationships that can help provide support during extenuating circumstances. Through household-level activities, people pursue multiple forms of production, trade, and labor. These include diversified agriculture, harvesting of forest products, pottery production and sales, temporary jobs within La Campa, and circular migration. They also follow traditional beliefs in lunar movements that are believed to improve their chances of success in agriculture.

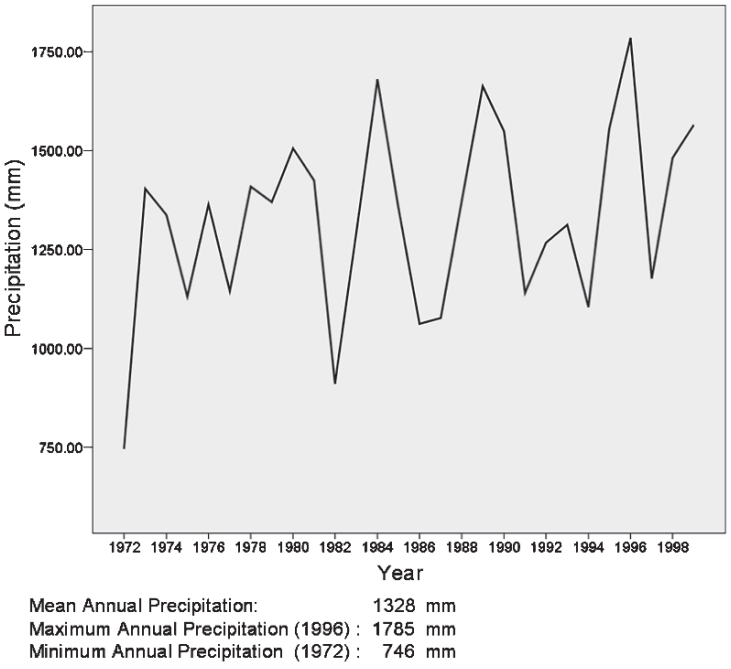

Fig. 3.2 Annual precipitation for La Campa, 1971–1999

Annual Crops

Maize

Maize is the primary staple for all La Campa households, and tortillas are the predominant food. Campeños eat tortillas at almost every meal (the chief exceptions are the preharvest period and holidays during which they eat tamales). For many households, tortillas with salt can compose an entire meal. The dependence on maize traces back to early horticulturalists in Mesoamerica, and Spaniards failed to convince indigenous peoples to adopt wheat as the principle staple. Household surveys conducted in 1994, 1997, and 2003 consistently revealed that more than 90% of the sample households planted maize. Households that did not were too elderly or impoverished to plant a field, or were headed by salaried professionals (mainly teachers) who purchased their food. Campeños grow two broad classes of maize: *maíz ligero* (early maize, which matures in 11–13 weeks) and *maíz despacio* (maize that matures in 16 weeks and is left to dry in the field before harvest).In addition to distinguishing maize varieties by growing time, they are identified by kernel color (purple, yellow, white, and mixed). La Campa farmers employ various strategies to improve their chances for a harvest, including planting fields in several locations, staggering planting times, and planting several varieties of maize. Many households, particularly those outside the densely settled Centro, also have maize fields near their homes, where they can keep a closer eye on them to prevent animal predation. These fields tend to occupy flat, more fertile areas that are resistant to erosion, and they benefit from organic inputs of domestic animals kept near the house. The combination of permanently cultivated fields with slash-and-burn fields constitutes another dimension of risk reduction and local environmental knowledge; the pattern has been found in many parts of the world (Netting 1986).

Beans

Commonly called frijoles (*Phaseolus* spp.), beans follow maize closely in importance. Most households plant pole beans with corn (*frijol milpero*) or bush beans (*frijol talete*) in separate fields. In the 1994 and 1997 surveys, more than 80% of the households reported pole beans or bush beans, and some households planted both. Traditionally, pole beans were always planted with maize, but today many households prefer bush beans because pole beans are considered hard to digest. Farmers usually plant bush beans in August or early September. Many households plant them in the milpa after they harvest early maize, but others prefer to have a separate field for bush beans.

Squash

Squash is planted traditionally with beans and maize in the milpas. Survey respondents varied in their reporting of squash, because it is a minor crop. Farmers often

mentioned that squash does not produce well in La Campa due to a worm that infests the vines and kills them before the fruit develops. When it is available, squash is a seasonal food eaten during October, November, December, and January as it is harvested from the fields. People regard it as a delicacy, and they are not able to produce as much as they would like to eat.

Other Annual Crops

A variety of annual crops supplement the diet of tortillas and beans. Vegetable gardens have become more common following government nutrition programs that visited La Campa in the 1990s and distributed free packets of seeds. People enjoy radishes, onions, cabbages, lettuce, tomatoes, and cucumbers. Some people also grow *camote* (a sweet potato) as a supplemental food source. A few farmers reported growing sorghum or rice (12% and 5.6%, respectively, in 1994). Several others noted that they used to plant sorghum but birds caused too much damage. Rice may have been more common in the past; it was reported with other important agricultural products when La Campa applied for municipal status. Outreach programs have promoted soybeans (for soy milk), but most Campeños consider the seeds to be expensive, and many hesitate to invest in vegetables or soybeans because of high incidence of insect damage.

Perennial Crops

La Campa households grow a wide range of perennial plants, including bananas, various fruit trees, coffee, sugarcane, pineapple, and a number of other useful plants. For the most part, households raise these crops for subsistence, although they may sell or give away a surplus. Coffee is an exception; many households now produce it as a cash crop. Due to its increasing importance, coffee is discussed in Chapter 6.

Fruit

A majority of the households raise banana plants, fruit trees, and pineapple. People identify more than six varieties of banana that grow in the municipio. Sweet, tender bananas known as *dátiles* (a reference to their finger-sized dimensions) and *mínimos* (the familiar yellow banana in the United States) are eaten fresh. The larger, firmer varieties known as *criollo*, *habanero*, *mojoncho*, and *macho* are preferred baked, fried, or boiled in soups. Several households explained that bananas provide an important source of food during the hungry season, which begins whenever the household's maize harvest has been consumed. One man said that his family lived on bananas when their maize harvest ran out. Most households have enough

banana plants to provide fruit throughout the year; they plant as many varieties as possible to enjoy and because some are more resistant than others to disease. Farmers reported an average of 84 banana plants on their lands in 1994, but estimating banana trees is a challenge due to their tendency to spread. They also had an average of six other types of fruit trees. Only four households (of the 108 surveyed) reported no fruit trees, and one household grew 15 types of fruit trees. Orange, lemon, avocado, mango, and lima (a citrus fruit with a mild flavor and low acidity) were among the most common. People tended to mention only the fruit trees that had market value, but wild fruit trees also grow in many gardens.

Sugarcane

Many households grow at least some sugarcane (more than 70% in the 1994 sample) but less than half raise enough to process it into panela (hardened treacle). Households mainly produce sugarcane for their own use, but a few (10.5% of the 1994 sample) produce it for local sales. La Campa children prize raw sugarcane as an inexpensive sweet; they chop the cane into sections, peel off the skin, and suck on the sweet, fibrous center. Households also grow sugarcane in soil erosion barriers; a few farmers feed it as fodder to their animals, and some cut cane leaves for organic fertilizer.

Pineapple

Known to the Lenca since prehistoric times, pineapple has gained new popularity in recent years. La Campa farmers began to plant more pineapples after workshops (sponsored by government agricultural programs) in the 1970s demonstrated how to contain soil erosion by creating barriers of living or dead plants in fields. One farmer explained that dead barriers require a lot of work to build, produce nothing, and require maintenance, but live barriers planted with pineapple are simple to plant; moreover, they maintain themselves, multiply readily, and provide fruit. Campeños grow two types of pineapple: sweet and sour. Households eat the sweet fruit in slices, and use the sour fruit to make pineapple juice and *atol de piña* (a hot beverage flavored with pineapple, flour, and panela). Several households said that they might sell a few pineapples "if someone asks for one," but a number of farmers commented that their plants produced fruit infrequently, and surmised that the tight planting in barriers or the soil quality inhibited fruit development.

Additional Perennial Plants

Campeños grow a number of other useful trees and plants, usually on a small scale. *Pimienta gorda* (*Pimienta dioica* [L.] Merrill) trees produce a pepper-like fruit that makes a flavorful tea, and achiote (*Bixa orellana* [L.]) fruit is used to tint foods

red-orange. *Izote* or *penquillo* (*Yucca elephantipes*) grows wild, but many households plant it as a living fencepost and relish its bitter flower scrambled with eggs. Chayote or pataste (*Sechium edule* [Jacq.] Sw.) vines are tended carefully in house gardens for their squash-like fruit, but they suffer from several pests and diseases. Tubers, especially yuca and *malanga* (related to manioc), provide an important supplemental source of food for a number of households. A few households sell achiote and *pimienta gorda* locally.[54] Medicinal plants abound. House gardens and dooryards often have several herbs and medicinal plants growing in pots or freely. Common medicinal plants include *lenguillo*, *siguapate*, *hoja blanca*, and *apazote*. Housewives often plant oregano (*Lippia graveolens* HBK), mint (*Mentha x piperita* L.), and other domesticated herbs known for their flavor and medicinal uses. Medicinal plants are exchanged rather than sold; households share whatever plants they have with neighbors who need a certain remedy, and the gift returns eventually.

Traditional Beliefs for Agricultural Risk Reduction

La Campa households schedule planting time for annual and perennial crops with respect to lunar cycles. The new moon counts as the first day of the lunar cycle, and early days are considered unpropitious for planting.[55] Slight variations exist in specific beliefs between different households. Certain families abstain from planting on the fifth and eighth days of the cycle, others avoid the first 4 days and the eighth and ninth days, and a few avoid the first 8 days. Interviews with related households indicate that men tend to follow their fathers' beliefs. One man explained that the moon is "in motion" on these days and, therefore, the maize will grow tall but develop poorly. According to some elders, the best days for planting occur on the tenth and eleventh, and until the end of the cycle.

Despite slight variations in proscribed days, the lunar beliefs for planting apply to the vast majority of annual and perennial plants raised in the region. Households hold that their knowledge of the moon's influence is based on factual experience; as an elderly farmer stated, "I have proved it" (*lo tengo probado*). Unlike other aspects of traditional belief that many hesitate to discuss due to strong criticism by the Catholic Church and state educational programs, Campeños openly share their convictions about the lunar cycle. When we planned to plant vegetables in our house garden, people offered concerned guidance so that we would choose an auspicious day. One source told me that a former priest (who retains a large landholding in the municipio) once insisted on planting on forbidden days of the cycle to prove that the people's beliefs were mere superstition. The source noted, with apparent relish, that all the priest's crops failed that year, and the priest now respects lunar movements.

People also believe that maize harvested during certain days of the lunar cycle will rot or suffer infestation in storage. Despite personal convictions in these matters, Campeños occasionally miscalculate or make adjustments to fit their circumstances. Once I helped a farmer, Don Tulio, and his two youngest sons, Hernan and Edwin, with the maize harvest and I inquired how they selected the day. Tulio replied that

he had waited for the fifth day of the cycle, because the first 4 days, and the eighth and ninth days, would be bad for the maize. Hernan observed that it was actually the fourth day, and he counted the days out on his fingers to demonstrate that his father had miscounted. Tulio appeared mildly disconcerted, but Hernan seemed indifferent to the error. We continued harvesting. The incident implied that an outwardly strict respect for the lunar cycle is pliable, or perhaps not as critical as people say.

Making and Selling Pottery

Pottery sales represent an important source of income for the more than 200 women who make it. According to Castegnaro de Foletti (1989), "La Campa is probably the most important center of traditional pottery-making not only in western Honduras, but in the nation" (p. 260). Most of the potters live in one of the villages nearest the clay bed that is used for pottery making, especially the Centro, San Matías, Nueva Esperanza (formerly La Esperanza), Cruz Alta, and Santa Catarina. Sand, which is mixed with the clay, is found in several locations around La Campa, often near stream beds. Women throw the pottery by hand and shape it into utilitarian forms, particularly pitchers, pans, water jugs, *comales* (used over the kitchen fire to cook tortillas), bowls, and candle holders. They paint their wares with colored earth (red and white); the red earth is found in only one spot. Pottery is produced throughout the year and tempered when the weather permits. Once pottery has been tempered, it can be sold. Traditionally, Campeños wrapped their pottery carefully in banana leaves and walked it to clients in villages throughout the region. Castegnaro de Foletti (1989), who wrote a definitive work on Lenca pottery, commented with amazement:

> *What most awakens interest and causes astonishment in La Campa's case, besides the technique and style of production, is the wide radius of the pottery's distribution and even more the manner in which it is accomplished, in part through the ancient mode used in prehispanic times to carry loads over any distance. That is to say*, on people's backs. *Today as for centuries past, at the break of dawn a burden carrier can be seen coming down from La Campa's mountains carrying a large pack full of pots, his steps short because the path is long and the load heavy. … Behind him comes a small figure, barely visible beneath a huge burden, straining to keep up, his son or daughter too, heirs of a path from which there is still no rest*. (p. 260; trans. author, italics [now roman] in original)

Each potter tended to distribute her pottery in one or two villages where she had developed a clientele. When potters had young children, the husband usually took the responsibility for carrying the pottery to sell. As children grew, selling the pots became a family duty. Since the 1980s, improving transportation has allowed people to carry pottery at least partway to market by bus or pickup. Even in the early 1990s, however, I saw people carrying pottery on their backs to market. Poorer people could not afford the cost of vehicular transportation and older people refused to entrust their delicate wares to vehicles that jolted to market over the unpaved, potholed roads. By 2000, however, roads had reached the mountains and

vehicular transportation was readily available. Now potters use vehicles to transport their wares. La Campa's pottery had a historical range of distribution throughout an estimated 400 km^2 area in western Honduras, and the trade patterns may have prehispanic origins (Ardón Mejía 1989). Today, it has a broader reach because souvenir shops and art stores in Tegucigalpa and San Pedro Sula send buyers to La Campa to purchase pottery by the pickup truck load.

Forest Products

At 8 o'clock on a sunny June morning, I arrive at Doña María's household for an informal visit and find a group of women headed out to collect firewood; the men are working in the fields. The group includes Patricia, a 14-year-old adopted daughter; Gabriela, a 20-year-old godchild who is staying with the family; Rita, the eldest married daughter who lives next door, and Carmen, Rita's 7-year-old daughter. Doña María, the matriarch, will stay home with Serafina, her 22-year-old daughter who recently gave birth to her first child. I ask to join the group, and Rita loans me an old machete so I can help.

We head out along a narrow trail that leads downhill between fields and woodlands. Everyone walks with eyes down, searching for mushrooms that might have sprouted during last night's rainfall. We cross over a decrepit wooden fence into an old fallow of oak and pines. Rita observes that the land's owner died many years ago and his children inherited it. They don't mind if people use it to gather firewood, but they have stated their intentions to defend their inheritance if anyone tries to claim it. About 30 minutes after leaving the house, Rita discovers a felled oak. The original woodcutter carried off most of the trunk and the thickest branches but left minor branches up to 3 inches thick behind. Rita, Gabriela, and I set to work with our machetes hacking the largest ones into sections about 30 inches long; Carmen and Patricia run off to look for ripening wild mangos and mushrooms. Rita points to the trunk of an old pine tree, from which someone cut strips of ocote fino (resinous pinewood) to burn for illumination. Balls of resin have formed in the scar; Rita collects them and tells me that they serve as a remedio (remedy).

After nearly 45 minutes, we have enough for five bundles; Carmen and Patricia return with enough mangos to share for a snack. Everyone except me has ropes and a strap to bind their wood. They wrap up pine needles and dead leaves in old pieces of cloth to serve as pads, which they position under the firewood as they help each other lift the bundles onto their backs and sling the head strap around their foreheads. Patricia decides that she can carry more, so we cut four more branches for her. I put my bundle into an old nylon sack to carry on my shoulder.

We return by another route; Rita still hopes to find some mushrooms. The return trip takes over an hour as we haul the loads uphill, and pause to examine shady spots where mushrooms might hide. Rita finds a single edible mushroom, and notes that either someone else has been collecting mushrooms, or else it's still too early in the season. By the time we arrive back at the house, it is late morning. The firewood is divided between the two households; it is enough fuel for Rita and Doña María to cook for 2 days. (Excerpt, field notes, June 9, 1994)

Forests offer many useful things for La Campa households. One informant started to list the forest resources that he used, then exclaimed, "There is an infinity of things from the forest!" The most important are firewood, lumber for construction, grazing land for livestock, and medicinal plants. People also collect a variety of wild foods in the forests. Hunters used to hunt animals in the forest, as well as fish and honey, but today these things have become rare.

Firewood

Nearly every household cooks with firewood collected in La Campa's forests. Firewood is also used to temper pottery, fire adobe bricks (used for flooring) and roof tiles, and boil down sugarcane juice during processing. Survey responses and observations indicated that residents of the Centro walked an average of 39 minutes to find trees suitable for firewood. The average roundtrip for firewood collection took more than 2 hours (135 minutes).[56] Elders recalled that in their childhood, they gathered all the firewood they needed just beyond their doorstep. Many young adults, by contrast, said that as long as they remembered, firewood collection required long walks. With ongoing population growth, fencing of common forests, and land clearing, the problem of finding firewood promises to augment in coming years. Campeños believe that there is plenty of forest remaining; the issue is simply that they must walk farther than before to gather what they need. Households increasingly cite concern for a future shortage of firewood, and this concern appears to be a motivation to protect private patches of forest around fields and near households. Since alternative sources of fuel (i.e., kerosene) are prohibitively expensive for most households, firewood is likely to remain the primary cooking fuel for the foreseeable future.

Campeños measure firewood by the *tercio* or the *carga*. A *tercio* of firewood is defined as the amount that a person can carry on his or her back; the standardized definition is 25 sticks of wood. A *carga* of firewood is twice as much as a *tercio*; it contains 50 sticks of wood and is defined as the amount that a horse or mule can carry.[57] A stick of firewood appropriate for a kitchen hearth ideally measures one *vara* in length. According to Campeños, a *vara* equals the distance from a man's sternum to his fingertips, but most wood cutters refer to the length of their ax handle (30–36 in., which approximates 1 *vara*). On average, La Campa households use 1 *carga* of firewood every 2 or 3 days to prepare the meals for their families, with a range of 1 day to 2 weeks. The households that could stretch the fuel were typically composed of an elderly widow living alone, who did not light a kitchen fire more than once or twice a day, and extinguished it as soon as she could.

Lumber

The forest provides lumber for various purposes, particularly to construct buildings, fences, and furniture. Since pine trees occur in abundance, and grow straight and tall, they are the primary resource for building. Hardwoods may also be utilized, but they are scarce and usually prized as firewood. Campeños must obtain permission to cut large, mature pine trees for construction; this regulation has been enforced since the 1970s. Pine from communal forests supplies most of the lumber used to make furnishings in La Campa. A few inhabitants specialize in carpentry; they make doors, window frames and shutters, tables, chairs, chests, cabinets, benches, bedsteads, and coffins to order. For most purposes, logs must first be sawn into workable boards and pieces; one carpenter contracts a two-man team from Gracias to cut logs into boards with a traditional two-man handsaw. Most Campeños

are sufficiently competent in carpentry to fabricate benches, stools, and shelves from rough-hewn planks and logs. They cut saplings for poles, which are used to build chicken coops, maize storage sheds, and kitchens built apart from the main dwelling. In addition, poles serve as crossbars and posts for fences and gates.

Fences

People build fences whenever they claim new land, and almost everyone uses wood for that purpose. A few people build stone fences or make *desplomos* (earth and stone fences), but fences built entirely of wood, or wood posts and barbed wire, are most common. Posts last from 1 to 9 years before needing replacement. According to calculations based on estimates from 37 respondents, an average fence post lasted 3.4 years with variations due to diameter and timber quality. Hardwood posts lasted longer than those of pinewood, while wood from mature, resinous pine endured longer than young pine. One farmer with 3.5 manzanas (2.45 ha) in maize fields reckoned that he had cut approximately 40 trees to fence the area. Another farmer said that he cut five trees, generally oak or another hardwood, every 4 years to replace decaying posts in the barbed wire fences around his land, which totaled about 4 manzanas (2.8 ha). Both commented that the number of trees they needed for any given fence depended on the sizes of the trees they cut.

Forest Pasture

Much of La Campa's terrain is too rocky, mountainous, or infertile to serve for agriculture, but it offers pasture for residents' livestock. Campeños designate common grazing areas by three overlapping terms: *astilleros públicos* (public [communal] woodlots), *zonas ganaderas* (livestock zones), and *campo libre* (open land). Livestock zones, which may also serve as de facto communal woodlots, are sections of communal forests that have been fenced to provide more secure grazing than unfenced areas. Open land consists primarily of unfenced forested areas but also abandoned fields, roadsides, and public areas such as soccer fields. In short, common pasture includes any place an animal can be left to graze without infringing on a land claim. Records of municipal budgets and the annual *Plan de Arbitrios* (List of Taxable Items) indicate that into the 1950s, residents of other municipios were allowed to pasture animals on La Campa's communal lands. The municipio assessed a grazing fee during the dry season per head of livestock pastured by nonresidents.[58]

Edible Products

The La Campa diet consists mainly of tortillas and beans, but the forests and pathways of the area offer minor edible products that change with the seasons.

People frequently mentioned wild fruits and mushrooms as foods gathered in the forest. Elders recalled that during the famines they had survived as children, people gathered several varieties of roots in the highland forests to make ersatz tortillas and bitter porridge. Today no one gathers these roots because improved transportation and linkages to national markets make maize available when local harvests fail. No one misses eating the unpleasant substitutes. A few people said that they occasionally collected honey in the forest, but they noted that it has become hard to find. Native bees produce the honey; they nest in hollow or fallen trees and people surmise that harvesting of deadwood has robbed bees of their homes. Edible plant products ripen at various times through the year; in all, households reported 31 kinds of fruits, berries, and other edible plant parts found in communal forests and fallows. Many wild fruit trees grow along paths and streams. Mango, an introduced species with several varieties, grows spontaneously from discarded seeds along frequented routes. Mushrooms sprout early in the wet season, usually emerging overnight after a soaking rain, although a few types emerge later in the year. Campeños named a total of 13 edible mushrooms. Poisonous mushrooms also grow throughout the municipio, and Campeños learn from experienced collectors which ones are safe to consume. Naturally occurring and wild foods do not constitute a major component in the diet, but many of them become available during the growing season for maize and frijoles, when labor demands increase and the previous year's harvests have been consumed or are nearly gone. Therefore, wild foods may serve a more important role at crucial times for Campeños' diets than their quantities suggest.

Game Animals, Birds, and Fish

Wild game and fish traditionally added protein to La Campa diets. Campeños reported that within their lifetimes the prevalence of deer and other wild animals had decreased, and they associate this decline with excessive hunting, forest clearing, and forest fires that occurred in the 1970s and 1980s. When respondents to the 1994 household survey were asked what changes they had observed in the forest, 42% responded that they had seen a drastic reduction in wild animals.[59] Deer and birds were especially missed; one woman noted sadly that "now you hardly hear the birds sing."[60] Several hunters remembered that outside hunting groups used to come to La Campa to hunt, and they carried off many deer at a time. The outside hunters, who paid no tax or contribution to the municipio, hired residents as trackers and paid them with a token fee or a cut of venison. One man explained:

> *Wild animals have been lost; they have gone to take refuge in more heavily forested mountains. The hunters also organized and killed the does and other female animals too, so they died out. And people from Santa Rosa and other places came and hunted, leaving maybe two lempiras for those who served as guides, or giving [a guide] only two pounds of meat when they carried off seven deer.*[61]

Fish can occasionally be found in isolated pools and streams; their populations have also fallen in recent memory. Campeños take fish regardless of size; one family

shared a meal of five 3–4 in. long fish that represented 1 day's labor for the father and eldest son. More commonly, fishers return empty-handed. Since fishing offers poor prospects, men tend to fish during lulls in the agricultural cycle. Efforts intensify during Lent and especially for Holy Week (which occurs shortly before field preparation for planting), when households hope to find enough fish for the traditional Good Friday dinner. One La Campa household has a small fishpond in the garden; the husband collects small fish from rivers and raises them until they are 6–8 in. long. A few people gather snails from streams. The rubbery meat is considered a delicacy, but it takes hours of wading and backbreaking rock-turning to collect enough for an average household of five members to have a small taste. Comments about the decline in animal populations reveal regret and a sense of loss, but into the early 1990s, hunters still pursued any animal that came into sight. By 2000, enforcement of hunting prohibitions and local sentiment had turned against hunting. A former hunter told me that he hunted no longer because he wanted the animals to come back.

Ritual and Medicinal Resources

Church holidays and religious activities draw on forest resources for special decorations. Campeños gather pine boughs, leafy branches, and flowering plants from the forest and house gardens to bedeck altars, the church yard, and homes for special occasions. Campeños strew pine needles on house floors and along processional routes to add an aromatic and decorative accent. Although traditional pagos have diminished through time and with church opposition, the people who continue to practice them utilize copal and black bees' wax as essential elements; copal is usually purchased, but black bees' wax (produced by native bees) must be sought in the forest. The celebrations also involve pine boughs, pine needles, and flowers for household decoration. In addition, traditional healers count on a variety of wild plants, some with medicinal use and others with symbolic power. These wild resources serve in remedies for sickness as well as in rituals to diagnose and cure the ill.

Forest Management Practices and Institutions

La Campa's municipal council has a history of concern for forest conservation, but as a means to address specific problems rather than as a general philosophy. The council became concerned about forest thinning around the Centro soon after the founding of the municipio. On November 15, 1921, the council forbade cutting of "trees useful for construction" (*árboles útiles para construcción*) and slash-and-burn clearing within half a *legua* (about 2 km) of the Centro.[62] Evidently the edict fell short of its goals, because the council repeated it in 1933:

> *Given that the pine trees adjacent to this town are very useful as timber for construction, it is forbidden to destroy them. The síndico municipal is responsible for taking care that no*

permits are granted for clearing milpas in the pines around the town, with the prohibition extending for two kilometers from the center.[63]

While the council prohibited slash-and-burn fields near the Centro, it continued to grant land for houselots, pastures, sugarcane fields, and fincas within the 2-km radius. The council's mandate requiring all households to live 1 month each year in the Centro meant that families needed a place to live, and many built a simple dwelling for that period. Scholars visiting La Campa comment on the number of vacant houses in the Centro, and note that many people live by their fields in the mountains during most of the year (Ardón Mejía 1989; Castegnaro de Foletti 1989). Today, more Centro residents tend to move to their fields only for planting and harvest, particularly when they have children attending a Centro school.

Given that the Centro is located in a narrow valley, its limited area could not meet the demand for houselots for the population. In 1927, the council declared El Guayabo (later San Matías) and Arenales as residential zones.[64] Trees were cut to construct new houses, create yards, plant gardens and open agricultural fields near homes. Demographic growth contributed to the process; censuses indicate that early twentieth-century La Campa experienced a gradual increase in population, which quickened by the latter part of the century (Table 3.2).

As new families were founded and claimed houselots on the expanding fringes of the *aldeas* and the Centro, flat areas near these population centers became highly

Table 3.2 Population of La Campa

Census year	Total municipal population
1887	578[a]
1926	1606[b]
1930	1932
1935	2103
1940	2118
1945	2198
1950	3066
1961	2927
1974	3959
1988	5545[c]
2001	4139[d]

[a] República de Honduras, Dirección General de Estadística, Censo de 1887

[b] 1926–1974: República de Honduras, Dirección General de Estadística y Censos. Censos de Población y Vivienda Levantados en Honduras de 1791 a 1974. The increase from 1887 to 1926 reflects the addition of the population of Caiquín and its aldeas to La Campa when it became a municipio in 1921

[c] SECPLAN [Secretaria de Planificación, Coordinación y Presupuesto], 1988 Censo Nacional de Población y Vivienda

[d] Censo Nacional de la Población 2001. The population decline reflects the separation of Caiquín from La Campa in 1995

desirable. By the end of the 1960s, the trend toward extended cultivation of agricultural fields was underway in the Centro and large *aldeas*. *Emboletamiento* continued for land that farmers requested for temporary fields in the mountains and forests beyond village edges. Around the Centro, the forest was retreating. One informant who had moved into the Centro at that time told me that it was a good place to pasture animals because of the open fields near his residence. The man's children, who grew up during the 1950s and 1960s, recalled walking 1 km or more to find good firewood. Some people chose to move away from the Centro and the larger villages in order to have easy access to agricultural land and forests for hunting. Cruz Alta, which had been little more than an outpost of a dozen households, began to grow. One landowner recalled that he had to fell trees over a meter in width to open his houselot. Presently the land is planted thickly in coffee and fruit trees. Patches of forest spot the landscape and grace hilltops, but no meter-thick pines have survived the expansion of human settlement.

The council received departmental and national orders to encourage forest conservation through forestry law and ordinances. One of the earliest orders (1927) emanated from the governor's office: all municipios were instructed to plant trees along rivers and streams and in ravines. Every household head had to plant two or three trees, with a penalty of 1 peso for each tree not planted.[65] Although the council announced the order and told residents to plant trees, it is not clear whether people followed through. In 1944, the order was repeated with better results; Caiquín's auxiliary alcalde reported that 160 trees were planted.[66] By 1939, the Honduran forestry code aimed to promote conservation of forests and watersheds (ESA Consultores 1993). National policy appears to be the motivation for the *síndico fiscal*'s duty to prevent land grants on slopes and near water sources. La Campa's council admonished residents in 1944 that slash-and-burn clearing had to be conducted with respect for forestry laws that protected forests and water sources.[67]

Municipal *actas* and interviews with residents suggest that national laws did not play a major role in shaping La Campa's forest-use practices until the 1970s, but people's recollections vary and written documentation is sparse. It is particularly unclear whether municipal and national regulations were consistently enforced to discourage abuse of forest resources. Rule enforcement represents a crucial dimension of sustainable resource management (Gibson et al. 2005). In La Campa, enforcement appears to have been concentrated in the areas near settlements, where people could observe violations, and records suggest a concern for excessive land clearing and slash-and-burn activities that could threaten houses, planted fields, or firewood supply. Elders recalled trying to bend the rules by planting close to water sources because crops benefited from the moisture, and sometimes failing to create firebreaks to save time and effort. People complained when they saw people trying to grab land, clear it without permission, or shirk on controlling slash-and-burn fires. The council responded assertively when cases of illegal behavior were reported by witnesses and confirmed through on-site investigation. People who failed to contain their slash-and-burn fires were fined or required to provide restitution, especially when runaway fires threatened or damaged people's homes and cultivated fields. This pattern of enforcement reflected public demand more than

national pressure. Unauthorized land enclosures also met with sanctions if neighbors complained. One example occurred in 1941, when a relatively wealthy resident of Caiquín opened a new clearing without permission. The man already had a land grant of 12 manzanas (8.4 ha) that he had not finished fencing. Caiquín residents complained to the council; not only had the man defied the law by failing to build a fence around an authorized land grant, he had made the unauthorized clearing in an area used as the village's de facto woodlot. The council imposed a heavy fine of 10 lempiras, but permitted the man to harvest one crop in the illegal clearing (so that he would not lose the labor he had invested in clearing), with the condition that he could not build a fence. The council immediately approved Caiquín's demand that the parcel be designated in perpetuity as a communal woodlot, evidently the first one in municipal history.[68] Even when the council imposed fines for careless and destructive behavior, there is little to suggest that deforestation, erosion, or damage to water sources represented a widespread problem in any part of the municipio before the 1970s. Instead, the problems appeared to be confined to specific fields or clearings, and the council took action in egregious cases. Elders pointed out that it was unusual for people to clear more land than they needed because of the heavy labor required.

The Question of Conservation

The forest-field-fallow cycle with long fallows between clearings supported forest persistence into the early 1970s, but was it an intentional or incidental outcome? Did the community aim to conserve forests? In support of the argument that La Campa intended to conserve forests, I consider the institutions and practices that supported long fallows, attempted to constrain erosion and forest fires, and tried to maintain forest cover around villages. It is also possible to find evidence that forest cover survived by accident when considering practices and behaviors that contradict the indications of intentional conservation strategies. I examine both perspectives below, and argue that Campeños did not envision forest conservation in Western terms of reducing or preventing human use of forests. Instead, they saw forests as a dynamic resource that humans needed to use.

The rules associated with slash-and-burn clearing restrained residents from freely cutting forests. *Emboletamiento* fulfilled its intended function of reducing conflicts over particularly desirable plots of land, but it also had wider social purposes and environmental implications. It encouraged people to fulfill communal duties, or they risked losing rights to clear fields. It helped to ensure forest regeneration because people had to abandon fields to fallow when they were done harvesting. The *síndico fiscal* was also charged with enforcing national rules that prohibited clearing on steep slopes or watersheds, or near water. Moreover, people had to obtain permission for burning, which encouraged caution to prevent runaway fires because authorities knew who was setting fires and where. If people burned fields without permission, they risked a fine. When a fire escaped a field

and burned someone else's fences or fields, the person who started the fire was responsible for repairing the damage. Even though elders recalled that the rules were enforced to different degrees over time, they believed that most people agreed with the purpose behind the rules and generally obeyed them. After a crop was harvested, stubble grazing provided food for livestock, and affirmed the communal status of the land while providing manure to nourish the soil. Once a field was abandoned, social custom and practice supported long fallows with the unwritten rule that land should not be cleared again until all signs of a previous owner (such as fences) disappeared. Thus, the combination of slash-and-burn clearing, long fallows, and complementary institutions contributed to the forest-field-fallow cycle, and an arguably sustainable system.

The forest-field-fallow cycle conserved forests through recognition of natural processes of regeneration, but long fallows were feasible because of low population density and abundant land for shifting fields. Forest persistence in many parts of the world has been attributed to low population density relative to the expanse of land, rather than any intentional conservation goal. Theories of common property suggest that people do not create rules until they perceive scarcity of valued resources (Gibson 2001). If forests were abundant, why did La Campa develop the institutions that appear to protect them? Several factors appear to influence early forest-related regulations. First, people living in villages saw that forests were being cut to make way for houses, agriculture, and pastures. This created an awareness of localized scarcity. Campeños evidently distinguished between a lack of trees and forests around villages (where they wanted those resources to be available), even though forests remained abundant in the rest of the municipio. Second, repeated mandates and policies emanating from the national government may have created some awareness of threats to natural resources, or confirmed their observations. It seems, however, that national policies were not enforced unless they appeared relevant to local circumstances or specific problems. Third, from an ethnoecological perspective, it is possible that the Lenca of La Campa had developed beliefs or understanding of their natural environment that fostered resource conservation (cf. Turner 2004). Through the first half of the twentieth century, Lenca beliefs were expressed in public pagos, or *composturas* (Chapter 2), to repay the spirits of the land for their generosity and gain or retain their favor. These beliefs and practices expressed and reminded people of their interdependence with the natural environment. Through the shared celebration of pagos, people also affirmed their ties to each other and to the environment upon which they depended for sustenance. The presence of institutions, beliefs, and practices that seem to support conservation lends strength to the argument that forest persistence in La Campa was more than an accidental circumstance or a consequence of low population density.

The evidence for intentional forest conservation in La Campa is undermined, however, by countervailing behaviors and practices. The belief that forests always come back reveals knowledge of natural cycles but also imparts a misleading sense of inevitability about the process. Forest clearing is interpreted as part of a natural cycle, rather than as a potentially unsustainable process. Most people in La Campa are not concerned about whether or not pine trees will grow back; they are much

more interested in their crops and meeting their families' needs. Some farmers perceive the ubiquitous presence and regrowth of pines as a nuisance for their fields and pastures; they compare pine seedlings to weeds. One farmer, puzzled by my questions about pine trees, pointed to a 20-cm diameter pine tree, over 5 m tall, growing by the entrance to his milpa. "See that pine?" he asked. "It started growing way back when I cleared this land. I didn't do anything to help it grow; I probably even bumped it a few times. Look at it now. You don't need to worry about pines."[69] Overhunting also shows that people did not perceive the potential for decline in animal populations, and now they miss deer. But they are still plagued by coyotes that prey on their chickens, and raccoons and birds that ruin their fields. They would just as soon be rid of them. These attitudes and perceptions represent a potential obstacle to forest conservation.

Institutions, therefore, appear to be aimed at protecting the long-term viability of the forest-field-fallow cycle and agricultural productivity, not forests for their trees or other resources. Conservation was intentional, but not in the same sense that Western societies perceive, and not for all things equally. La Campa's people are conserving what is valuable to them, and this relates to what they perceive as integral to their survival and well-being. Within their contexts, they also faced repeated periods of scarcity that were not a consequence of their overuse or misuse of a resource or the environment, but the result of unpredictable and uncontrollable environmental variations. Through fluctuations in rainfall, insect infestations, wildlife predation on domestic animals and crops, and bouts with epidemic disease, the people's understanding of scarcity has been defined by crop failures, dried-up springs, periodic inability to produce food, and food shortages. Therefore institutions and practices developed to mitigate risks rather than conserve forests. At some level, people may have realized that preserving forest cover reduced risks by maintaining soils for cyclical agricultural production and assuring provision of many useful and edible forest products. For the same reasons, farmers practice a diverse livelihood strategy that includes orchards with a variety of native and introduced trees, herbs, and useful plants. Historically, they needed alternative sources of food if maize and frijoles failed. Pottery production and trade provided an important hedge against crop failures and drought; not only did people gain income and obtain trade goods as they sold their pottery, they extended their social networks.

Institutions for risk reduction and diversified subsistence strategies depended on access to common property and its counterparts, participatory local government, and collective action. The communal, diversified system did not simply buffer the effects of environmental variability but also unpredictable individual tragedies as well as general economic shocks and political instability. When someone's crop failed and a family faced hunger, it was not unusual for the family to find, every few days, several pounds of maize on their doorstep in the morning. Another custom held that if someone asked for something to eat, he or she could not be refused.

Social solidarity and diverse livelihoods could not protect people from all hazards. During the 1920s and 1930s, a series of civil wars and conflicts took place as

rival regional leaders vied for dominance. During this period, soldiers from different factions swept through La Campa repeatedly. They forcibly conscripted able-bodied men and older boys to serve in their ranks, stole food and domestic animals to eat, and wreaked havoc on the villages. An elderly woman who reminisced on these days recalled fleeing with other girls and women to the mountain forests whenever they saw or heard that soldiers were coming. Soldiers forced women to cook for them, and worse. "Those were hungry years," she noted. I asked if they suffered drought, because she was a child during the years that lack of rain had caused famines. She was nearly 80 years old when I interviewed her (1994), and she did not recall the droughts that had occurred. Instead, she replied: "No, we could not tend the fields because of the ransacking soldiers, and every time we thought we might harvest some maize, soldiers stole it or burned it. We had no food, so we ate roots from the forest. They tasted awful, but kept us alive." In another instance, La Campa was hit with an epidemic that may have been yellow fever. One woman recounted lying prostrate on the floor, her mother and siblings beside her, in great pain and unable to move. Her father, who was an auxiliary alcalde, was charged with helping to bury the dead until he fell sick and died. Two of her brothers and a sister also died during the epidemic; only one sister, her mother and grandmother survived. Many families lost loved ones. Other elders recalled that many people were buried in common graves outside the cemetery because they had received no funeral. At the approximate time of the epidemic, municipal council records have an unexplained gap of 2 months between meetings.

In summary, municipal government, agricultural practices and forest use in La Campa during the twentieth century presented institutional arrangements and practices that helped community members to survive in a marginal natural environment despite difficult political and economic circumstances. With the communitarian tradition, people accepted a set of responsibilities and gained complementary benefits. Common property gave community members rights to benefit from the lands' resources. Given that the land belonged to Campeños as a group, most people felt a vested interest in making sure that no one abused rights to the commons by selling the land to an outsider, managing land destructively, or establishing usufruct to land that was not needed for livelihood. At the same time, there were people who attempted to get by with as little labor for the community as possible, thus communal work was obligatory and rules had to be enforced with fines and other sanctions. The wealth of La Campa was its land and the communal system that guaranteed its members relatively equitable access to the fundamental natural and social resources that facilitated survival. By the second half of the twentieth century, however, it was becoming more difficult to maintain the long fallows that were necessary for maintaining agricultural productivity and still provide enough land for everyone's milpas. Fertilizers were introduced, changing the productive potential of the land over extended periods. The municipal council faced increasing pressure to provide basic services to a growing population. In some ways, forests were protected through cycles of renewal and people's efforts through the municipal council to maintain communal woodlots and pastures. Nevertheless, the spread of agricultural

fields and growing villages were placing pressure on forests. The system of land use and management experienced gradual change throughout the twentieth century. People's traditional concepts of conservation, based upon meeting basic needs through natural resource use, helped them meet subsistence needs. They did not provide a frame of reference to encourage municipalwide caution or action to protect forest resources from conversion to agriculture or houselots.

Chapter 4
Logging Comes to La Campa: State Intervention, Forest Transformation, and Collective Action

> *When I was a child, I was afraid to walk in Jilguarapis because it was a great pine forest, and now it is bare.… When will we see another forest like that? There were many oaks, all good lumber … First came our own people, they were the resin tappers and they were followed by sawmills, and they destroyed everything, carrying off [timber] and leaving wood discarded. And then the animals retreated to the mountain; you don't even see coyotes here anymore.*
>
> La Campa farmer

When I first walked through one of La Campa's communal forests in 1993, I saw sparsely growing pine trees, scattered shrubs and saplings, and grasses growing in clumps on rocky soils. I followed tracks of a dirt road, past pine trees with great scars where bark had been stripped off. Few trees exceeded 12 in. in diameter. I was witnessing the aftereffects of excessive logging and resin tapping. As I returned to the forests over the years, I saw signs of regrowth. Logging roads faded to parallel lines and pine saplings crowded the more fertile slopes, but people still remember the logging and resin tapping. Anger surfaces as they reminisce on how sawmills and the national forestry corporation carried off their timber, and left them with ruined forests and minimal compensation.

La Campa's experience with state-controlled commercial logging points to a recurring question in natural resource management: Who should manage forests? In Honduras, as in most of the world, there are no easy answers or recipes to determine who is best qualified or most able to manage forests well. The question is confounded by interrelated questions: What should forests be managed for? How should forests be managed? Who has the right to make the decisions? By examining the history of logging in La Campa, I explore tensions between national-level goals and local-level needs regarding forests, and the conflicts that arise when parties involved in using and managing forests have fundamentally different answers to questions about how forests should be managed and who should make the decisions. The first part of the chapter highlights La Campa's efforts to benefit from forest production, the fragility of local institutions when opposed by higher-level government powers, and the consequences for La Campa's people and the

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

forests when traditional governance rights are abrogated. The latter part of the chapter explores the contexts in which La Campa's people overcame internal differences and obstacles to work toward ending state-controlled logging in their forests. The discussion explores the national political-economic context that proved conducive to La Campa's eventual success and points to the potential as well as the limitations and challenges of collective action. Studies of common-property regimes and collective action for common-pool resource management have generally found that state intervention leads to the destruction of local institutions, and resource degradation. La Campa's experiences suggest that state interventions may also motivate collective action as a form of resistance, and provide opportunities for new institutional arrangements to emerge.

Development Goals Prompt Timber Sales

Early Experience with Logging

Forests are La Campa's most abundant, renewable natural resource. Through much of the twentieth century, residents could find pines over 0.5 m in diameter in the mountains and hills, but they did not perceive timber as a potential source of revenue. Then in the 1960s, several businesses from the departmental capital of Gracias approached the council to request timber. The council approved several modest timber sales, which netted an average income of $551.[1] Residents do not recall logging in La Campa during this decade, but elders remember when Elena Castro, the owner of a property known as Trapichito, granted a logging concession in the early 1960s (Fig. 4.1). The transportation of logs through the Centro upset residents; the timber trucks damaged the road that linked the municipio to Gracias, and Campeños had to repair it. By the late 1960s, Trapichito's pines had been harvested, and the loggers departed.

The First Municipal Timber Concession

In 1972, the council confronted numerous requests for much-needed infrastructure. People from the municipio's eight settlements requested primary schools, potable water systems, roads, and bridges over rivers. The council obtained a modest contribution from the national government ($1,000), which was completely absorbed by the purchase of construction materials for a water project for the Centro Urbano.[2] The council requested additional funds,[3] but to no avail. About this time, Elena Castro put Trapichito up for sale. La Campa and its neighbor, San Manuel de Colohete, coveted the property that lay between their lands because they both wished to expand their landholdings. La Campa's council found itself in the familiar position of lacking funds to undertake important civic works or expand its lands.

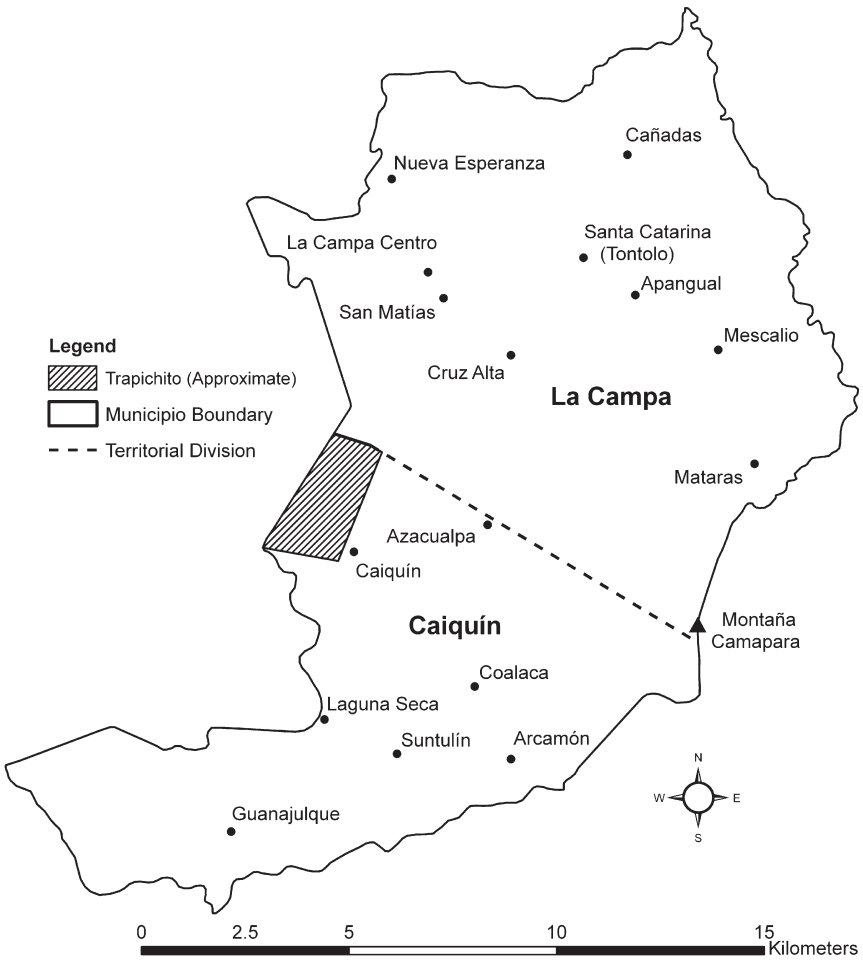

Fig. 4.1 Map of La Campa including Trapichito

A sawmill owner from Gracias, René Mejía, chose this moment to approach the council and request a timber concession. His business, the San Pedro Sawmill, had the capacity to process 5,000 m^3 of timber per month. The alcalde and the other council members began negotiations with Mejía in January 1973, but contrary to custom, they did not consult with auxiliary alcaldes or the general populace.[4] After 6 months of secret deliberations, the council agreed to sell 30,000 m^3 of pinewood to the company. Mejía pledged to pay 3 lempiras ($1.50) per m^3 of timber, and advance 15,000 lempiras ($7,500) for public projects. The news leaked and spread rapidly.[5] Residents could not imagine any legitimate reason for their exclusion from a decision that involved their communal forests. Suspicions grew that the alcalde had been bribed to sell the timber or was trying to hide mismanagement of

municipal funds. A group of residents formed a Community Defense Committee to oppose the council's decision. A series of contentious communitywide meetings ensued. René Mejía defended his interests at the meetings by sending three representatives: his assistant, a senior military officer, and one of the department governor's top aides.[6] Each presented arguments in favor of the timber sale and asserted that La Campa had much to gain by its immediate approval.[7] The people rejected the arguments, and objected to further decision making by the council because it had neglected to abide by community norms of governance. A number of comments were recorded in meeting minutes:

> *"… the alcalde did not take the pueblo into consideration, and that is why there is opposition to selling timber."*[8]
>
> *"Don Roberto is in favor of the timber sale, as long as there is some public work to show for it … and if another council makes the sale. The income could buy Doña Elena Castro's property."*[9]
>
> *"Don Juan said that … the alcalde did not include the people in [negotiations for] the sale and he agrees with selling timber, but that another council should do it."*[10]

The issue reflected convictions that communal forests belong to the whole community and are at once heritage, birthright, and resource base. Residents agreed that timber could be sold for common benefit, but a council willing to sell off communal resources without the people's consent was committing a crime, no matter the justification. The alcalde's repeated apologies fell on deaf ears.

The San Pedro Sawmill and its supporters, along with the municipal council, sought a compromise with the Community Defense Committee. When village representatives complained about the lack of materials to complete civic projects, the sawmill representative offered to add construction materials to the payment. The Community Defense Committee softened its opposition and entered negotiations with the municipal council and the sawmill over the conditions of the concession. René Mejía raised the price to 4 lempiras ($2) per m^3.[11] He also proposed an advance payment that La Campa could use to purchase Trapichito.[12] The negotiating parties soon agreed on the sawmill's obligations, which were approved by the general populace:

1. The Company [San Pedro Sawmill] promises to maintain the road from Gracias to this pueblo throughout the period of operations.
2. The Company promises to construct a bridge over the Río Oromilaca on the trajectory of the road, [using] reinforced cement piles and treated lumber.
3. Reconstruction or repair of the Centro's streets.
4. Similarly, prepare the site where the pueblo's health center will be constructed, and provide the lumber needed for said construction.
5. Five rolls of barbed wire and 25 pounds of clamps for an agricultural zone.
6. Help with 50% of the cost of transporting materials for the Centro's potable water system.
7. Provide at cost the sawn lumber for the ceiling of the telegraph office and the municipal meeting hall.
8. Provide the lumber for construction or reconstruction of schools in this jurisdiction.[13]

Subsequently, representatives from all of La Campa's *aldeas* worked with the council to develop a work plan, which listed the projects to be completed with the timber income. The final list included something to benefit every village:

1. Purchase of El Trapichito
2. Construction of the telegraph office
3. Reconstruction of the Centro's primary school
4. Construction of a bridge over Río Oromilaca
5. Reconstruction of the dike along the river on the Centro's east side
6. Construction of a health center
7. Repair of the municipal meeting hall
8. Installation of a water system for the Centro
9. Construction of a new wall around the Centro's cemetery
10. Construction of a *cabildo auxiliar* (auxiliary town hall) in Mescalio
11. Construction of a split-log bridge over the Río El Vado
12. Construction of a hanging bridge over the Río Coto
13. Construction of a new meeting hall in Caiquín[14]

Their decision to request materials in addition to a cash payment stood to save them considerable time and money in purchasing and transporting materials. The success of the Community Defense Committee established a precedent for future collective actions to assert communal forest rights.

Initial Benefits from Logging

The sawmill began logging in October 1973.[15] The municipal council appointed two men to serve as timber guards; they received training to verify the quantity of the timber extracted and calculate the payments owed by the San Pedro Sawmill.[16] The council quickly closed a deal to buy Trapichito for 5,000 lempiras ($2,500), and obtained legal title in December.[17] Municipal documents from subsequent months record an explosion in expenditures and contracts approved to carry out the 12 remaining projects detailed in the work plan, as well as other public works. Two villages undertook school construction,[18] and two other village's schools received necessary repairs.[19] Mescalio and Caiquín began to build their meeting halls,[20] and the Ministry of Public Health approved plans for a health center.[21] Work on the telegraph office and the municipal meeting hall moved forward.[22] Bridge construction over the Río Oromilaca was postponed when the Ministry of Public Works delayed a necessary study, so the funds were reallocated to the Centro's water project.[23]

La Campa's confidence and determination resulted in a more robust contract than the council had originally negotiated. The process of drafting the timber contract exemplified many of the principles associated with successful common-property institutions (see Ostrom 1990). Several factors appear key in the process: A majority of the populace participated in the decision making; the community had

conflict-resolution mechanisms available (community meetings held to discuss problems and negotiate solutions); and the people designed rules to govern the timber company's activities. Monitoring mechanisms were established to assure that the timber company followed the rules and met the conditions of the contract. The absence of higher-level government interference (and tacit support for local governance) allowed people to make and enforce their decisions (McKean and Ostrom 1995).

National governments and development agencies worldwide have tended to see indigenous groups and rural populations as incapable of managing forests for development. Yet external authorities are rarely as concerned for local welfare and forest conditions as the people who live in or near forests (Cabarle et al. 1997). La Campa's people were committed to managing their own forests, but had no prior experience negotiating a timber concession. From a forester's perspective, the contract was lacking because it did not require extraction methods that would reduce erosion and soil compaction. The people nevertheless defended their common rights by requiring transparency in decision making and setting down responsibilities for the timber company. The final contract protected their interests, recognized their rights to enforce the agreement, and provided income and materials for development projects.

La Campa's determination to enforce the contract indicated that the municipio had the potential to successfully manage its forests for production, particularly if it furthered training in forestry for the timber guards. Unfortunately, La Campa was not given the chance to prove itself in forest management, or compel the San Pedro Sawmill to fulfill its obligations after the first few months. In retrospect, elders suspect that the sawmill's owner accepted La Campa's conditions because he knew that pending policy changes would annul the contract.

Honduras Nationalizes the Forestry Sector

As the San Pedro Sawmill negotiated the timber concession in La Campa, the national government was charting a new direction in forest policy to fuel economic development (Hernández 1992). On January 10, 1974, the congress passed Law Decree 103. It declared that the national government owned all trees, in effect nationalizing Honduran forests. The same decree created the Honduran Forestry Development Corporation (COHDEFOR). Forest owners still owned the land, but not the trees. Landowners had the right to be reimbursed for timber extraction, but under COHDEFOR's control.

The national government created COHDEFOR as part of a series of reforms undertaken during a brief era of reformist militarism that had begun in December 1972. General Osvaldo Lopez Arellano, commander of the armed forces, deposed President Ramón Ernesto Cruz in a coup d'etat and proceeded to create a national development plan. The government "introduced a state-controlled and interventionist style of cross-sectional planning that tended to strengthen the state's role as the prime negotiator in development by assigning it a more active and direct participation in the national economy" (Molina 1986, p. 24). The decree established

COHDEFOR as a semiautonomous institution. The board of directors included the Honduran president and the secretaries of the ministries of Natural Resources; Economy; National Security and Defense; Treasury and Public Credit; and Planning, Coordination, and the National Budget (SECPLAN/DESFIL/USAID 1989).[24]

COHDEFOR was given the responsibility of promoting and overseeing forest-related industries, including extraction, industrialization, and commercialization of forest products. The decree also assigned COHDEFOR the responsibility for forest management, conservation, watershed protection, and reforestation (SECPLAN/DESFIL/USAID 1989). Through COHDEFOR, the state aimed to regulate the inefficient forestry industries that wasted timber and exacerbated the rate of deforestation. The state provided no budget for COHDEFOR; it expected that COHDEFOR would support itself with the income it generated from timber sales, exports of sawn lumber, fees extracted by operating as an intermediary between local people and sawmills, and foreign donors. It was also supposed to produce profits for national coffers and fund national development programs (Hernández 1992; SECPLAN/DESFIL/USAID 1989; Stanley 1991). The combined responsibilities of exploiting forests for profit and protecting forests from degradation set up a fundamental contradiction within COHDEFOR that undermined its ability to perform its responsibilities well.

Honduras' decision to nationalize forests was part of a broader trend that emerged by the 1970s. Developing countries, including Indonesia, Malaysia, Philippines, Costa Rica, Peru, and Brazil, were turning to their forests to stimulate economic development, generate income from trade, and address poverty. While each nation had a different set of policy prescriptions and goals, they shared a top-down approach to accelerate industrialization of forest resources. Costa Rica, Brazil, and Honduras promoted timber production in combination with programs to alleviate the demand for land among rural populations (Ascher 1999; Repetto and Gillis 1988). As a general rule, these initiatives fell short of expectations for generating national revenue, alleviating poverty, and accelerating development. Instead, they accelerated deforestation and, in some cases, exacerbated rural poverty by denying local populations access to forest resources. In addition, policies were designed and implemented without recognizing preexisting institutional arrangements for forest management. However, Honduras contrasted with many other nations in that the government continued to recognize common-property titles owned by many indigenous groups and rural communities. In the short term this did not protect forests but it did provide local people with a narrow opportunity for legal recourse to assert their land rights, which Campeños attempted to do.

Change in the Oversight of Timber Concessions

The new forestry laws had numerous detrimental ramifications for La Campa's rights to oversee and monitor logging in the forests. With the creation of COHDEFOR, Campeños lost control of their forests. They lost rights to negotiate timber contracts, place stipulations on timber extraction, and verify the quantities of timber extracted. The new forestry law terminated all existing timber contracts, so

Mejía was freed from his contractual commitments for road maintenance, bridge construction, providing lumber for school construction, and the other obligations negotiated with La Campa. COHDEFOR took charge of issuing all timber contracts, and its foresters took over the role of verifying the quantity of timber extracted. La Campa's timber guards lost their jobs, and the municipio was not allowed to inspect timber trucks' loads, so it had no way to verify the quantities extracted. One of the former timber guards recalled that he tried to keep an eye on the loggers, but stopped when they threatened him. Campeños suspected that the timber company extracted more timber than it paid for, but they had no recourse to verify their suspicions. They had to accept COHDEFOR's figures, which were based on the timber companies' reports.[25] The COHDEFOR Management Unit in Gracias was too short on staff to do more than occasional spot checks, and the staff had no authority to examine trucks outside of regular work hours. Sawmills had ample opportunity to extract surplus loads during evenings and weekends without rendering account. Foresters noted that timber trucks often pulled into Gracias after dark; they complained of the problem to the COHDEFOR hierarchy but got no response.[26]

Struggles to Obtain Timber Payments

The San Pedro Sawmill stopped payments to La Campa when COHDEFOR took over, but continued to extract timber. It was the first sign of a pattern of difficulties in receiving payments due. Within months, COHDEFOR wrote another contract for René Mejía, which the council had to approve before they learned the terms of reimbursement.[27] They later learned that the rate of payment would be only 2 lempiras ($1) per m^3. COHDEFOR charged sawmills 6 lempiras ($3) per m^3, and kept the difference. Although COHDEFOR raised the charge for timber companies to 12 lempiras ($6) per m^3 in later years, COHDEFOR never increased the amount it paid to municipios. In effect, La Campa's income from timber was reduced to half of what it had negotiated in the original contract.

The council sent a delegation to COHDEFOR offices in Tegucigalpa to petition for reinstatement of the pay rate negotiated in its first timber contract. The delegation obtained approval to be paid the original contracted amount; it also won permission to have timber payments deposited in Gracias to avoid the long and costly trip to the capital. Two months later, COHDEFOR retracted its promises. The council dispatched another delegation to Tegucigalpa to petition, yet again, a reinstatement of the original timber price. Council members noted that COHDEFOR policies threatened their autonomy and interfered with their efforts to bring progress to the community.[28] The second delegation argued La Campa's case at COHDEFOR headquarters, the Ministry of Government and Justice, and the Ministry of Public Works. Their efforts yielded partial success: COHDEFOR agreed to add 1 lempira per m^3, for a total of 3 lempiras per m^3, if La Campa took responsibility for fire-fighting in the municipio.[29]

The actual pay rate proved to be lower, because COHDEFOR subtracted fees from each timber payment. The income available for civic projects was further

reduced after municipal authorities deducted their travel expenses to process paperwork and withdraw payments in Tegucigalpa. In 1974, trips to Tegucigalpa to negotiate more favorable terms and process paperwork cost the municipio 1,312.50 lempiras ($656.25).[30] By contrast, the construction of adobe walls for one of the new primary schools cost 180 lempiras ($90).[31]

In assigning COHDEFOR responsibility for timber contracts, the Honduran government intended not only to profit from timber extraction, but also to end sawmills' practice of paying a minuscule amount for timber. Supposedly, COHDEFOR would pay a fairer price to municipios and thereby foster development. In practice, COHDEFOR and the national government kept the majority of the income. It is unclear whether COHDEFOR's price represented an improvement for most municipios or landowners; La Campa certainly received much less. The state promised that its cut from timber sales would be returned to the municipalities in the form of public services, but this proved to be more rhetoric than reality for La Campa.

Delays in timber payments became a pattern, and had multiple causes. The process to obtain reimbursement involved four national agencies, including COHDEFOR (Fig. 4.2), and rarely worked smoothly. Municipal authorities had to travel repeatedly to Gracias, the regional office in Santa Rosa de Copán, and

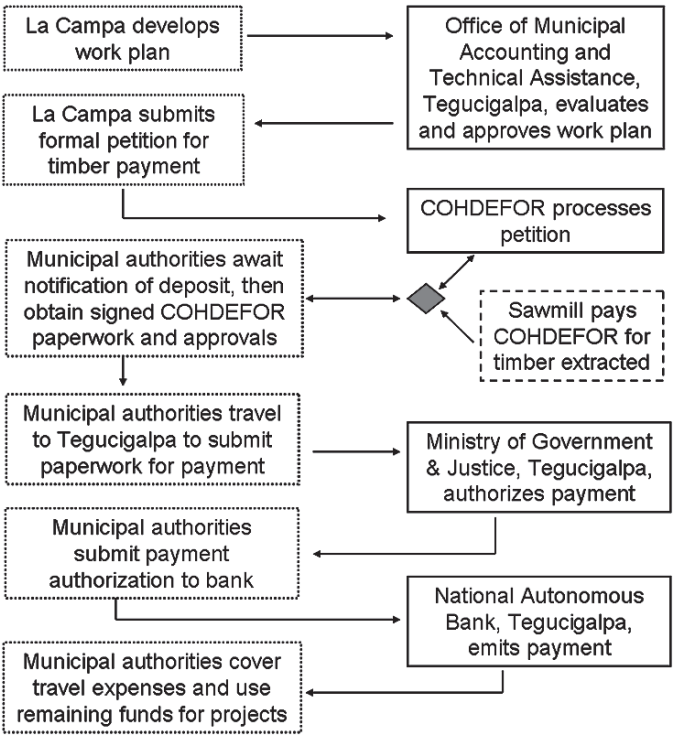

Fig. 4.2 Procedure for a timber payment under COHDEFOR

sometimes to Tegucigalpa, to check on the status of the paperwork. In order to request a timber payment, the municipal council had to have a work plan approved by the Office of Municipal Accounting and Technical Assistance and submit a formal payment requisition to COHDEFOR that specified the public works on which the money would be spent. When the bureaucracy worked properly, the council received notification once a payment was deposited. The council then had to obtain a permit from regional COHDEFOR officials to claim the payment. The next phase required a trip to Tegucigalpa.[32] If the work plan and all the papers were in order, the council member obtained the authorization required to claim the funds from the National Autonomous Bank. The government imposed these measures to prevent municipal authorities from diverting funds to their own pockets. For La Campa, these precautions ignored the history of community oversight of municipal expenditures, and local mechanisms to ensure transparency.

The bureaucratic process to approve La Campa's requisition for payment did not begin until the sawmill paid COHDEFOR. The San Pedro Sawmill and its successors—the Bardales Sawmill and the Alvarado Sawmill—typically failed to pay in a timely manner. René Mejía ended timber extraction in La Campa in 1975 but his last payments were delayed until the middle of 1976, in part due to bureaucratic errors.[33] The most egregious instance occurred when the Bardales Sawmill delayed over 4 years (1978–1982) to pay COHDEFOR for the timber it extracted from La Campa in 1977 and 1978.[34]

COHDEFOR Regulations' Implications for Municipal Governance and Livelihoods

COHDEFOR regulations covered a wide range of issues beyond controls over municipal timber sales. Following its mandate to protect forests, COHDEFOR required people to obtain permits for most activities that involved cutting timber, such as construction, carpentry, or clearing land. COHDEFOR set rules to prevent forest fires, improve forest growth and timber quality, and restrict slash-and-burn agriculture (FAO 1968; Hernández 1992). COHDEFOR employees visited municipal council sessions to lecture the council, auxiliary alcaldes, and the general public on fire control,[35] and to disseminate restrictions concerning forest use. In 1977, COHDEFOR fined a number of residents for clearing areas near streams and water sources; in 1978, the chief of the Gracias Management Unit attended a council session to warn residents not to repeat the previous year's behavior and to obtain COHDEFOR permits to cut pine trees, or else they would be fined again.[36] The council acceded to COHDEFOR's domination, and sent residents to the management unit for permission to cut trees. COHDEFOR generally approved municipal construction projects but, overall, undermined or prohibited the institutional arrangements by which the municipal council had managed forest use and agriculture.

Rules Restricting Timber Harvesting

Prior to COHDEFOR, La Campa residents obtained permission to cut trees for construction by presenting a request to the council, but they did not need permission to harvest trees for fence building or tempering pottery. Under COHDEFOR, Campeños had to travel to Gracias and purchase an officially stamped paper required for legal documents. Subsequently they had to pay an employee of COHDEFOR to type the document in the correct manner, and then pay a permit fee. The only timber use that was not regulated was firewood collection for household use, but it was restricted to areas that COHDEFOR designated as woodlots. COHDEFOR did not approve woodlots in any area that had commercially valuable timber, and national regulations prohibited unauthorized people from entering the areas designated for resin tapping or logging. La Campa's people suddenly had few places where they could collect firewood legally.

Rules for Slash-and-Burn Agriculture

Foresters and policy makers saw slash-and-burn agriculture as the foremost cause of forest fires. Between 1975 and 1992, Honduras lost an average of 61,416 ha of forest per year to fires, and 58% of the fires were caused by individuals. A study on the reported causes of forest fires discovered, however, that only 9% could be directly attributed to slash-and-burn agriculture. National laws nevertheless focused on ending slash-and-burn agriculture; it was much easier to blame a single cause for forest fires than attempt to address the full range of implicated activities, from burning garbage to clearing underbrush in pastures (Hernández 1992).

COHDEFOR attempted to terminate slash-and-burn agriculture immediately,[37] but many municipios from around the nation petitioned for an exemption. They pointed out that most farmers could not afford fertilizer and widespread food shortages would result.[38] COHDEFOR temporarily granted the petitions, and issued a limited number of slash-and-burn permits to each municipio for a fee. To reduce the chances of runaway fires, foresters ordered farmers to clear 3-m-wide fire lanes around fields. Foresters also required that fires be conducted in the morning, when conditions were most humid and they could monitor the fires. Although these regulations were sound, foresters did not understand the range of variation in local conditions or the implications for farmers. Creating wide fire lanes required heavy labor, and the morning hours were the least propitious time to burn fields. Wet with morning dew, slash would burn unevenly and leave areas unfit for planting. Farmers in La Campa's lowlands had to contend with capricious morning winds; as the dew lifted, the winds could carry a fire beyond the bounds and force people to fight a runaway fire during the hot and breezy midday hours.[39] These farmers preferred to burn fields after 4 p.m. when winds died down. Fields in the more humid mountains burned best in the middle of the day, after the dew evaporated and before dew condensed in

the late afternoon. COHDEFOR could not be present to watch every field burn, so farmers continued to choose the ideal time to burn based on their assessments of weather conditions. When foresters insisted on monitoring burns in the morning, farmers noted that burns usually did not go well, and their harvests suffered.

Rules to Limit Settling and Clearing Land

One of COHDEFOR's goals was to protect forested land from occupation, so people needed a permit to clear land for a houselot or agriculture. As sawmills cut tracts of forest, COHDEFOR sought to prevent people from settling the cleared land. La Campa's authorities did not agree that they should stop people from building houses and planting fields. The population was growing, and land was abundant. By law, La Campa owned the land but not the trees; the people found it unreasonable that they could be prohibited from settling land once trees were removed.

Social Forestry System Offers Alternatives for La Campa

Part of COHDEFOR's mandate included the creation of the Social Forestry System, through which the rural population would undertake forestry activities to alleviate poverty and foster development. While COHDEFOR's regulations interfered with residents' forest use, implementation of the Social Forestry System provided new employment opportunities. By late 1974, COHDEFOR began to organize agroforestry groups for resin tapping and pine seed collection in La Campa. At the time, a pound of top-quality pine seeds was valued at 40 lempiras ($20), and a barrel of resin was valued at 240 lempiras ($120) on the open market. The pine seeds were collected for the seed bank of the National School of Forest Sciences, mainly for export (SECPLAN/USAID/DESFIL 1989). COHDEFOR provided training on collecting and classifying pine seeds to everyone who was interested, but this activity never became a reliable source of income due to limited demand and variability in pine trees' seed production.

The Promise of Resin Tapping

Resin tapping had greater potential than seed collection. International markets demanded resin for dyes, soaps, adhesives, and turpentine (Stanley 1991). COHDEFOR supplied the necessary materials as a loan, and groups repaid COHDEFOR as they sold the resin.[40] Residents in the Centro, San Matías, Cañadas, Cruz Alta, and Caiquín formed the first resin-tapping groups in La Campa; each group started with less than

20 members. Many resin tappers were young people eager to diversify beyond agriculture, or entrepreneurial individuals interested in new income sources. When a group was ready to work, COHDEFOR assigned it a separate section of the communal forests to resin tap. As agroforestry groups formed throughout Lempira, COHDEFOR organized a regional cooperative to coordinate resin collection and delivery to the buyer, RESIHON. La Campa's groups joined to facilitate the marketing of their product, and several individuals attained leadership positions.

Resin tappers recall that it took time for them to become proficient at their tasks and to develop the level of skill and cooperation to work efficiently. It took practice to correctly affix the materials to a tree. Two grooved metal strips had to be bent around the trunk, attached with nails, and connected to a plastic cup. If the grooves did not line up exactly and fit the tree perfectly, resin dripped down the trunk and missed the cup. As resin tappers worked, they used a sharp metal stick to scrape horizontal channels into the bark. Each channel had to be deep enough to penetrate the bark, but not so deep as to damage the wood beneath. After a channel was carved, they applied sulfuric acid to increase resin flow into the cups. They emptied full cups into 1-gallon cans, which they emptied into large drums mounted on horses (Fig. 4.3). Large, reusable barrels (the size of an oil drum) were used to store the resin for sale.

One former tapper, Renán, remembered that at first his group collected two barrels of resin every 8 days. Later, the group took on additional workers and collected 12–20 barrels per month. Trees produced more resin during the dry season (approximately January–April) under sunny skies. In the wet season, resin flow declined, and people took time to plant their fields. Another ex-tapper, Gilberto,

Fig. 4.3 Resin tapper in La Campa

noted that they usually worked 6 days per week, and that the labor was demanding. Splashes of sulfuric acid ruined their clothes and burned their hands. Carrying the heavy resin buckets and moving the barrels strained arms and backs. Gummy resin spattered their skin and clothing, and they had to buy kerosene (an expensive item) to remove it.

The difficult labor of resin tapping became more demanding as groups grew and members competed in productive activities. Internal tensions took a toll; the Centro's group split into two after a leadership struggle. Each group continued resin tapping within separate zones.[41] Although resin-tapping groups experienced organizational issues and internal tensions, they tended to have friendly relationships with COHDEFOR employees. Renán, Gilberto, and other resin tappers recalled that the Social Forestry System workers were good people who tried to help them improve their livelihoods.

Economic Challenges of Resin Tapping

The resin market proved volatile; prices fluctuated unpredictably. The late 1970s brought a decline in prices, followed by rising prices that attained a peak of $41 per quarter metric ton in the early 1980s (Stanley 1991). The market fell again in 1983, as synthetic chemicals began to compete with pine resin on international markets. Even with good prices, Gilberto, Renán, and other tappers remembered their share of the profits did not amount to what they had expected. COHDEFOR took a portion of every sale to repay the loan for materials and deducted a production tax and a service charge. The tappers had to pay the truck driver and a municipal tax of 1 lempira per barrel. Gilberto earned an average of 60 lempiras per month, equivalent to $30 (or about $1.20 per day), when prices were good.

Resin tappers benefited from additional compensations. They received food supplies (i.e., cooking oil, maize, beans, and canned meat) for assisting COHDEFOR technicians with forest maintenance activities. They trimmed branches, culled young trees and excess seedlings, cut down deformed pines and eliminated other species to encourage the growth of productive pine trees. They were allowed to keep culled wood for their own use. Nevertheless, most resin tappers barely met subsistence needs. Renán and Gilberto, like many of their peers, lived in small adobe houses with dirt floors and unpainted walls. They struggled to maintain their growing families. Their children, like many in La Campa, suffered malnutrition with a diet composed primarily of tortillas. Resin tappers could rarely afford to buy their children the mandatory school uniforms, and shoes were a luxury. Resin tapping did not reduce their poverty; it just changed the contexts of their labor. When tensions began to grow between resin tappers and their neighbors, the experience of poverty endured as a common thread.

Tensions Between Resin Tappers and Their Neighbors

Through COHDEFOR seminars, training, and orientation, resin tappers became guardians of the forest and defenders of COHDEFOR interests in La Campa. Resin tappers learned the rationales for forestry techniques and valued pine trees for their resin-producing potential. They observed the activities of sawmill loggers and other Campeños with a critical eye. Foresters encouraged resin tappers to report violations. From the beginning, resin tappers lodged complaints against loggers for wasting timber and leaving damaged trees behind, and then they began to report some of their neighbors (especially ones with whom enmities already existed) for cutting trees without permission. For example, the president of the Centro's resin-tapping group reported seven damaged pine trees in a neighbor's fenced pasture, even though the pasture was not in a resin-tapping zone.[42]

Another major point of contention arose over the prohibition on collecting firewood in resin-tapping zones. Although resin tappers assert that they did not report people who collected dead or fallen wood, their neighbors recall otherwise. Resin tappers' work with COHDEFOR to cull trees aggravated the tensions. From the perspective of non-tappers, the resin tappers had free access to firewood in the resin territories. The rest of La Campa had to use woodlots approved by COHDEFOR foresters, who had designated the depleted, inconveniently located areas that the San Pedro Sawmill had logged. Campeños observed resin tappers and foresters removing firewood and small trees with increasing indignation as they found it harder and harder to find firewood and pines suitable for construction in their over-exploited woodlots. Eventually residents demanded that COHDEFOR employees pay a municipal tax for any wood taken.[43] The director of the Gracias Management Unit, Guillermo Mazier, visited a La Campa council meeting to explain that his people were removing undesirable, useless trees, especially oak and small pines, to improve conditions for commercially valuable pine. Except for the resin tappers, Campeños found the explanation to be entirely without merit. They prized oak for firewood and valued small pines for their numerous uses as poles. To their eyes, COHDEFOR was taking the best firewood and desirable small pines. To calm the tensions, Mazier told the council that La Campa residents could cull trees for their use, including house building, as long as they did not do so in excess.[44] The definition of "excess" culling was left unclear, and Campeños hurried to take advantage of the opening. Mazier's tolerance level was quickly surpassed; within months Campeños faced fines for cutting timber in resin-tapping zones.

Despite Campeños' perceptions, COHDEFOR foresters were following well-established silvicultural procedures to cull wood and remove it to reduce the risk of forest fires. They could have defused the situation if they had left the culled wood in La Campa, but they carried it off in their vehicles. To this day, Campeños remain convinced that COHDEFOR employees used the firewood themselves or sold it for cash in Gracias. They interpreted the culling as a violation of the law, and saw this as justification for their own actions. Although they risked fines, people felt that they had few choices but to fell trees without permits, collect firewood in resin-tapping

zones, and clear their slash-and-burn fields without permits. They believed their basic needs for food, shelter, and livelihood took precedence.

Resin tappers reported people whom they caught cutting trees illegally, but it did not occur frequently. Resin tappers maintained a sense of righteousness because they supported the law, protected their livelihoods, and defended the forest. Yet they had family, friends, and neighbors who did not tap resin, so resin tappers had to perform a balancing act. Although Campeños disliked resin tappers for reporting tree-cutting violations to COHDEFOR, they knew that resin tappers were trying to get by, just like everyone else. For their side, resin tappers were ambivalent about COHDEFOR's restrictions on settling land. They also needed agricultural fields to feed their families, and they joined their neighbors in requesting land for agriculture from the council, even in areas that COHDEFOR wanted to protect for forest.

Shortcomings in the Social Forestry System

Employees of the Social Forestry System encountered numerous difficulties in fulfilling their duties. The Gracias Management Unit managed over 77,000 ha[45] but it lacked staff, supplies, and funding. The Social Forestry staff had to provide support and training for agroforestry groups throughout the region, as well as deliver food supplies and carry out forest maintenance activities. Yet in the late 1970s, the district office transferred the Gracias unit's Social Forestry System vehicle to another unit, drastically limiting the staff's mobility. During January 1979, sulfuric acid ran out, and resin production fell.[46] Funds to purchase food staples owed to rural people did not arrive, and COHDEFOR checks to resin tappers bounced when the district office failed to transfer funds. Resin sales were delayed due to a shortage of barrels,[47] and RESIHON refused to fulfill its purchase obligations. Rigoberto Alvarado, who worked with La Campa's agroforestry groups, asked the regional headquarters to "… please guarantee a market for [resin] production … the rural people are struggling, and they want to resolve some of their many problems."[48] Alvarado made continual requests for more support throughout 1979, but they were ignored. He finally submitted a plea for better funding:

> *[G]rant us a bit more support for executing our program activities next year, 1980, and provide the indispensable resources needed to carry out more comprehensive work. For during my stay here, the little that has been realized has been [through] the personal effort of the hired hands, myself, and the help of a few others who have given what they could. I consider and expect that if in the coming year you give us the support requested so many times, we will give you greater and better achievements in favor of our organization.*[49]

Instead of improving support for the Social Forestry System, COHDEFOR chose to diminish its efforts. The national-level administration noted widespread problems in the program, including a fall in resin prices, deficient credit arrangements, institutional problems, and shortcomings with agroforestry groups (SECPLAN/DESFIL/USAID 1989; Utting 1993). Moreover, national demand for lumber was

growing. In 1980, the Gracias Management Unit was assigned new Social Forestry personnel oriented toward profit-making timber and resin production; rural development faded as a goal. Alvarado's name disappeared from the archival record; evidently he lost his job.[50]

At this time, serious problems surfaced in the regional resin cooperative. An inexperienced driver wrecked the cooperative's truck,[51] and anomalies came to light in the cooperative's financial records.[52] La Campa tappers who held leadership positions in the cooperative acknowledged that at first they were not accustomed to managing large sums of money. Conflicts among the cooperative's agroforestry groups and other frustrations led La Campa's groups to withdraw from the regional cooperative in 1980.[53] COHDEFOR hierarchy reacted with a flurry of memos expressing suspicions of subversive, outside influences at work, although they had no proof.[54] Such suspicions resurfaced periodically in COHDEFOR's dealings with La Campa. Ironically, the hierarchy believed that farmers had the capacity to manage an agroforestry cooperative efficiently without prior experience, but could not conceive that those same people had the collective capacity to leave the cooperative as a group.

Problems with Sawmill Companies

La Campa's forests were harvested by a series of logging companies and a large *palillera* that produced small wood products, such as matchsticks, toothpicks, and broom handles. The San Pedro Sawmill left in 1975; its promises to help with supplies never materialized. It was the most rapacious of the sawmills, with its 5,000 m^3 per month volume. According to interviews with COHDEFOR officials and records, it logged more than subsequent sawmills and left behind eroded soils and damaged trees. In 1977, COHDEFOR granted a timber contract to the Bardales Sawmill for an area in Caiquín. The council endorsed the contract because the municipio had outstanding debts of 1,922.69 lempiras ($961.35), and needed additional income to finish civic projects that dragged on without completion.[55] The Bardales Sawmill completed its logging in Caiquín at the end of 1978, but despite council petitions to COHDEFOR,[56] La Campa did not receive full payment until July 1982.[57] The sawmill did not report the quantities extracted,[58] and owner Luís Bardales did not pay COHDEFOR for the timber until he applied for a new contract.

After the sawmill ceased logging, resin tappers continued work in their zones. By 1980, the trees in the zone known as Jilguarapis were tapped out. COHDEFOR released notice that it had a timber concession available for La Campa. The Bardales Sawmill requested the contract, and the owner finally paid for the timber he had extracted previously. Although the sawmill had a poor reputation, COHDEFOR approved the contract. An internal memo reported that the sawmill's area included enough forest to support logging for another 8–9 years. Of the estimated 47,246 m^3 of marketable timber, 45,246 m^3 were located in the municipio of La Campa.[59]

Bardales began operation in Jilguarapis in August 1982, and quickly gained a reputation for careless logging methods and disregard for the damage his trucks caused roads and bridges.[60] COHDEFOR employees denounced the sawmill for cutting and damaging small trees, employing methods that eroded the soil excessively, and using equipment improperly.[61] Bardales' trucks were caught carrying unauthorized timber and excess loads by COHDEFOR employees.[62] Audits of the sawmill's records and physical plant found accounting discrepancies, incomplete documentation, equipment problems, and a failure to heed COHDEFOR orders. Bardales again postponed payments to COHDEFOR, so La Campa did not receive reimbursement in the promised time frames.[63] A report submitted by the Gracias Management Unit noted that the Bardales Sawmill suffered from "the irresponsibility of its owner and his bad administration."[64] A forestry inspector warned Bardales in writing, "… in all of the inspections realized from 1982 to the present, there has never been one in which some problem or other was not discovered. If this situation continues, we will be obligated not to extend the Annual Operating License for 1984."[65] COHDEFOR nevertheless allowed Bardales to continue his operation. By the end of April 1984, Bardales had accumulated 1,723.19 lempiras ($861.60) in unpaid COHDEFOR fines.[66] Soon after, he sold out and left the region without paying the fines or other outstanding debts. The operation became the Alvarado Sawmill and continued logging in La Campa. It carried on its predecessors' practices of extracting timber without regard for sustainable harvesting principles.

Theory vs. Reality in Forest Management Philosophy and Outcomes

COHDEFOR's forest management philosophy focused on deriving maximum profits while maintaining conditions for future growth and harvesting. To this end, COHDEFOR taught a form of resin tapping known as "tapping to death" (*resinación a la muerte*). Under this system, tappers extracted resin as fast as possible from mature pine trees, facilitated by sulfuric acid. Resin tapping continued peeling the bark until it was removed from both sides of the trees to a height of nearly 2 m. When trees ceased to produce a consistent flow of resin, they were destined for sawmills. Loggers extracted the trees fit for lumber, then *palilleras* moved in to harvest the damaged trees and scrap wood. In the end, forests were left with few standing trees.

In theory, a clearing in a pine forest can grow back with only a few standing trees. The future regeneration of the forest can be assured by (1) conservation of high-quality pines as parent stock (*árboles padres*); (2) careful extraction practices that respect young pines, control erosion, and limit soil compaction; and (3) protection from subsequent human use to allow forest regrowth. In reality, COHDEFOR lacked the personnel to enforce these principles. Inadequate monitoring and enforcement gave resin tappers and loggers the opportunity to appropriate some of the trees marked as parent stock,[67] and loggers got away with extraction techniques that caused erosion and degraded soils. "Quick and dirty" tree removal paid off by

increasing the number of logs that could be taken every day, so the financial benefits exceeded the minimal risks of a fine.

Logging created open areas. Areas that were steep, rocky, or severely degraded by logging had minimal commercial potential. Over the years, COHDEFOR approved several of these areas as woodlots to placate residents' demands for subsistence firewood and timber. Other logged sections had fairly level ground that attracted farmers. Campeños wanted land for agriculture, and COHDEFOR did not have the authority to forcibly remove people once they had fenced and planted a field.[68] The National Agrarian Institute (INA) had jurisdiction over agricultural land, and, in practice, actual land cover defined which agency had oversight. At the national level, COHDEFOR and INA competed over land-use designations. COHDEFOR wanted forests for production, while INA was charged with carrying out land reforms to placate well-organized peasant groups that were pressuring the state for land rights. By law, INA could not redistribute lands from commercial plantations of bananas, coffee, sugar, or citrus fruits, but it could allocate forest lands (Ascher 1999). The competition between COHDEFOR and INA points to contradictions and inconsistencies within the legal structure of Honduran state agencies. COHDEFOR, however, tended to come out on the losing end when it clashed directly with INA over forest land with agricultural potential.

Around the nation, principles of forest management were never achieved due to COHDEFOR's shortcomings and inadequate resources to fulfill its responsibilities. Across the nation, logged forests were left with suboptimal conditions for regrowth. As COHDEFOR's own assessments noted:

> *From the beginning, regulations for forest production were not effectively implemented … to a certain degree, forest technicians continued a practice of failing to indicate or apply silvicultural and road construction rules prior to logging. To the same degree, there was no accurate inventory of the timber to be harvested, and the buyer [sawmill] was trusted to correctly document the timber that was transported and pay COHDEFOR for only that much.* (AFE-COHDEFOR 1996, p. 91)

In La Campa, the relatively level areas were converted to agriculture, and areas designated as woodlots were subjected to constant harvesting for firewood and household timber. Overexploitation and erosion begun by logging activities inhibited regeneration. Only the less accessible areas, undesirable for agriculture and inconvenient for firewood collection, were left alone to regenerate, and pines returned.

Failures of COHDEFOR Rules

COHDEFOR's rules backfired in several ways. COHDEFOR negated the municipio's right to set and enforce rules on forest use, which the people had seen as legitimate and as protecting their joint interests. COHDEFOR's rules were seen as protecting the state's interests while denying Campeños access to resources they needed to live. Rules that restricted slash-and-burn farming ignored indigenous knowledge and traditional practice, and increased risks that harvests would decline. In addition, the paperwork,

transportation costs, and processing fees required for permits diverted household income needed for basic necessities, such as food and clothing. Obtaining permits often required two trips to Gracias: one to submit the paperwork and another to pick up a permit. Farmers resented the time that this took away from their work. Campeños had periodically sold firewood to residents in Gracias, hunted wildlife, and gathered edible forest products. All of these activities contributed to livelihood, as well as providing a form of insurance against crop failures and hard times. By limiting access to forest products and charging for extraction, COHDEFOR's rules and enforcement threatened Campeños' well-being. Instead of mitigating poverty, COHDEFOR appeared to exacerbate it.

In COHDEFOR's early years, it rarely enforced the rules. But as it became more established, its foresters became more determined to apply sanctions. Campeños reported that after being fined, they begrudgingly sought permits to cut pine trees to avoid further sanctions.[69] They became bitter as sawmills extracted truckloads of timber and left behind ruined forests. Foresters carried on a separate, largely futile effort to fine sawmills. To La Campa residents, it appeared that the sawmills faced no consequences for wanton forest destruction, while Campeños had to pay fines for comparatively minor infractions. The discrepancy in enforcing the forest laws and collecting fines occurred throughout Honduras. Foresters working in the field witnessed sawmill misdeeds with frustration, but they were powerless to sanction sawmills without backing from their superiors. Foresters proceeded to punish rural people's transgressions; it was one area in which they could prevail. The inequities in enforcing the law exacerbated enmities between COHDEFOR personnel and rural populations, who viewed their forest uses as necessary to survival. Over a decade later, a study acknowledged that "after 1980 … COHDEFOR, as the Forestry Sector's most important entity, experienced a declining capacity to apply the Law. It conducted enforcement in a way that punished the weakest sectors with a certain brutality while granting impunity to the most powerful sectors" (AFE-COHDEFOR 1996, p. 204). In the long run, penalizing the poor backfired by augmenting resistance to COHDEFOR, while doing little to protect forests.

The State or the Community: Who Should Manage the Forest?

The experience of La Campa with COHDEFOR through the early 1980s points to shortcomings in state-led resource management, but also to inadequacies of community-level forest governance. The top-down approach adopted by the Honduran state entailed several assumptions, including: (1) communities and individuals are incapable of managing forests without external supervision, (2) traditional and rural groups inevitably destroy forests, and (3) centralized public management is the most efficient approach for managing and conserving natural resources. These assumptions resulted in policies that undermined local institutions for resource management and absolved timber companies of responsibilities to communities. Although the state claimed that its policies were aimed to develop rural areas, in reality it became

much more difficult for communities to obtain income from logging due to bureaucratic prerequisites. Moreover, people were restricted in access to forest products (firewood, timber) that were important for subsistence.

The Honduran government's forest management proffered laudable goals, including use of forest income to foster development and reduce poverty. The effort had precedents in other nations, which likewise adopted top-down approaches to forestry, but did not provide the profits, development, and poverty reduction that the state had optimistically projected. Under COHDEFOR, commercially valuable pine forests were depleted by the end of the 1980s, and timber production began to fall (SECPLAN/DESFIL/USAID 1989). Honduras joined the ranks of nations whose inadequate policies and institutions led to forest destruction and disruptions for human livelihoods (e.g., Repetto and Gillis 1988).

La Campa did not have the power to maintain its institutional arrangements against the state. No matter how well communities may manage natural resources, they depend on the state's recognition of their governance rights (McKean and Ostrom 1995). When the Honduran state expropriated rights to trees, the people had nothing to gain by restricting their forest uses. The only way they could regain control of their land was by claiming it for agriculture and preventing the forest from regenerating. The state did not realize that it was creating negative incentives for local forest protection. The Social Forestry System appeared to offer a promising approach for participatory management and development based on forest production, but shortcomings in management and market complexities undermined the program's success.

If COHDEFOR had not been created, it is problematic to assume that La Campa would have achieved sustainable forestry on its own. La Campa had nearly no knowledge of timber markets or wise logging practices, their subsistence economy and traditional extraction methods were small scale, and they could not foresee the environmental risks posed by a large-scale commercial logging operation. Although they had managed to negotiate a somewhat better price and conditions for logging with the San Pedro Sawmill, the pending changes in national forestry laws probably encouraged the sawmill owner to sign the contract, given the likelihood that it would be terminated in the near future.

Under COHDEFOR, shortcomings in community forest management emerged as people adapted or tried to adapt to new information and experiment with novel activities. The people received too little training and time to develop new skills for business management, such as balancing budgets, managing debt, operating equipment (e.g., truck driving), and mediating conflicts. The agroforestry groups and the regional cooperative foundered despite state support and rights of extraction. Neither the state nor local people were prepared to surmount organizational challenges and market volatility.

For La Campa, the abrogation of their forest governance rights represented a disincentive to protect forests. A similar phenomenon has been observed in other parts of the world, where the elimination of community forest institutions has been associated with accelerated deforestation rates (Jodha 1992). In a typical scenario, the imposition of state laws undermines traditional institutions, but the state lacks the resources to enforce the new laws or command respect. In the resulting open-access

situation, users rush to extract resources in the institutional vacuum, because they have no guarantee of future rights or benefits. A "tragedy of the commons" (Hardin 1968) may ensue. In Honduras, while COHDEFOR's presence did serve to inhibit wholesale forest destruction, inadequate enforcement allowed forest degradation and clearing. Multiple actors participated in the process: loggers, sawmill owners, resin tappers, and residents. In failing to develop effective and equitable enforcement, COHDEFOR staff and administration were implicated in forest destruction. COHDEFOR's failures were numerous, and perhaps inevitable given the set of mutually contradictory mandates and high demands placed upon it by the state. Yet COHDEFOR foresters and the hierarchy had choices in making decisions about how to deal with La Campa's dissatisfaction and sawmill company excesses. Instead of searching for compromises and participatory alternatives, regional COHDEFOR employees followed the domineering approach mandated by the central headquarters.

Neither the Honduran state nor La Campa was prepared to manage forest production adequately. Their failures, which echo similar shortcomings found elsewhere, suggest that the transition to commercial forest production entails experimentation and a long learning curve if it is to result in sustainable management. More often than not, national management of natural resources is developed with reference to theoretical assumptions that fail to recognize the variability in human and natural conditions on the ground. Many policy makers also assume that one can pass laws and obtain immediate changes in activities and outcomes consistent with that law (Ostrom 2005). Instead of designing policies that can be adapted to local conditions, governments attempt to make people and environmental contexts fit policy. The discrepancies can provoke human misery and destruction of natural resources (Ascher 1999; Scott 1998). In Honduras, the state did more to facilitate rapid extraction for maximum profits than to foster sustainable management. After the setbacks of the Social Forestry System, the state abandoned participatory approaches and moved to more authoritarian arrangements. The situation placed La Campa's people in a bind, and compelled overt, organized resistance.

The Exacerbation of Tensions: Fines, Fires, and Broken Bridges

Development at a Snail's Pace

La Campa's efforts to construct schools, potable water systems, roads, bridges, and other basic infrastructure faltered due to recurrent funding shortfalls. The municipio obtained loans against promised income from timber sales, but the payments consistently fell short of projections and arrived late. The debts mounted. In an effort to make some progress, the council sought assistance from the national government and nonprofit organizations. Care International supported the construction of two primary schools; however, the administrative process experienced delays and several years passed before construction was completed.[70] The Nationalist government

of General Policarpo Paz García (1978–1982) provided assistance for bridge repair and work on the municipal meeting hall, and later for school reconstruction,[71] but the funds fell short of the actual costs. In the mid-1980s, the Community Development Federation of Honduras (FEDECOH) and World Vision became active in the region. La Campa requested support and received assistance for several new schools, water projects, and other public works. In each case, La Campa provided the labor and World Vision provided materials and technical guidance.

One of La Campa's highest priorities was bridge building and maintenance, but it proved to be one of the most costly tasks. Each bridge required expensive materials and heavy labor contributions by residents. COHDEFOR and sawmills did not contribute to the construction costs, but once completed, sawmill trucks used the bridges and caused damage. The Río Oromilaca bridge represented a case in point. After the San Pedro Sawmill reneged on its commitment to build the bridge, the people of La Campa spent more than 10 years of communal labor and fund-raising efforts to construct it. By that time, Bardales Sawmill was operating and trucks loaded with timber immediately started crossing the bridge. It had not been constructed to withstand such weight, and constant repairs were necessary. The council sent a request to Bardales asking him to send his drivers through the adjacent river crossing previously used by the trucks.[72] Bardales consented, but his drivers ignored the agreement. The trucks also eroded roads and damaged the bridge over the Río Chiquito.

The slow pace of progress and crushing debt confronted successive councils. When COHDEFOR representatives presented timber contracts for municipal approval, the council was not in a position to refuse. Council members were painfully aware that timber was the municipio's only marketable commodity and the main source of income for civic projects. The weight of public opinion, however, had begun to shift. People had begun to doubt that timber sales were benefiting La Campa. To growing numbers of the population, COHDEFOR had become the nemesis of liberty and progress.

The Rise of Resistance

By 1983 COHDEFOR's employees faced increasing resistance from local residents. As the year began, the Gracias Management Unit reiterated orders to prevent forest fires, stop unauthorized clearings, and control the illegal cutting and sale of firewood. This time, every village was ordered to form a Forest Defense Committee to fulfill the orders.[73] For the most part, the people disregarded the demands. In June, Mazier ordered the council not to grant houselots in Jilguarapis where the Bardales Sawmill was logging, because settlement would impede forest regeneration. The council responded that it was inconceivable to deny residents land for houses and agriculture on level ground, and it resolved to take the matter up with higher-level officials and the Ministry of Government and Justice.[74] From the perspective of La Campa residents, COHDEFOR was preventing them from making a living off their own land. A prominent council member, Máximo León,

defied the law altogether, and refused to accept the denunciations he was sent for unauthorized felling of pine trees.[75] The impasse developed into enmity when COHDEFOR employees and agroforestry group members conducted tree culling and cleaning on a parcel that León had claimed to pasture livestock. The culling was in preparation for a controlled burn to improve forest productivity, but León intimidated the workers into leaving. The Forestry Protection and Extension technician in charge of the activity, Roy Romero, promised to fine León. In response, León threatened to sue COHDEFOR for destruction of property. Romero reported the interaction to his boss:

> *The man in reference [Máximo León] argued that COHDEFOR is destroying the forest, and therefore should not forbid everyone else to cut trees … he said that we should give a little (and not fine violators) because the community is poor and does not have anywhere to work, or otherwise he and a large group of people angry at COHDEFOR would never permit COHDEFOR to enter the municipio again.*[76]

Máximo León was one of several cases of open opposition encountered by COHDEFOR employees during 1983. A memorandum written by the Social Forestry System promoter related that the Agricultural Committee in Nueva Esperanza did not want to participate in the annual forestry festival. The people "showed an attitude predisposed against COHDEFOR because its members had not been permitted to undertake agricultural activities in forested zones, and they had certain questions about activities in the area, for example, resin tapping and logging by a sawmill, and they also questioned some actions of La Campa's municipal authorities."[77] The promoter added that an agronomist working with the agricultural group declined to cooperate; the agronomist had complained that COHDEFOR's employees treated him rudely.

COHDEFOR continued working with agroforestry groups, and encouraged them to diversify their activities. Resin tappers needed another source of income because resin prices were dropping drastically in 1983 toward a decadal low of $16 per quarter metric ton (Stanley 1991). Due to the dismal situation, resin tappers retired in droves. The Centro and San Matías groups foundered as members withdrew. By May 1983, two members remained in the San Matías group, but they produced very little. The Centro group had only three active members; they were racing to remove resin-tapping material from trees ahead of the Bardales Sawmill's logging.[78,79] COHDEFOR aimed to revitalize the groups, and in October, members of the Centro group signed an agreement to start resin tapping on a mountainous ridge in a previously unexploited area of Monqueta.[80] Residents of San Matías had been using the area as an unofficial woodlot and pasture. The prospect of resin tappers' appropriating another communal forest evoked their ire. Twenty-five household heads (representing a majority of the *aldea*'s population) showed up at the next council session to protest the group's invasion and resolved to request the area as an official public woodlot.[81] The same day, two COHDEFOR technicians arrived to demarcate the new resin-tapping zone, but residents stopped them with a petition demanding that it be designated as a public woodlot.[82] The request was soon denied. Resin tappers started work, but antipathies in the community had intensified.[83]

As resin tappers signed the agreement to tap in Monqueta, Mazier sent the municipal council a decree that forbade it from allowing residents to claim any land with pine trees. Since pine trees are ubiquitous in La Campa, the order essentially prohibited the council from granting any new land use in the whole municipio. The council called a special session for October 4, 1983, and people from throughout the municipio attended to discuss the issue. The meeting authorized the council to "plead with state offices and the branch of the Honduran Corporation for Forestry Development, not to prohibit the [use of] plots located in this municipio that are suitable for agricultural production. Campesinos need them for agriculture, the shortage of staple grains is becoming more serious every year, and the birth of new citizens cannot be stopped."[84]

COHDEFOR employees realized that La Campa had become a difficult site; Mazier wrote to the district chief:

> *[A] general movement is growing to prevent COHDEFOR from continuing to realize any kind of activity in La Campa's forests … I consider that if serious action is not taken immediately, the problem will become grave; there is already the tendency to lose respect for forestry laws and the Corporation's orders. The Unit's employees will be seen as enemies and our authority will be in a precarious state. Besides, we do not want to risk the physical safety of any of our Unit or District employees at any moment.*[85]

Rather than consider their own roles in heightening tensions, COHDEFOR employees blamed Máximo León and the municipal council. Mazier proposed a meeting with resin tappers to enlist their support within La Campa. He also recommended more severe options, each of which involved action from military and political authorities to compel the population to respect COHDEFOR.[86]

COHDEFOR's frustrations with La Campa grew apace with La Campa's anger toward COHDEFOR. Municipal meeting minutes detail four ongoing aggravations: damage caused to bridges by timber trucks, COHDEFOR employees' insistence that residents could not settle land where pine trees grew, the culling of trees by resin tappers and COHDEFOR employees, and delays in timber payments. The council endeavored to resolve each problem. As the bridges continued to deteriorate, council members complained to the COHDEFOR office and requested assistance to rectify the problem.[87] When that failed, La Campa's officials confronted departmental authorities and told them that their failure to act made them responsible for any injuries if the bridges failed.[88] The council continued to grant land for houselots and agriculture as long as the residents requested areas on level ground. Municipal authorities must have consulted with departmental authorities; one document noted that "the alcalde has an understanding with the governor [to allow land grants]."[89] COHDEFOR employees persisted in culling trees, so residents used this to justify their own clearing activities. From Campeños' viewpoints, they used timber out of necessity, while COHDEFOR employees took trees out of avarice. To obtain the habitually postponed timber payments, municipal officials traveled repeatedly to check on the process in the Gracias Management Unit, at regional offices in Santa Rosa de Copán, and to the national headquar-

ters in Tegucigalpa. The procedures became more onerous through the years. During one visit to Santa Rosa de Copán, the alcalde learned that 14,811.46 lempiras ($7,405.73) had been deposited in Tegucigalpa for La Campa. To withdraw it, he had to submit 18 different reimbursement requests, purchase officially stamped paper to attach appendices, and then await notification of approval.[90] The council also tried to help Caiquín process its timber reimbursements; Caiquín had sold over 12,000 m^3 of timber from their separately titled land, El Rancho, to finance urgent projects.[91] After several postponements, COHDEFOR informed the council that no payment would be forthcoming for El Rancho's timber until Caiquín formed a committee[92] to handle its own petitions. La Campa had already submitted the necessary petitions, but the process had to start over after Caiquín's committee formed.[93]

Meanwhile, La Campa's financial situation eased. The national government forgave outstanding debts for all of Honduras' municipios in 1984.[94] COHDEFOR released some of La Campa's delayed payments for timber, and this helped to fund overdue renovations to the municipal meeting hall. La Campa was solvent for the first time since 1975, but it still lacked money to use toward outstanding projects.

Into 1985, COHDEFOR employees intensified pressure on Campeños through decrees, fines, threats of legal action, and summons of offenders to the Gracias office for verbal reprimands. They prevailed upon higher authorities to chastise La Campa officials through written rebukes and summons. Despite fines and warnings, residents persisted in illegal tree cutting and clearing forested areas for agriculture. Máximo León owed 2,600 lempiras ($1,300) in fines.[95] The amount exceeded most households' annual incomes, which were under $1,000. The head of the Gracia Management Unit reported:

> *The major problem, especially in the activities for [forest] protection and control of illegal exploitation, is the lack of a genuine and conscious cooperation from local departmental authorities, [who are] united with the public's disrespect toward forest laws. Another factor that impedes our application of effective sanctions for violators is the inefficient system of fines through forestry denunciations, for there is no judicial or legal mechanism to obligate the violator to pay.*[96]

COHDEFOR's interaction with resin tappers also evidenced strain; two resin production specialists and a Social Forestry System promoter had been dismissed as resin prices fell in 1983. The silvicultural technician and Roy Romero had been given the responsibilities for the Social Forestry System in addition to their already demanding duties.[97] These technicians reported a number of shortcomings in the agroforestry groups. In a 1985 report to the district chief, Mazier observed, "Apart from our own problems, the [agroforestry] groups have never been able to consolidate themselves and diversify their activities due to the constant falls in resin prices and the idiosyncrasies of peasants in this zone (conformist and antagonistic among themselves)."[98] COHDEFOR nevertheless needed the resin tappers to assist in forest protection activities, as well as to maintain some support for COHDEFOR within the community. Resin tappers appreciated the food supplies that they received for helping COHDEFOR, but resin prices stayed low.

Ousting the State and the End of Logging

As 1986 began, the municipio had become divided into two general factions: resin tappers and everyone else. Many households, however, had ties on both sides and were torn in their loyalties. During 1986, the discord between COHDEFOR and La Campa residents, and between resin tappers and non-tappers within the municipio, continued to accumulate incrementally. Campeños recall this period vividly. Their memories reveal aspects that archival documents do not illuminate, such as recollections that certain COHDEFOR employees treated them in a condescending and insulting manner. Adults who lived through the period voice deep frustration with COHDEFOR regulations that limited forest use and required permits to cut pine trees. The latter regulation particularly alienated the women who produced artisanal pottery. They needed a reliable supply of dry pinewood to temper their product, but the costs in time and money related to permits (traveling to Gracias, purchasing officially stamped paper, and paying COHDEFOR employees) practically eliminated their slim profits. They saw no option but to harvest pines illicitly and they resented the risk. From COHDEFOR's perspective, the use of deadwood did not pose a serious problem, but the forest did not have enough dead pine trees within reasonable hauling distance to meet the potters' demands.[99] Members of agroforestry (resin-tapping) groups also had potters in their families, but because of their work with COHDEFOR in culling and trimming substandard trees, they had access to wood that non-tappers did not.

The inequitable access to forestry resources, and non-tappers' perceptions that agroforestry groups were allied with their adversary, fanned growing sentiment against resin tapping. The last president of the San Matías group, Renán, recalled that his group faced passionate opposition from many people in the Centro and San Matías. He claims that his group did not prevent people from cutting a tree if they needed one, as long as they cleaned up the debris, but he acknowledges that residents saw it differently. Residents accused tappers of destroying the forests and causing springs to dry up. A carpenter, Simón, and a progressive farmer, Nico, particularly opposed resin tapping. Nico fenced in a large parcel of land that included trees being tapped for resin, and Renán clashed with him repeatedly. The alcalde summoned Renán repeatedly before the council to answer allegations, and resin tappers received threats. Renán noted that it was almost like a war. Then Renán discovered Simón cutting a large number of pines after COHDEFOR had granted a permit for a maximum of five trees. Renán reported the violation to COHDEFOR, and Simón was fined 1,000 lempiras ($500). During an interview, Simón expressed rancor at the fine; he believed it to be the largest single fine emitted by COHDEFOR in La Campa. He felt that he had tried to comply with COHDEFOR regulations. His good faith efforts had resulted in unending paperwork, fee payments and trips to Gracias, but he never got a permit for the quantity of lumber that he needed to keep up with the demand of his small carpentry shop.

In addition to resin tapping, the clear-cutting and damage caused by the loggers angered a majority of residents, particularly those who lived within sight of the

affected zones. A former resin tapper recalled that loggers left the hills dry and bare, echoing the words of his non-tapper neighbors. Others commented that resin tapping dried out many trees and rendered them inferior for construction, while the high-grading methods left inferior trees for regeneration. In one interview, an elderly farmer pointed to the roundwood pine beams in his house. He noted that they had lasted over 30 years because the resin prevented infestation and deterioration, but pine logs cut today start to deteriorate in less than 10 years. A former alcalde of La Campa observed:

> *Here there were beautiful, precious forests, and fine wood to construct buildings. And then the loggers came and destroyed them, and they destroyed the watersheds too. The rivers used to have a lot more water, and with the disaster of forest destruction the water levels fell.*[100]

Reimbursement for their timber arrived so rarely that residents suspected COHDEFOR of keeping more than its share. Simón related: "… sawmill owners cheated us many times; the income due the municipio never came, and what COHDEFOR paid us was just a small amount … we still don't know what they did with our money."[101]

Although there is no supporting documentation, residents recall that COHDEFOR had the national police force detain violators and arrest some of those who could not pay their fines. A reliable respondent told me that one poverty-stricken man was jailed for 15 days for cutting pine trees to sell; the man had a crippled hand and had not been able to find other work. Similar recollections abound, and whether or not they report events accurately, they form a consistent discourse that communicates residents' perceptions of COHDEFOR's insensitivity to their situation.

A series of minor events combined to escalate anti-COHDEFOR sentiments. On February 13, 1986, COHDEFOR employees set a prescribed burn that accidentally destroyed part of a resident's fence. The resident, who had served as a municipal *juez de paz*, questioned whether COHDEFOR really protected forests and notified the session that he was initiating legal action against COHDEFOR for damages.[102] Several weeks later, a forest fire consumed 120 ha of forest, which affected logging, resin tapping, and forest protection activities in the area. The fire apparently resulted from efforts to remove honey from a beehive, and started in a relatively remote location being logged that day by the Alvarado Sawmill. COHDEFOR suspended the logging, pending an investigation.[103]

In the subsequent session, the council reported that it had received no reimbursement from COHDEFOR since July 1985, even though all paperwork had been duly submitted. Meanwhile, the alcalde informed the meeting that he had been summoned to the governor's office at the instruction of COHDEFOR employees. The governor told the alcalde that COHDEFOR was ordering La Campa residents to fight forest fires, set up Forest Defense Committees, and stop using forested land for agriculture.[104] Interestingly, the governor simply informed the alcalde of COHDEFOR's demands, and did not order the alcalde to comply. In response to this information, the people in attendance wrote a declaration:

> *[F]rom prior and past years there was no need for forestry defense committees to fight fires, instead the people fought fires and cared for the pine trees, because the material is*

> *useful for the residents of the pueblo, and there were no great disasters in the forests. Now, ever since the office of COHDEFOR was declared responsible, instead there is a reduction in pine trees and the forests look like deserts, great breaches have been made to extract pinewood, [there are] great forest fires, [and] great waste of all kinds of trees, pines, oak and others that the residents use to cook food, all because of the members of COHDEFOR, it has been a loss for the people ….*[105]

The council added that under national law, municipios had the right to administer the community's resources, and should be allowed to control permits for forest use rather than COHDEFOR. The gathering authorized the council to discuss the anomalies with the department governor and the Minister of Government and Justice.[106]

La Campa's declaration and the ex-*juez de paz's* denunciation were sent to the COHDEFOR District Office, and Mazier was asked to explain. He replied:

> *In the first place, there is a negative attitude on the part of various individuals and municipal employees from prior [La Campa] councils (and I believe of the present one) toward the Corporation and the activities we realize in that sector. [This is] motivated by provincialism, that is, many people do not wish to accept forestry laws or the decisions of the State Forestry Administration because they still have the mentality that only they give the orders in their municipio.*
>
> *In relation to the supposed forest fire denounced by the ex-justice of the peace, it was nothing more that a planned burn in a zone that had previously been cleared and prepared for that purpose. In the area that he denounces as having had two tareas of fence burned, this Unit permitted him to work for agriculture because it is flat. Even so, the aforementioned judge committed abuses by cutting down various pine trees with resin-tapping materials. We did not even reprimand him.*
>
> *The damages and injuries mentioned in the judge's denunciation are a) silvicultural treatments, b) planned burns, c) the logging realized by the Alvarado Sawmill and the Palillera Helenita ….*
>
> *In synthesis, I think that more than anything, these men act capriciously and insidiously, because they don't do or say anything about the destruction carried out by residents for the purpose of migratory agriculture; for there is much destruction in areas suitable for forestry, authorized by the council itself for agriculture and house lots.*[107]

As the preceding illustrations indicate, COHDEFOR employees and the people of La Campa had profound differences in their perspectives on forest use. The people believed that the forests belonged to the community, and that they had rights to use the land as they saw fit. Forests were integral to daily survival, and they constituted a reserve for future agriculture. La Campa inhabitants also saw themselves as better managers of the forest than COHDEFOR: prior to COHDEFOR, no one was allowed to clear land without council permission, and individuals who violated land-use norms were sanctioned. Until COHDEFOR had assumed control of the forests, the people had not seen deforestation or extensive degradation in their municipio. The traditional forest-field-fallow cycle had permitted the forest to regrow, and their clearings had been small. COHDEFOR's efforts to teach and inform the residents about the benefits of trimming and culling young trees backfired, because it was clear to residents that under COHDEFOR, any long-term advantages gained through these activities would be appropriated by resin tappers and loggers. In the minds of the people, the state and COHDEFOR had exceeded their authority by establishing laws that limited people's access to their forest resources and land.

By contrast, COHDEFOR's employees saw the forests as a resource to be harvested for national benefit. Archival documents imply a lack of comprehension concerning communal land use. Employees apparently construed communal property as unused land, and doubted residents' assertions that they needed common forests. The employees did not see themselves as oppressing the rural population, but as managing the forests in an economically rational manner, and protecting the forest from wasteful exploitation. Indeed, COHDEFOR's forest management policies, such as the prohibition of cutting trees near streams and on steep hillsides, were based on sound principles of forest management and watershed protection, some of which were recognized by La Campa's folk management practices until COHDEFOR abrogated council authority. It must also be noted that COHDEFOR archives show that employees cited timber companies with even more vigor than they cited La Campa residents. Despite this, fines against timber companies were too small to deter lawbreaking, and employees' recommendations to stop loggers' flagrant violations by suspending logging permits were not enacted by administrators. Logging continued unabated and largely uncontrolled. One COHDEFOR employee who worked in Gracias during the 1980s acknowledged that

> *[T]he industry at this time worked in an irrational way, you might say, because they worked without management plans and didn't know how to manage the forest from a silvicultural perspective. The laws didn't benefit landowners, all the forests were national property, and the state took everything. So from this perspective, the communities were right because the forests were cut, and nothing was left for the community, no services for them.*[108]

La Campa's informal resistance began to coalesce into a formal organization in August 1986. Experienced community leaders, including a former alcalde, *síndico fiscal*, and council member, began to discuss their problems informally. One leader remembered, "… some neighbors and I thought we should organize because our forest was getting scarce, they had exploited this whole sector … we began to talk about what we could do. We met with the community to discuss the whole situation; they supported us, they motivated us, and they joined us."[109] Not surprisingly, the leadership included residents whose livelihoods and aspirations had been particularly compromised by COHDEFOR. This included Simón, who could not get enough lumber for his carpentry shop, and several farmers who desired land in areas controlled by loggers or resin tappers. A participant noted that although the community has always been divided by petty feuds, at this moment the people were so "burning mad" that they united. More than 300 people attended the first meeting; they named their organization Patronato Pro-Defensa de los Derechos del Pueblo (Society for Defending the Community's Rights; hereafter, the Patronato). They elected officers and composed a document that delineated their complaints and demands. The document presented a number of complaints, including (1) COHDEFOR denied access to the land and forests that the people needed for subsistence; (2) the level of exploitation allowed by COHDEFOR had caused serious environmental degradation; (3) COHDEFOR had not fulfilled its promises to the people while permitting loggers to damage bridges constructed at great cost; (4) COHDEFOR prohibited potters from using the firewood needed to temper their

wares; and (5) they needed to complete a number of important projects but COHDEFOR had not left any timber, not even in areas promised as public woodlots. The people noted that they were prepared to face the ultimate consequences in order to regain the land rights that were legally theirs from ancestral times. They concluded with a demand that logging and resin tapping cease forever in order to protect the forests for future generations.[110] The group's secretary sent copies of the document to the municipal council and COHDEFOR's Gracias Management Unit.

Patronato leaders appeared at the next day's council session, and presented their demands to the council.[111] The council accepted the Patronato's demands, and the presidents of Cruz Alta, San Matías, and Centro resin-tapping groups immediately notified COHDEFOR that as "sons of La Campa," they supported the Patronato even though it meant stopping their work.[112] Other factions disagreed as to what activities should be outlawed. The Cañadas agroforestry group had just started operating a COHDEFOR-backed manual sawmill and wanted to pursue the business. Caiquín's resin tappers refused to acknowledge La Campa's Patronato; with the rest of Caiquín's residents, they were angry because their efforts to become a separate municipio had been foiled due to back taxes owed to the municipio of La Campa.[113] Patronato members worked to bring the factions to their cause through dialogue that included reference to their shared conditions, subsistence needs, and ideals of responsibilities and benefits related to communal land rights. A Patronato member recalled arguing with his resin-tapping neighbors, "We told them, 'You'd be better off planting more maize … or your children aren't going to be able to find wood for a house when they want it.'"[10] Renán told me that he agreed that COHDEFOR was exploiting the pueblo, because resin tappers had always paid a tax of which half was to be returned to the community but never was. He added, "If we didn't support the Patronato, we would be against the community (pueblo), but we were in favor of the community, to defend community rights."

Logging continued in the municipio during the Patronato's early months.[114] Patronato members traveled to COHDEFOR's regional offices in Santa Rosa de Copán and to national headquarters to negotiate with authorities to exempt La Campa from further timber extractions. One of the Patronato's leaders knew a journalist with one of the national newspapers, and he shared the story in hopes of publicity. During this time, the Patronato obtained a pledge of support from the departmental governor and the regional head of the national police force in charge of the department's security. Patronato leaders consulted with a lawyer who offered to defend them if they were jailed. They also asked their powerful sympathizers whether La Campa should consider a roadblock against COHDEFOR. Their confidants noted that such actions had been successful for peasant groups elsewhere in Honduras.

The Patronato suffered a setback when a pine beetle (*Dendrotonus frontalis*) infestation was discovered in a stand of pines near Cañadas. In a series of meetings, Cañadas residents and Patronato members debated the problem and concurred with COHDEFOR employees that the epidemic had to be halted by removing the infected trees. La Campa requested the following conditions: The company contracted for the logging had to pay its outstanding debts and provide an advance

payment; the council and the Patronato had the right to send a member to observe the activities; only local labor would be hired; and only the beetle-infested trees would be cut. Finally, a representative of the Cañadas Agroforestry Group, Don Jorge, would be responsible to negotiate prices, collect payments, and distribute the monies according to criteria agreed to by all parties.[115] COHDEFOR agreed that Don Jorge could oversee the activities and manage the payment collection, and that only the infested area would be logged. The timber company promised to use local labor.[116] Despite the carefully designed agreement, the arrangement resulted in a falling out between members of the Patronato. Don Jorge recalled that the Centro leaders wanted him to send the municipal council's portion to the Patronato, and he refused. Centro members recollected that Cañadas tried to keep all the money. The Patronato split in two.

For several months, both sides of the Patronato lay low. In the interim, COHDEFOR employees tried to establish a new policy that was anathema to La Campa. In an effort to revitalize the Social Forestry System, COHDEFOR had created a plan called "Integrated Management Areas" in which a COHDEFOR employee would live in a community and direct the residents in forest management. COHDEFOR officials thought this approach would finally work to instill principles of sustainable forest management in local populations. The program had been started in 1983 (SECPLAN/USAID/DESFIL 1989), but COHDEFOR representatives waited until early 1987 to propose it for La Campa. Mazier asked La Campa's alcalde to approve a COHDEFOR office in the Centro to implement the program in La Campa. The alcalde called a special council session and public meeting for February 4, 1987, to discuss the request. In essence, COHDEFOR had thrown kerosene on a nascent fire. A telling note reveals the climate of the session: "The alcalde makes the following recommendations to the people: maintain the best possible order, respect, and morality, to stand before [speaking in] the session. Speak rationally and calmly so it will be possible to understand all that a citizen expresses."[117] Roy Romero came to explain the plan, but it was unanimously rejected. Among the numerous comments recorded, people repeatedly noted that COHDEFOR had destroyed their forests, made their municipio a desert, and never provided helpful support. The meeting minutes stated that no site for an office would be granted because "it would serve to make us more marginalized."[118] My interviews, conducted in 1994 and 1995, indicate that people recalled this meeting as a call to action. They saw COHDEFOR's plan as an overt move to subjugate La Campa and make sure that residents lost all opportunities to use their forests.

Soon after this meeting, COHDEFOR issued a national edict that terminated further permits to burn fields for agriculture during March and April. The edict was the latest effort to decrease the number of fires that devastated Honduran forests in the dry season, but it had the effect (no doubt intentional) of outlawing slash-and-burn agriculture. Slashed fields did not dry quickly enough to be burned in February, and rains usually began in May.[119] La Campa farmers who relied on slash-and-burn methods could not wait until May to burn. Unless the rains came late, they would not have enough time to burn, prepare their fields, and plant a crop. At this point in time, someone set fire to one of the resin-tapping zones, which

angered COHDEFOR foresters and upset resin tappers, who lost materials for which they were still paying. For the rest of the community, it was an additional indication of COHDEFOR's incapacity and illegitimacy to manage the forests.

The Patronato remained divided until the pine beetle-infested timber had been logged, but at that point COHDEFOR decided to sell more of Cañadas timber and reclaim financial control from Don Jorge. These conditions were unacceptable to Don Jorge and Cañadas' Patronato members. Meanwhile, the Centro's Patronato had anticipated that COHDEFOR would try to push through another concession. Members kept a watch out for COHDEFOR visits. In April 1987, a Patronato member caught La Campa's alcalde, Don Carlos, in the act of signing another timber contract with a COHDEFOR representative. Patronato members and other residents felt that Don Carlos had betrayed them. In retrospect, La Campa citizens acknowledge that the alcalde really did not have much choice; COHDEFOR had all the power over the forests at that time. A former alcalde noted that Don Carlos was a humble man and COHDEFOR treated him as if he were a servant. For Don Carlos' part, he did not think he had the right to refuse to sign the contract. He also felt he was acting in the best interests of the community; he hoped that the income would let him finish reconstruction of a bridge.

The Centro Patronato called an emergency meeting, and Cañadas members participated to map a plan of action. After the logging company moved equipment to the new site, a designated group of Patronato members blocked the access road and threatened to destroy the machinery. A COHDEFOR employee ordered the road opened, but the angry crowd slashed his tires and ordered him to leave La Campa on foot. Another group took over the municipal offices and held the alcalde and the secretary hostage. The Patronato then sent a delegation to the department's governor to request mediation. Patronato leaders expected mediation to work in their favor, because they knew that the governor sympathized with their position. The governor, however, was away on Easter vacation. When the delegation established contact by phone, the governor promised to appear the following Monday to meet with the concerned parties. In the meantime, the governor named the community sheriff as interim alcalde, and ordered that Don Carlos and the municipal secretary be set free.

The interim alcalde, the municipal secretary, and Patronato members used the intervening days to inform the entire municipal population of the upcoming meeting. Many people feared violence, and expected that the Patronato would insist on deposing the council and installing its own leaders. The parish priest, Padre Constantino, became concerned, so he met with Patronato leaders. The leaders assured the priest that they only wanted to stop timber exploitation and expel COHDEFOR. They asked Padre Constantino to serve as a mediator for the reunion, to keep tempers in line and prevent bloodshed.

The following week, La Campa residents, including men armed with machetes, filled the meeting hall and crowded the adjacent plaza to witness the events. People from Caiquín came to give moral support. The church sanctuary's speaker system and generator were set up in the plaza so everyone could hear the proceedings. All of the key players attended: Patronato members, Don Carlos, municipal council members,

the governor, Padre Constantino, Roy Romero of COHDEFOR, and the military colonel responsible for department security. The governor and the military colonel declared their support for the Patronato; they asserted that the deforestation had exceeded acceptable bounds. The priest called Don Carlos forward to stand on a bench so the crowd could see him. The Patronato leader asked Don Carlos to promise the crowd that he would never allow further logging. Don Carlos made the promise willingly. In addition, he added that agroforestry groups and resin tapping must end.

This extemporaneous addition unexpectedly supported many people's wishes. It also demonstrated to the crowd that Don Carlos was speaking for himself instead of parroting the Patronato's script. Representatives of the agroforestry groups came forward and vowed that they would permanently disband. Finally, Padre Constantino called to the bench Roy Romero, who swore before the crowd that COHDEFOR would respect La Campa's decision. The secretary wrote down the agreement and detailed minutes while the people stood by. All the municipal and regional officials, Patronato members, representatives of the villages, and resin-tapping groups witnessed and then signed the document.[120,121] That same day, April 20, 1987, La Campa regained control of its forests.

COHDEFOR departed on the condition that La Campa follow the law, which forbade La Campa from permitting any commercial forestry activities without COHDEFOR involvement. La Campa, for its part, was satisfied as long as logging ended and COHDEFOR left them alone to use forests for their subsistence needs. COHDEFOR foresters and authorities in the Copán District belatedly realized that they had misunderstood the people's viewpoint. One of the foresters who had worked with the resin tappers told me, during an interview in 1994, that COHDEFOR changed its tactics after being expelled from La Campa. "Now we act with great caution … and we have developed many alternatives for working with municipalities that we did not have before." He added that COHDEFOR would not go back to La Campa unless the people themselves made the invitation.[122]

Assessing State Intervention and the Mixed Success of Collective Action

> *All the activities in the forest came to an end, we eliminated them so the forest would belong exclusively to us and in harmony with everyone [in La Campa]. And from that moment, COHDEFOR, which is the organization created by the state, ceased to exist and exercise its total autonomy in this municipio. It wasn't just the forest it sought. No, it also sought to take away our rights to our lands, and that was something we could not tolerate. Whoever works the forest owns it, that is simple logic. So we couldn't give it the chance. The truth is that we united as if we were a single man, or one person, to defend our rights. No one else could have more rights than us [on our land], and due to our predecessors, we had good documents to fight for our rights. So that's how we overcame the problem. Even now, we have a saying: "No one stomps on us."* (Secretary, the Patronato)[123]

Similar to other cases of peasant resistance, the people responded to threats to their livelihood and autonomy (e.g., Fitzpatrick 1994; Scott 1976, 1985; Smith

1989; Utting 1993; Wolf 1969). The sense of exploitation and marginalization experienced by the population under COHDEFOR compelled the people toward an organized resistance, but their rancor was not a sufficient condition for successful mobilization. Collective action to assert their communal land rights emerged from a tradition of community decision making and a shared ideology of rights to the forest. The people had prior organizational experience and believed that it was possible, but not guaranteed, that they could prevail through a coordinated and concerted effort. Second, people viewed communal land rights as integral to their subsistence; they believed that they would share equally in the benefits of expelling COHDEFOR and loggers. Third, the Patronato employed dialogue, argument, and peer pressure to gain the support across the majority of the population, even among resin tappers and people who lived in mountain *aldeas* far from the logging. Community members on all sides were ultimately willing to set aside their differences of opinion to work toward a common goal of regaining rights to manage their forests for subsistence. Fourth, people's antagonism toward COHDEFOR became embodied in their relationships with its regional representatives. Although La Campa's people had experienced COHDEFOR's bureaucracy as immutable and implacable, they saw its employees as human beings who could be stopped. Fifth, the Patronato sought support and advice from more powerful but sympathetic authorities, and made an effort to get favorable news coverage. Sixth, the people had land titles. In other parts of the world, the political marginality of people whose resources the state expropriates has tended to reduce their capacity to influence decisions. In most cases, land titles are weak or nonexistent. In contrast, La Campa had legal rights to land that the government did not challenge, continuing a centuries-old Honduran policy to allow indigenous groups to retain legal land titles.[124] This policy empowered people to resist the state's domination in natural resource management but also provided an incentive for people to manage their land sustainably.

The Patronato's ability to unify a majority of the population did not guarantee success. Internal disagreements and temporary fragmentation were major threats to regaining their forest management rights. However, the Patronato ultimately combined effective organization and leadership to accomplish the group's goals. From experience in other community work (for school construction, water projects, and other group projects), members knew how to plan activities and share responsibilities. They were also fortunate that several members had dealt previously with departmental and national authorities. Their eventual achievement combined skillful planning, strong allies, forceful action, and peaceful (but resolute) negotiation. The group might not have been successful if key officials had not provided support, or if national authorities had chosen a military response to La Campa's resistance.

La Campa's experience suggests that the practical and symbolic aspects of communal land management can contribute to a population's capacity to form organized resistance. Practical aspects include communal duties, such as obligatory labor and participation in local government, that provided experience in forming groups, making plans, and performing activities collectively. Many

residents had participated in self-organized groups to achieve a community goal. Although people inevitably grumble at obligatory duties and group participation (and some perform their parts more willingly or adequately than others), they accepted certain responsibilities for the common welfare. In this case, the potential loss of communal forests constituted a grave threat to personal and community welfare.

Cultural values and symbols also supported their organization. Campeños perceived their forests as a common good that was irreducible to individual or government rights. The conception of communal rights, and the lived ramifications that shared property carried for their daily existence, tied them together as a community despite their internal tensions and discord. Communal land rights undergirded their interdependence, even as the demand for private usufruct motivated passionate disputes and rivalries. The concept of community symbolized a union and shared identity that took on particular clarity as residents contrasted themselves to a common enemy; this became apparent when resin tappers chose to support the Patronato because they were "sons of La Campa." COHDEFOR became a symbol of the injustice and marginalization that Campeños experienced in relationship to the national government. As COHDEFOR acquired this connotation, the valid information the organization tried to impart about forest protection and conservation was discredited in the minds of Campeños.

In Campeños' eyes, COHDEFOR's renewal of timber licenses to companies that persisted in flagrant abuses of the municipio's infrastructure and forest resources proved that COHDEFOR was not really interested in forest conservation. COHDEFOR employees appeared to residents as hypocrites in enforcing forest regulations and seemed to be insensitive to the deprivations faced by Campeños as their forests were razed to benefit national interests. Thus, the people reacted not simply to COHDEFOR's policies but to their experiences with individual representatives.

From the perspective of COHDEFOR employees, their efforts to prevent forest overexploitation and enforce regulations impartially were inhibited by inadequate legal support, and an organizational environment over which they had little influence. Their hands were tied, because the administrators were biased toward aiding the logging companies in order to maximize forest production and profits. The foresters shared some of the same frustrations as the people of La Campa with COHDEFOR administration.

Finally, the area's marginalization in relation to the state contributed to the people's willingness to resist and to their ultimate success. Prior to COHDEFOR, their experience of marginalization was associated with minimal state interference with their forests; thus they were accustomed to considerable autonomy in managing the resource by their own democratic traditions. Their confidence as managers of their own resources bolstered their convictions that COHDEFOR's appropriation was inept, exploitative, and unjustified. The state's repressive power appeared distant, not only to La Campa residents but evidently to departmental authorities as well, compared to the real and immediate problems posed by COHDEFOR.

Forest Destruction and the Birth of a Conservation Ethic

La Campa was the only municipio in Honduras to oust COHDEFOR. Why La Campa? La Campa is not outwardly different from many other indigenous, rural, and marginal municipios with forest resources in Honduras. La Campa was not unusually organized; many peasant groups and municipios in Honduras appear to have fairly well-developed organizational capacity (Ascher 1999), and this can be traced in part to the degree of autonomy they exercised historically due to the national government's inability to form an effective, centralized state. The inability of the state to compel obedience and integration posed certain problems for development but resulted in a population perhaps more prepared for the processes of decentralization that emerged by the end of the twentieth century. La Campa appears to have been unusual in one regard: the large percentage of its territory that retained mature pine forests. As noted earlier, La Campa had the majority of the commercially valuable pine available in the Bardales Sawmill's territory, which probably included the municipios of Gracias, Belén, and perhaps San Manuel de Colohete and Lepaera. It was adjacent to the Gracias Management Unit, and much of the timber was within easy reach of the major road connecting Gracias to municipios in its hinterland. As a result, La Campa received a lot of attention from COHDEFOR and sawmills, and the people came under particular scrutiny. They had perhaps more incentives to resist and actively oppose the loggers than their neighbors because they had lost the most, and had endured more pressure and oppression from COHDEFOR.

La Campa's forest management did have weaknesses prior to the existence of COHDEFOR. One of the threats to La Campa's forests actually came from within the community. They perceived forests as endlessly abundant; as one resident explained "there was an 'infinity' of forest." This perception fit conditions of low population density and shifting agriculture, but these conditions had begun to change. As discussed in Chapter 3, beliefs and institutions had developed practices that had conservationist dimensions. The purpose was not conservation of forests, however, so much as conservation of conditions associated with viable slash-and-burn agriculture. COHDEFOR moved La Campa abruptly into a situation of forest scarcity that undermined its traditional institutions. Campeños reacted much as people all over the world have responded to similar policies: they chose to ignore, resist, and confront the law by legal and extralegal means.

Their success in ending COHDEFOR's hegemony in La Campa reflected their prior organizational experience on communal projects and within groups, as well as their history of a communitarian tradition that provided an ideology of communal land and a common good. But the timing of their movement also synchronized with broader political-economic contexts that contributed indirectly to their success. Clearly, if higher-level military and government authorities had chosen to arrest Patronato leaders or provide armed protection for logging operations, the Patronato would not have prevailed. COHDEFOR, however, was in trouble politically and economically. It had not produced the profits, gains in forest production, or the improvements in forest protection anticipated by lawmakers. Instead, Honduras'

timber production was falling, deforestation rates remained high, and fires continued to ravage the forests even though slash-and-burn agriculture had declined. Around the country, forest fires appeared to be set intentionally. Ascher (1999) notes, "The forest fires were a grim reminder of the power of local people to undermine a resource base when their rights to it had been abrogated" (p. 113). COHDEFOR's future seemed uncertain, and therefore La Campa's resistance did not pose a threat to the state; it was just another instance of COHDEFOR's many shortcomings. At the time that La Campa expelled COHDEFOR, Honduras was deeply in debt, and USAID and the International Development Bank were imposing strict structural adjustment measures in an effort to stabilize the economy (Ascher 1999). Moreover, Honduras was surrounded by civil wars. The USA perceived the social turmoil in Guatemala, El Salvador, and Nicaragua as a threat to its own national security. Therefore the USA chose to invest heavily in Honduras to gain a relatively stable base for its military operations and political influence in the region. As a result, the Honduran military and the national government had more pressing concerns to capture their attention than a small insurrection in an impoverished backwater against an unpopular agency. In retrospect, the success of La Campa's efforts to end commercial logging reflects the juxtaposition of fortuitous political-economic circumstances as well as the determination and organizational capacity of the people.

Campeños' collective action shows the potential of grassroots organization to attain local goals against higher-level opposition under a set of favorable conditions. At the same time, their success was mixed. They had regained rights to govern their forests for subsistence purposes, but the state still owned the trees. When COHDEFOR departed, more than 1,500 ha[125] of their lowland forests had been laid bare or degraded. They had acted in time to prevent logging in their mountain forests, but in prohibiting timber sales they lost their primary source of revenue to undertake municipal projects. The paltry income that they had gained from COHDEFOR was absorbed by public projects that already needed repairs or amplification. Residents with growing families had settled the logged land, and built fences where they had once hunted deer. Roads opened for timber trucks had become public pathways, and farmers were looking for opportunities to improve their livelihoods with an eye out for market opportunities. Respect for, and compliance with, the traditional restrictions and customs that had helped protect the forest prior to COHDEFOR had been interrupted for too long to resume intact. Population growth, economic necessities, and COHDEFOR's constraints had rendered certain practices untenable, such as long fallows and annual field relocations. During the 13 years of COHDEFOR domination, La Campa's forests, its communal institutions, and relationships with outside entities had been profoundly transformed. For the first time, Campeños had reason to doubt that forests were endless. The experience of deforestation by outside hands (and the realization that they were complicit in resin tapping and forest clearing for fields) caused some of the people to reevaluate their assumptions that forests would readily regrow regardless of human behavior. They wanted the forests for themselves, but in the wake of COHDEFOR, it occurred to at least some of the population that forests might need specific protections to ensure future availability.

Chapter 5
Common-Property Transformations and Market Integration

Land scarcity, population growth, and market integration are among the factors frequently associated with deforestation. Other factors that appear related to forest destruction include the dissipation of traditional, local institutional arrangements, relatively rapid social change, and national policies that encourage conversion of forest to export crops. La Campa's situation since the late 1980s has encompassed all of these factors, yet forest cover expanded between 1987 and 2000. Through this chapter, I examine the complex interplay among people, forests, and changing political-economic contexts that contributed to forest regrowth, as well as patches of deforestation and stable forest cover on a dynamic landscape. At the local and national levels, concern to protect natural resources competed with a demand for land and hopes for development. I consider the interrelated processes of land privatization, expansion of export-oriented coffee production, and the implementation of national policies that led to social change and transformations in land cover and land use.

First, I discuss the attempts to protect the forests in the wake of uncontrolled logging and the factors that propelled de facto processes of land privatization. Second, I focus on the emergence of export coffee production in La Campa and place it within the historical trajectory of coffee production in Honduras. Third, I discuss the impacts of a national land titling effort that interacted with the spread of coffee and de facto privatization processes to reformulate common property, formalize private property, and limit the role of municipal governance in land management. Fourth, I consider the unequal distribution of benefits from coffee production and market integration across the community. Finally, I consider the ways that these processes played out on the landscape by analyzing a time series of satellite images and linking them to the transformations in the forest-field-fallow cycle and political-economic contexts. The dynamic nature of forest change in La Campa, and more generally for western Honduras, indicates that a focus on deforestation or reforestation alone is inadequate for understanding the relationships between people and forests. Moreover, the data show that population growth did not have a detrimental impact on forest cover during the study period.

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

Forest Protection Efforts and De Facto Privatization of Common-Property Forests

Soon after La Campa regained the right to govern its forests, the council passed accords that supported the population's expressed desire to protect forests from further destruction. Specifically, the council prohibited land grants in areas with mature pine or oak trees, although permits could be given to cut pines for house building.[1] It also banned the use of chainsaws on communal land. Community members denounced neighbors found cutting trees without permission, or trying to stake a land claim without the proper approvals of the council.[2] At the same time, demand for agricultural land and houselots was increasing. Under COHDEFOR, the people had been prohibited from occupying land deemed suitable for forestry. This restriction had been flouted when possible; nevertheless, COHDEFOR's expulsion apparently released pent-up demands for land. The *síndico fiscal* was kept occupied examining land requests to make sure they met the criteria. The *síndico* proposed a ban on clearing in mountain forests; the council approved the motion[3] but continued to approve land grants in the highland forests. The rule seems to have been enforced only for areas with large pines and oaks; one man was denied his request because the *síndico* found "double-wide pines."[4] In 1990, the council became concerned at the volume of land requests. It voted to end further land grants except for houselots, and suspended permits for slash-and-burn fields in *guamiles* (secondary successions) because "the *síndico* has already granted enough permits for agriculture."[5] Nonetheless, the council approved several requests for agricultural land in subsequent meetings.[6] The size of the area that farmers requested most frequently for de facto private property increased to 2 manzanas after 1987, which was twice the size usually requested before 1970. The increased amount reveals a trend that emerged following the departure of COHDEFOR: greater flexibility on the part of the council to permit land claims in excess of a household's immediate subsistence needs. Among households in the Centro and its adjacent *aldeas*, the median landholding in the early 1990s was just under 5 ha, and the median area planted in maize was 1 ha.[7] The figures support information from interviews: In the context of increasing land scarcity and perceived risks of future state intervention on communal lands, households attempted to claim enough land to meet their subsistence needs and maintain some in reserve for future fields and fallows. Livestock owners requested forest areas for private pasture, and several explained that their forest pastures represented a reserve for firewood.

A number of complaints against illicit land claims appear in the municipal archives after 1987; farmers frequently attempted to enclose land without prior approval or exceeded the area they had been granted.[8] The guilty parties were called before the council to explain their transgressions. Only a few cases reveal the council's ruling, and these report that the unauthorized area had to be surrendered. In several other cases, farmers requested land that they then sold to another resident. The entire community frowned on such profit-seeking behavior unless the sale was motivated by economic hardship or illness. At least one man was sanctioned for this

behavior; the council ordered, "He is not to be granted any more land because there are other residents who need places for houses and yards."[9] In another case, a son sold one of his father's parcels to a friend against the father's wishes; the council annulled the sale.[10] The municipal archives suggest that the councils that served between 1987 and 1993 followed through on local rules and precedents that restricted excessive land claims, fencing without prior permission, clearing land with dense forest, and selling land for profit. This tendency toward increased enforcement dovetails with existing theory that scarcity of a valuable resource can motivate collective action for its protection (Gibson 2001). In another sign of land scarcity, the council tried to acquire additional property, citing residents' needs. When a large property went up for sale on La Campa's border with the municipio of Gracias, La Campa sought a grant, unsuccessfully, from the office of the Honduran president to cover the cost.[11]

As land for agriculture became scarce, demand for communal woodlots also increased. Every *aldea* had at least one informally designated area traditionally used for communal grazing, firewood collection, and timber cutting. When land-hungry residents attempted to make claims in the open areas used for communal woodlots, other residents requested formal recognition of the woodlots and attempted to oust the interlopers.[12] Once the council declared an area as a communal woodlot, it was usually fenced to prove that the land was claimed and to keep livestock enclosed. Most communal woodlots and pastures encompassed steep, rocky areas that were minimally suitable for agriculture. Due to their biophysical characteristics and constant exploitation for firewood and grazing, the woodlots were especially vulnerable to degradation. In the lowlands, all of the areas designated as woodlots had been logged under COHDEFOR. Even before logging, these pine-oak forests had evidently been sparse and the thin, rocky soils had been damaged by the careless timber extraction methods. In the Centro, people found it particularly difficult to find firewood and timber near their homes. In 1994, residents of the Centro and its satellite villages (Arenales and San Matías) reported an average walk of 39 minutes to find firewood, but almost a third of the respondents walked an hour. A few people reported walking only 5 or 10 minutes; these households were located on the outskirts, near a fallow area or public woodlot.

Factors Shaping the Perception of Land Scarcity and Privatization

Perceptions of land scarcity evidently grew as the area available per capita for shifting agriculture declined. Between 1974 and 1988, the population increased by 40%, from 3,949 to 5,549 (República de Honduras 1981; SECPLAN 1990). The traditional system for granting usufruct presumed that most agricultural land requests would return eventually to forest and communal use. With population growth, there was not enough land to support shifting agriculture for the entire populace. The process of agricultural intensification began to spread across the municipio. A key indicator of intensification is a shortened or eliminated fallow period (Boserup

Table 5.1 Characteristics of La Campa households' landholdings, from 1994 household survey

Landholdings	Average (N)	S.D.	Minimum[a]	Maximum
Number of parcels	2.77 (103)	1.52	0	8
Mean land area (ha)	8.94 (103)	30.76	0	210
Area in fallow (ha)	2.27 (103)	4.19	0	21
Cultivated area (ha)	1.79 (101)	43.02	0	15.9

[a] Represents two unmarried, female teachers and one widow who held no land

1967); however, the pattern of intensification in a slash-and-burn system relates to the availability of soil nutrients, the rate of regeneration, and climatic conditions (Vasey 1979). Interviews and household surveys with farmers in the Centro during the 1990s indicate that they had begun to shorten or eliminate fallows on their flat fields near the Centro during the 1960s, while parcels in the mountains remained under long fallows. When I arrived in La Campa, it was not unusual for Centro residents to have a milpa under extended cultivation, with plowing and chemical fertilizers, near their home and another milpa that had been slashed and burned recently (within a few years) in the mountains. A reduction in fallow time evidently occurred first where the land was most suited to plowing, population density was relatively high, and informal monitoring of land use complicated attempts to expand fields into communal forests.

Agricultural intensification and increasing requests for permanent usufruct also represented a proactive stance adopted by farmers to secure land for the future. Due to the experience of state intervention in communal forests, people now saw common property land as lacking the secure tenure provided by individually held, fenced fields. The combination of land scarcity, population growth, and concern for tenure security combined to end the custom of temporary usufruct for agricultural land. If land needed to be fallowed because of soil infertility or weed invasion, farmers let the forest grow back, but they no longer relinquished their land rights during the fallow period. A survey of 108 households in 1994 found that 75% had fallow land, ranging in size from less than 0.2 to 21 ha (Table 5.1). The retention of fallow land for private uses represents a marked contrast from the pre-COHDEFOR era, when fallows were required to be opened for communal stubble grazing and firewood collection.

The Promise of Coffee

What is worth growing except for coffee? (La Campa farmer)

As people established de facto private land for subsistence agricultural activities, they were also searching for better economic opportunities. Managing forests for commercial production had been a dismal failure on all accounts; the forests had been destroyed, loggers and the state had taken the profits, and resin tapping, logging, and pine seed collection had not provided reliable sources of income.

Campeños' interests in development and desire for new sources of income intersected with the interests of the state, which was implementing policies to promote export-quality coffee production. During the 1990s, coffee adoption became an increasingly important factor in the de facto privatization of La Campa's common-property highland forests. Coffee production exacerbated land scarcity because farmers interested in producing coffee requested large parcels of land on the speculation that they would be able to plant it in coffee for the market.

Throughout Latin American history, coffee expansion has occurred in association with privatization of public and communal lands, although the processes and contexts vary (e.g., Greenberg 1989; Pérez Brignoli 1995; Williams 1994). The pattern in La Campa proved to be similar, in part because coffee changed the productive potential of the land. Private property tends to be established where land has high value per unit area, high and dependable productivity, and possibility of improvement (Netting 1976, 1982). Prior to export-oriented coffee, the communal forests in the mountains were used primarily for shifting agriculture, grazing, and hunting. With coffee, these forest lands could provide perennial yields and incomes for the owners. The transformation in perceived value of the resource base combined new information, the introduction of new technology ("technified" coffee production), and national policies that provided incentives. With high potential for economic gain from coffee, Campeños' commitment to forest conservation and fair allocation of agricultural land faced a major challenge. The timing of La Campa's coffee expansion grew out of the conjunction of political, economic, and technical factors, and related to the historical trajectory of coffee production in Honduras.

The Historical Context of Coffee Production in Honduras

The history of coffee in Honduras can be traced back to the mid-1800s, with its introduction occurring in a similar time period throughout Central America. Historical documents fail to provide a definitive record, but it appears that the first coffee plants arrived in Honduras in the early 1800s, and coffee plantations were established by the middle of that century (IHCAFE 2001; Williams 1994). The national government made successive attempts to encourage coffee production. As early as 1849, Decree 5079 declared coffee free of taxes for the first 10 years after planting (IHCAFE 2001). By the late 1800s, however, Honduras was the only Central American nation that did not produce coffee as a major export commodity. Scholars point to poor infrastructure, dispersion of land appropriate for coffee, and a weak state government as factors that inhibited the emergence of coffee as an important crop. R. Williams (1994) observes, "Nineteenth century Honduras had the poorest transportation network, the least developed wage labor pool, the least integrated national market, and the shallowest connection with the world economic system of any country in Central America" (p. 185).

Coffee also had less appeal to elites in Honduras due to the importance of silver and bananas. Euraque (1996) argues that coffee was relegated to the sidelines

while elites in Tegucigalpa consolidated their power and influence by focusing on silver mining. On the north coast, modernization processes revolved around banana exports (Euraque 1996). Although early coffee-oriented economies developed in the departments of Santa Bárbara and El Paraíso, coffee growers did not acquire the political power needed to build roads and other infrastructure for export-oriented coffee production. Honduran governments also took a different approach to encouraging agricultural production from other Central American nations. Governments in Guatemala, El Salvador, and Nicaragua created a cheap labor force for coffee growers by passing laws to expropriate indigenous landholdings and impose forced labor regulations (Lapper and Painter 1985; Williams 1994). Successive Honduran administrations made land grants to municipalities on the condition that they be used productively; they also sold *realengas* to private owners. As a result, indigenous communities retained more of their lands under communal arrangements. With few exceptions, farmers grew coffee in small plots with a variety of useful fruit and shade trees. They harvested coffee with family labor, labor exchanges, and some wage labor. Although coffee was planted almost everywhere it would grow, the vast majority of production was consumed domestically. Into the 1940s, Honduras represented only 2% of Central America's coffee exports (Williams 1994).

In the late 1940s, the situation began to change. In conjunction with perceived communist threats in the region, the United States pumped thousands of dollars into development programs and anti-communist unions in Honduras (Euraque 1996). Coffee received favorable support, and development programs built new roads that facilitated the transportation of coffee to ports (Williams 1994). Thereafter, a series of national policies and new institutional arrangements helped to promote coffee expansion (Table 5.2).

The Honduran Coffee Institute (IHCAFE), created in 1970, played a crucial role in encouraging and improving coffee production. Through agricultural research and outreach activities, IHCAFE promoted modern production methods through improved coffee varieties and chemical inputs. In 1982, the national legislature passed Decree 78-82, the Coffee Enterprise Protection Law. It exempted coffee-producing lands from the Agrarian Reform Law, which gave coffee producers confidence to continue investing in coffee while other lands could be expropriated for landless groups (AFE-COHDEFOR 1996).

Decree 175-87, passed in 1987, provided subsidies to coffee-growing municipios for road building and repairs. The subsidy was calculated in proportion to the municipal annual production, based on official records of coffee sold to buyers. Other legislation followed. The National Coffee Fund was created in 1992 to expand coffee infrastructure and provide a hedge for times of market volatility. It aimed to store coffee when prices fell, and sell it on international markets when prices rose. Also in 1992, the passage of the Agricultural Modernization Law offered a market-friendly legal foundation to support coffee production and related industries by encouraging productive efficiency, technology transfer, agricultural investment, improved infrastructure and economies of scale (República de Honduras 1992). The Honduran government hoped that expansion of coffee

Table 5.2 Legislation related to coffee production, 1970–2002

Law	Date	Title	Content
Decree 83	1970	Creation of the Honduran Coffee Institute (IHCAFE)	Creation of the Honduran Coffee Institute (IHCAFE), as a nonprofit-making private body to support coffee improvements, development, and marketing, and to promote Honduran coffee
Decree 78-82	1982	Coffee Enterprise Protection Law	Exemption of coffee-producing lands from the Agrarian Reform Law
Decree 175-87	1987	–	Established an annual payment for road improvements to coffee-producing counties, proportional to production
Decree 31-92	1992	Agricultural Modernization Law	Aimed to foster agricultural efficiency and stimulate production through market incentives, improved land access and tenure security, technology transfer, greater credit availability and development of agroindustry, in a manner compatible with conservation of natural resources
Decree 146-92	1992	National Coffee Fund Law	Created the National Coffee Fund (FCN) and established a program to improve infrastructure and withhold coffee exports during low prices for later sale
Decree 145-2000	2000	National Coffee Commission Law	Creation of the National Coffee Commission to establish policies related to coffee and protect the public interest related to coffee
Decree 297-2002	2002	IHCAFE Loan	Authorization of a $20 million government loan over 20 years for IHCAFE, to finance coffee growers through loans and relieve debt

Sources: AFE-COHDEFOR 1996; IHCAFE 2001

production under neoliberal economic principles (with a modicum of protection for producers and investors) would accelerate economic development, bolster income from trade and lead to long-term economic growth (cf. Maxwell and Fernando 1989). The combination of incentives for production and improved infrastructure encouraged a dramatic expansion. Between 1950 and 1990, Honduras' coffee production expanded by over 800% (Rice and Ward 1996). During the 1990s, national income from coffee began to rival that from bananas, the traditional leading export. By 2000, Honduras' coffee production rose to eleventh in the world (ICO 2006).

Emergence of Export Coffee Production in La Campa

Until the late twentieth century, coffee was produced only for household consumption. Grown in house gardens and orchards under the shade of fruit trees, the traditional variety of coffee (*café indio*) thrived. In the founding documents of the

municipio, coffee was listed as one of the most important crops along with maize, frijoles, and several other crops. Coffee production for the market did not begin until the late 1960s, when a farmer in La Campa's eastern mountains decided to plant more coffee than he needed for household consumption. He carried his surplus production out by mule, along a precipitous path and across a major river to reach the nearest market in the municipio of Belén. The same person is credited for bringing the first chemical fertilizers to La Campa, years before agricultural outreach programs reached the area. He had mixed success at first, but began to make money. Some of his neighbors in Mescalio and nearby Mataras followed his lead. The lack of roads made transportation to markets difficult, but they persisted in small-scale, artisanal production despite the challenges. They had no access to training in modern coffee-producing methods, so they used traditional methods of growing *café indio* under shade.

Exposure to modern coffee hybrids did not come until the late 1980s. Campeños credit Padre Constantino for the introduction. The son of a modest coffee-growing family from Intibucá, Padre Constantino recognized the potential for export-quality coffee production in La Campa's highlands. He served as the parish priest from 1982 until 1990. Unlike other priests who had served in the municipio, he settled in La Campa with his mother and younger siblings. In 1986 he requested land from the municipal council. He chose a parcel in the mountains above the village of Cruz Alta, and hired neighbors to clear the land and plant a hybrid coffee (*café caturra)*, evidently the first in La Campa. Four of the young men who helped the priest decided to experiment with coffee using the priest's methods. In this period, IHCAFE agronomists confirmed that La Campa's higher elevations (1,200–1,800 m) provided excellent conditions for high-quality coffee production and began to offer workshops to promote modern methods.

The traditional *café indio* requires minimal maintenance after it is established. It typically starts to produce in the fifth year, and can grow to the size of a small tree (about 4 m tall) if it is not pruned. It lives indefinitely, and resists most pests and diseases. One man showed me a patch of *café indio* in an orchard planted by his grandfather more than 50 years earlier. The plants were still healthy, but so tall that picking had become nearly impossible. *Café indio* produces sparsely, with perhaps a dozen coffee cherries to a branch. Hybrid coffee varieties produce dozens of coffee cherries on each branch, but they require more care. Fertilizer must typically be applied during the growing season (March–December), and weeding should be done about three times a year. Hybrids must be pruned about every 8 years to maintain good productivity, and replaced after several prunings. Pesticides and fungicides should be applied to fend off infestation and disease. When IHCAFE started giving seminars, the agronomists promoted hybrids designed to grow in full sun. This approach reflected international trends, and depended on the use of chemical inputs. La Campa farmers experimented with sun-grown plantations, but they found that the intense dry season (December–April) stunted or killed hybrid coffee bushes, which had been developed in moister climates. A majority of La Campa coffee farmers abandoned sun-grown coffee and resumed planting shade trees with their coffee. They also discovered

that coffee produced poorly when exposed to wind or planted in thin, rocky soils. Padre Constantino explained,

> *When you want to plant coffee, you have to choose the land with care. … Look for a place where the wind doesn't blow, where it's not too high and cold, and where the soil isn't shallow and gravelly, so you can dig a large hole for the plants to grow. In some places, coffee grows easily. But here, you have to choose well.*[13]

Before coffee became a major crop in La Campa, men migrated to pick coffee in other parts of Honduras. During my first year in La Campa (1993–1994), trucks from coffee plantations in Santa Bárbara came to the Centro at the end of November. Men from all over La Campa awaited the trucks, each carrying a small bag or satchel with a change of clothing, and little else. Dozens of men filled the trucks to capacity, and trucks continued to come for workers for several days. The migrants returned gradually between February and April, bringing their earnings to invest in the planting season. By the late 1990s, the trucks stopped coming because people no longer migrated to pick coffee; there was plenty to pick in La Campa. Padre Constantino recalled that people turned out in a crowd to pick his first coffee harvests; they harvested each picking in a single day.

Farmers' experiences with subsistence coffee production and picking coffee cherries on large plantations in Santa Bárbara facilitated their acceptance of it as a cash crop. Farmers felt comfortable and confident growing coffee. Moreover, coffee production fits well with the agricultural cycle. Maize and beans, the most important staple crops, require the greatest labor during planting (May–June) and harvesting (August–November). Coffee harvests occur between late November and April, when other agricultural activities reach a nadir. Therefore, coffee demands the most labor when people have time to provide it.

Most Campeños have little access to credit because they do not have titles to their de facto private parcels, but they can keep their initial costs and risks relatively low by raising their own seedlings and planting small parcels. If they have no money to purchase hybrid seeds, they can negotiate with one of La Campa's better-off coffee growers to work in exchange for seeds. The process of growing coffee begins by planting seeds in a protected nursery with sieved, rich soil. When seedlings have two leaves (dicohtyledon stage), they can be transplanted into bags (typically 6 in. across and 8 in. deep) filled with sieved soil. Only seedlings with straight, single tap roots will grow into strong coffee bushes; others are discarded. Once in bags, the seedlings are placed in a shelter to grow in partial shade until they have at least six pairs of leaves (4–6 months). Coffee planting is done in the spring or in the fall, when rains come most reliably. Typically, a new farmer starts out with enough seeds to plant 1–8 *tareas*. One *tarea* measures approximately 21 × 21 m, or 1/16 of a manzana, and 8 *tareas* represent about 0.33 ha. Farmers with more resources begin by planting 1 manzana (0.7 ha). Depending on the variety planted, farmers need 2,500–4,300 seedlings for 1 manzana of coffee. Once seedlings are planted, they must mature for 2–5 years, depending on the variety, before they produce cherries. Depending on their economic resources and personal preferences, coffee producers choose whether to purchase chemical inputs and how much they will apply.

Farmers experiment with different shade trees and shade density. The most popular shade trees are banana plants and *guamo* (*Inga* spp.), a leguminous species that provides even, moderate shade. Farmers often plant a wide variety of introduced and native fruit trees. The variety of microclimates in La Campa means that there is no single recipe for shade. Farmers go through a learning process to find what types of shade suit their land's topography and the varieties they have planted. Coffee growers often have multiple fields and differing degrees of shade. They explained that plantations in the moist, cool highlands do well with sparse shade because the plants suffer a high incidence of fungal diseases under heavy shade. Plantations at lower elevations benefit from dense shade to make it through the dry season. Depending on the direction of the slope, shade trees can help protect coffee from damaging winds. The annual fluctuation in coffee prices also influences growers' decisions about the use of shade. Coffee prices are highest early in the harvest season, and usually fall steadily through the end of the harvest. Shade slows the ripening process and produces coffee with rich, more complex flavors, but by the time shade-grown coffee beans are picked, the prices have fallen significantly. Ironically, plantations with heavy shade usually produce higher-quality beans, but because they ripen slowly, they receive the lowest prices. Therefore better-off farmers with larger plantations usually plant much of their areas with sparse shade so beans are ready to pick early in the season when prices are high. They may lose some coffee plants to drought, but they have the resources to plant replacement stock each year. They manage shade by pruning the trees to maintain the desired amount. Farmers with fewer economic resources tend to plant their coffee with heavy shade at lower and middle elevations because shade protects trees from certain diseases and climatic extremes, inhibits weed growth, and provides leaf litter as organic fertilizer.

Due to farmers' financial constraints, the labor involved in growing and transplanting seedlings, the time lag between planting and harvesting, and the lack of roads into La Campa's mountains, the area in coffee expanded gradually in La Campa. Requests for land to grow coffee proceeded more quickly than planting as people became aware of coffee's market potential.

Political and Economic Incentives for Coffee Expansion

When farmers began to plant hybrid coffee in La Campa during the late 1980s, coffee prices were relatively high and national policies promoting coffee were beginning to make an impact on the region. The entire highlands of La Campa, which represented almost 60% of its land, had no road. Steep slopes divided the highlands (above 1,200 m) from the lowlands, and posed a challenge for road construction. Municipal authorities and coffee farmers welcomed the possibility of subsidized road improvements under Decree 175-87. La Campa, however, was not recognized as a coffee-growing municipio. Producers in the eastern mountains sold their coffee to buyers in Belén; therefore, La Campa's coffee was counted as part of Belén's production. The municipal council wanted the coffee to be credited to La Campa in

order to qualify for the road-building subsidy, but the coffee growers needed a road before they could sell their coffee through the Centro. The problem appeared intractable because the council had no money to build a road. Then in 1989, Padre Constantino's plantations began to produce. The next year, the plantations established by the young men who had learned by assisting Padre Constantino came into production. The producers hauled their coffee to buyers through the Centro, and IHCAFE recognized La Campa as a coffee-producing municipio. La Campa received its first subsidy of 1,059.28 lempiras (about $180) later that year.[14] It was not enough to start building a road, but as production expanded in subsequent harvests, the subsidy increased. In 1993, the budget had enough money to begin opening a road from the Centro to Cruz Alta. As plans for the road became public, residents of coffee-growing *aldeas* in the eastern mountains petitioned for their own roads, which had been in the planning stage for years. The municipal council received three road-building proposals to link mountain *aldeas* to each other and the Centro. Coffee growers demanded immediate progress, but, as usual, the municipal budget had nothing extra to offer. In November 1993, the council confronted a request to sell timber to build a long-awaited road. My transcribed field notes detail points of the meeting:

The municipal building has filled with community members for the bimonthly council meeting. It is 9 am; some people left their homes at dawn to walk over the mountains in time for the meeting. The residents of Mescalio and Apangual have petitioned to log forests in order to pay for a road into their aldeas. The alcalde, Don José, reads the petition and then begins to read the signatures, which fill several sheets of paper. After several minutes, he simply holds up the paper for all to see, and notes that the petition has too many names to read. The petition asks the council to sell timber to fund the completion of a road that will open their aldeas to vehicular traffic. Don José expresses concern that he will be accused of illicit dealings if he approves a timber contract; only 80 days remain in his term. He reminds the gathering of the turmoil over COHDEFOR's logging concessions and forest degradation during his predecessor's term, which culminated in the forced departure of COHDEFOR, and a municipalwide accord to prohibit timber sales.

The representatives from Mescalio and Apangual respond, emphasizing three points: timber is their only resource; they have been trying to build the road for many years; and the road is necessary for the aldeas' development. They point out that farmers in both areas are planting coffee for the market, and a road is critical to their success. A resident from Mescalio stands and asserts that the people expelled COHDEFOR to defend their own interests, not to protect the forest.

Another representative states, "Some of us eat frijoles, but we all eat tortillas and salt." The audience around me nods, and so do council members. He goes on to argue the point that timber is their only resource, and that everyone would share the benefits of selling timber to finish the road.

The alcalde invites each of the five council members present (the sixth is not here due to illness) to speak in turn. The síndico fiscal speaks first. He supports the petition to sell timber, and argues: "The trees will eventually rot. Selling the timber will prevent waste."

The second council member observes that loggers destroyed so much that people must now use small pine trees for house repair and construction. The comment elicits concurring murmurs from the audience. "We agreed that timber would never be sold from the municipio again"; he continues, "… we must operate within the agreement that we made. I insist that we honor the agreement."

"Yes, all of us need timber," the next council member notes during his exposition. "If we sell the timber, some will be satisfied but others resentful."

"I agree, no more COHDEFOR here," adds the following council member. "The forests belong to us." He speaks at length, reminding people of the municipio's past problems with logging contracts and the paltry income received after COHDEFOR took its cut.

The last council member reiterates the arguments against timber sales. Then Don José reminds the assembly that he recently returned from a seminar on forest management. He notes that a logging contract would require hiring a lawyer to prepare the necessary documents, and they would have to acquiesce to a costly, time-consuming study conducted by COHDEFOR. In his estimation, any legal misstep will leave La Campa defenseless against timber company transgressions. He then adds that the timber sale would benefit only a small portion of the population, and prove detrimental to others. Don José concludes, "After listening to the arguments, I say 'no.' I request that the communities not press [the petition], but have patience, our terms are ending. … Look, if an alcalde doesn't do as I tell you, COHDEFOR is going to come back and finish off with La Campa."

Tempers fray as the alcalde, councilmen, auxiliary alcaldes, and members of the public hold forth repeatedly, speaking all at once in a mounting crescendo of loud voices, reiterating points and adding comments. Except for the petitioning communities' residents, few people favor selling timber under any circumstances. Yet everyone supports the road.

One council member points out, "A municipio with few resources cannot provide all the development desired."

Several people recommend exploring alternatives to a timber sale, including fundraisers, communal labor, and assistance from non-government organizations.

The council meeting lasts until 1:30 p.m., well past the time generally considered necessary for a council meeting. My hand cramps from taking notes and the penetrating cold of the thick adobe walls. Finally, the council as a whole declines to act since their terms of office end in January. Representatives from Mescalio and Apangual withdraw the petition to await the coming elections, but stress that they will persevere because completing the road is critical for their future. Don José closes the meeting with the observation, "It's not easy to develop a community, I see now. It requires that everyone be united."[15]

The question of how to fund development projects had become more pressing with the end of income from timber sales. The municipal council meetings churned with debates over land allocations and how to fund important projects. Many *aldeas* had inadequate schools and lacked potable water. The progress on civic works was slow. The annual list of priority projects in La Campa for 1990 included the construction of a primary school for Apangual, potable water systems for Cruz Alta, Apangual, Cañadas, and San Matías, renovation of public buildings, and road repairs.[16] Several of these projects had been on the list since 1974 as priorities to complete with the timber income that never materialized. The only sources of income available to the council were community taxes and donations from the national government and nongovernment organizations, which as a rule provided only materials.

From an economic perspective, it was in the council's best interest to encourage the expansion of coffee in order to gain greater income from taxes as well as government subsidies. As a progressive, new council took office in January 1994, four institutions (rules-in-use) stood in the way of allowing rapid coffee expansion: (1) the council prohibition, initiated after COHDEFOR departed, on allowing land grants on parcels with large, old pines; (2) an informal tradition that limited the size of most land requests to no more than 6 manzanas (4.2 ha); (3) national banking standards that prevented credit for people who did not hold private land titles; and (4) the principle that only residents of La Campa could have rights to use the

municipio's common-property land, which encompassed communal and ejidal titles.[17] The council evidently relaxed their enforcement of the first two rules: Despite the prohibition on cutting trees (and a series of complaints brought before the council by concerned citizens who observed clearing in forests), motivated farmers requested parcels in the mountain forests and cleared them to plant coffee. The second rule was stretched by farmers who exceeded their grants after receiving permission to use specific parcels. A number of residents complained that neighbors were fencing in land in excess of authorized limits, but despite the council's reprimands, the meeting minutes do not reveal any case in which a farmer was forced to remove a fence from land that otherwise had no claim on it.

An increasing availability of barbed wire enabled ambitious farmers to make excessive land claims. During the 1990s, families that participated in rural development and poverty alleviation programs, such as one undertaken by World Vision, could request a modest amount of barbed wire to fence their fields. Barbed wire was also readily available in stores in Gracias. Although the expense was prohibitive for most Campeños, the better-off households were able to purchase barbed wire. Historically, the heavy labor required to fence land limited the extent to which people could claim new parcels or expand existing parcels. By tradition, fence building for permanent usufruct represented a definitive claim to land. The standard methods of building fences from tree trunks and branches, stones, or by planting a living fence, gave neighbors adequate time to notify the council if they objected to a fence being built without permission. In many cases, neighbors had not cared if a farmer extended a fence to include a larger area, as long as it did not overlap with another claim, a public path, or a community woodlot. In any case, fence expansions prior to barbed wire generally represented small areas of a few *tareas*, much less than 1 ha. If no one complained before the fence was finished, custom held that the claim was accepted and it became permanent. With barbed wire, a fencing job that used to take weeks could be accomplished in a matter of days, and enclosure might be completed before complaints could be lodged or acted upon.

The relative ease of fence building with barbed wire, and the rapid spread of de facto private property, echoed the experience of the American West (e.g., Anderson and Hill 1975). The council had the authority to force removal of fences, and it did so on occasions when fences blocked public access to pathways, roads, or communal resources. Nevertheless, in at least three cases between 1993 and 1995, the council failed to reverse extreme instances of land grabbing. In one case, a well-off farmer with nine young sons enclosed approximately ten times the area that he had requested. A number of neighbors complained vociferously to the council, but the man defended his excessive claim by arguing that he was fencing off land for his children. The council investigated and corroborated the excess claim, but took no further action. In another instance, the resident responsible for distributing barbed wire for the World Vision program fenced off a large area along the slopes of Montaña Camapara, which provides water for most of the municipio's *aldeas*. People worried that his claim would disturb the water supply, and gossiped that he'd taken more than his share of barbed wire. He asserted that he had taken only his part and purchased the rest. In the third case, an ambitious farmer enclosed the *coloral*, the sole source of red earth in

the municipio, which all of La Campa's potters used to paint their pottery. This time the council faced a public outcry that could not be ignored, and the council compelled the responsible party to withdraw the fence. The man nonetheless retained all of the excess enclosure except for the small area used by the potters. Each of these cases involved locally influential individuals with close ties to the council. Under such circumstances and with the commitment to coffee expansion and road building, the council did not abide by customs of equitable land distribution or enforce its own rules. As a result, the people who already had above-average resources (e.g., schoolteachers who earned a salary, owners of small stores, and farmers who produced and sold surplus maize, beans, and coffee) claimed the largest parcels because they were able to afford the barbed wire and labor required to accomplish the task. Less privileged households still managed to claim parcels, but their claims were limited by the cost of fencing.

The process of land privatization in La Campa coincided with a period of increasing indigenous activism in Honduras. The Honduran Lenca Indian Organization (ONILH) became active in western Honduras during the early 1990s, and worked with the national organization of indigenous and autochthonous peoples of Honduras to press for indigenous rights to land and cultural identity. The ONILH chapter in Caiquín argued for independence from La Campa on the grounds that the people of Caiquín represented an authentic Lenca community whose cultural freedom of expression was infringed by subordination to La Campa. Caiquín did not have the requisite population or infrastructure to gain municipal status by standard procedures. In 1994, the Honduran national legislature approved Convention 169 of the International Labor Organization in a process that was closely observed by ONILH representatives. Convention 169 included articles to protect indigenous rights. Upon its passage, representatives of indigenous organizations from around Honduras marched on Tegucigalpa to demand that the government honor the convention. The organizations presented a list of over 100 demands which included Caiquín's request for municipal status. The representatives occupied the grounds of the Honduran congress and gained national media coverage, which reported the demands. After a protracted negotiation process between indigenous organizations and government authorities, the government agreed to a number of demands on the list, including Caiquín's independence from La Campa. In 1995, Caiquín officially became a municipio. Through a process that remains unclear, the national congress set a boundary line which did not adhere to the land titles that had been established (and contested) since the mid-1800s. Under standard legal prerequisites, an authorized surveyor should have surveyed the boundary in the presence of representatives from both municipios, but this did not happen. The new boundary cut off over one tenth of La Campa's territory, including some of its prime coffee producing land and the municipio's water source: Montaña Camapara. The area known as Trapichito, purchased by La Campa in 1973, fell within Caiquin's territory although La Campa held the legal title. The alcalde of La Campa refused to sign off on the boundary and lodged a formal protest. La Campa continues to exercise its previously established rights over the disputed territory as well as Trapichito, but the situation has yet to be resolved formally (Fig. 5.1).

Fig. 5.1 Map of disputed land area

As Caiquín gained municipal status, the demand for land in the La Campa's highlands reached a zenith. Cold weather in Brazil and Colombia damaged much of their 1994–1995 coffee harvest, and world prices soared. La Campa farmers who harvested coffee that year made windfall profits, and demonstrated their wealth by purchasing new pickup trucks, remodeling their homes, or sending their children to secondary school. Campeños with existing land claims in the mountains apparently extended their fences when possible, and prospective coffee growers came to the council requesting land for coffee. By the end of 1995, a majority of the communal mountain forests had been subdivided into de facto private plots. The remaining common-property areas were the least desirable for agriculture or inaccessible areas. These included the *aldeas*' communal woodlots, livestock zones, and Montaña Campara, which was generally deemed as too cold and moist for agriculture.

As land became perceived as valuable for coffee, nonresidents attempted to purchase land. Some La Campa farmers were willing to sell their parcels; they trusted that they could convince the council to give them more land. However, if neighbors brought a formal complaint to the council over an illegal land sale, the council annulled it.[18] The seller received a haranguing in a public council meeting, and was ordered to return the money to the buyer. The council followed up to make sure that their orders were respected. During the 1990s, only a few nonresidents managed to acquire pieces of La Campa's land, and this involved subterfuge: a La Campa resident had to request the land and appear to work it, while keeping secret the nonresident's involvement (which usually came in the form of payments for materials and labor). These arrangements required a great deal of mutual trust. If the Campeño backed out, the nonresident would have difficulty claiming legal rights to the parcel. Of course, such arrangements eventually became open secrets. One nonresident who acquired a piece of land owned a well-stocked grocery store in Gracias. She gave credit to people as they needed it, and over time she proved herself to be a "friend of La Campa." When it became known that a La Campa resident was serving as a front for her to plant coffee in La Campa, neighbors did not object.

Land Titling Under the National Agrarian Institute

Under the de facto processes of privatization, farmers gained land rights that were respected and secure within La Campa. The land, however, remained under municipal common-property titles. From the perspective of the national government, communal lands needed to be "normalized" so farmers using the land under de facto arrangements could obtain credit and invest in their land. A large proportion of Honduras' land lacked formal titles, or were formally titled as common property but held under individual use. Development agencies and policy makers viewed the predominance of communal lands and inadequately titled private holdings in rural Honduras as a major impediment to development. In many rural areas, property transfers followed traditional norms with an appearance of legality. Land sales often involved exchanges of handwritten "titles" drawn up between the interested parties, and no official record of ownership might exist. Competing claims arose between informal and legal titles, and property rights were rife with contradictions, confusion, and conflicts (Jansen and Roquas 1998).

Although much of rural Honduras experienced unclear and contradictory arrangements over land titles, the widespread conceptualization that communal land rights necessarily lead to conflicts and insecure tenure does not apply as a general rule. For rural communities with strong land governance institutions, land rights can be clear without the need for higher-level bureaucracy to document and enforce titles (Runge 1986). Usufruct in La Campa was secure, clearly defined, and enforced by municipal laws and norms. Although land disputes did occur, residents respected municipal arbitration and adjudication. Violence over land was rare (and usually occurred in conjunction with inebriation). People knew who had the rights to each parcel and its boundaries, and they recognized the boundaries of communal areas.

Beginning in the 1980s, a series of national initiatives attempted to regularize land titles, under the strong encouragement of international donor agencies. Private land titling programs aimed to encourage investment in land, "rationalize" land markets to respond more flexibly to market signals, and make credit available to smallholders. The Agricultural Modernization Law of 1992 specified land tenure security and access to land as necessary elements to stimulate agricultural production. With land titles, smallholders were expected to capitalize on their competitive advantages (such as their ability to muster inexpensive household labor), produce more, improve their income, and lift themselves out of poverty (Boucher et al. 2005). The law also ended state ownership of trees, and returned certain decision-making rights over forest management and development to municipalities and private owners. In 1996, representatives from the National Agrarian Institute arrived in La Campa. They informed La Campa that it was being included in a new land-titling program through which ejidal lands would be divided into private titles. The program offered two choices: People could chose to buy private titles for their de facto parcels at a cost deemed reasonable by INA (Tucker 2004), or they could join with their neighbors to include their lands under an *aldea*-level title. The vast majority of La Campa's landholders opted to join an *aldea* title. Most of them did not want to pay anything for land that was already theirs, and a good number felt that the private titles were too expensive given their limited financial resources. Some of the people who could afford private land titles decided not to pursue them because they did not want to pay higher taxes or signal their withdrawal from the social relationships tied to communal land rights. *Aldeas* retained their communal woodlots and grazing areas. The municipio lost control over ejidal lands, but retained governance rights to areas that had not been claimed for individual use within the communal lands purchased by the municipio. For the most part, these lands were lowland, communal forests that were not suitable for coffee or staple crops.

The rules of the program effectively eliminated the municipal system of land allocation, and dispersed the processes and responsibilities for record keeping, oversight, and coordination to villages. Under the municipal-level system, residents had gone to the council for all requests, claims, and complaints, and the municipal council had recorded each request and acted upon it. Following the land-titling program, *aldea* councils took over these duties for their jurisdictions. *Aldeas* already had committees to handle local projects and issues, and many adult men had experience serving as auxiliary alcaldes or as council members. As a result, they had an organizational foundation for managing their new land titles. They confirmed the precedent that only residents could own, inherit, or purchase land under the *aldea* titles, and land transactions had to be approved by the *aldea* councils. The new system, however, lacked coordination. The municipal council had always been the coordinating body and the mediator of inter-*aldea* land conflicts and other problems. As the new property system went into effect, two *aldeas* entered into a dispute over a communal forest area that both used. Although the forest ended up entirely within one *aldea* title, residents of the other *aldea* continued to collect firewood in the forest and demanded that their traditional access rights be respected. The alcalde intervened, and the *aldeas* accepted council arbitration that led to a mutually acceptable compromise. As a result, the municipal council established a

precedent for its continuing role as a mediator, even though it had not been contemplated by the land-titling program (Tucker 2004). Even in a period of property transformation over which they had limited control, Campeños' experience with self-governance and collective action helped them to establish at least a few appropriate institutional arrangements.

Other examples of institutional innovation occurred as *aldea* councils had to resolve problems that were unforeseen under the guidelines of the land-titling program. INA evidently assumed that most farmers held one parcel of land, or that all the parcels would fall within a single *aldea*. In La Campa, households held an average of three land parcels[19] spread around the municipio. By the end of the land-titling process in 1998, many farmers held parcels under several *aldea* titles. The dispersion of parcels took advantage of different microclimates and reduced risks; the more parcels a farmer owned, the better the chances of a good harvest from at least one of them. But whereas the municipal system had held each landholder accountable to the municipal council, landholders were initially expected to meet obligations to serve in every *aldea* where he or she held land. *Aldea* councils concluded that the obligations were unreasonable. They resolved that landholders would be invited, but not required to attend meetings in every *aldea* where they held land. Each landholder agreed to fulfill responsibilities in his or her place of residence.

In the end, the titling program introduced complexity and eliminated traditional land rights institutions that had worked relatively well. It did not resolve the principal problem that INA had promised to alleviate: access to credit. The people who paid for private titles did improve their chances of getting credit, but only a few La Campa farmers had enough land in coffee to be taken seriously by banks. The situation proved worse for those with land under *aldea* titles. If anyone wanted to obtain credit, the other members had to cosign the loan and agree to cover any default. No one wanted to share the risk without any benefit.

Before *aldea* councils had the chance to consolidate their position, the rules changed again. In 2000, a new alcalde was elected. A native of La Campa who had left to further his education, he had gone on to become a lawyer in San Pedro Sula, then a politician elected to the national congress. He had never lost contact with La Campa; over the years he had used his political contacts and influence to support a secondary school (established in 1993) and other development projects. He entered the alcaldeship eager to move his birthplace into the twenty-first century, and he concurred with neoliberal perspectives on the necessary steps. One of his priorities was to increase the value of La Campa's land so it could sell at market prices. He decided to eliminate the generations-old rule that prohibited residents from selling to outsiders. The municipal council approved the proposal. La Campa residents gained the opportunity to sell their private landholdings at full market price to outsiders and absentee landlords. By 2003, La Campa had its first landless farmers. The subsequent alcalde reversed the law with support of a newly elected council in 2006, however, the law forbidding sales of land to outsiders has not been enforced and nonresidents continue to purchase land in La Campa.

Coffee and Inequality

Through the early years of the coffee expansion, some of the government's neoliberal economic assumptions regarding benefits from market integration and export crops appeared to be coming to fruition for La Campa. The entire population benefited from improved roads, which reduced travel times to market and the nearest hospital. The roads also permitted increased traffic; traveling vendors brought baked goods, foods, school supplies, household goods, and plastic furniture to sell. Instead of one intermittent bus, four buses passed through La Campa making the round trip to Gracias every day. Yet, the benefits from coffee were inequitably distributed.

Municipal records confirm that a majority of the households had some coffee (a basis for municipal taxes), but most coffee continued to be planted in small plots, house gardens, or orchards. Although many households made an effort to increase their coffee production, inequality persisted in the size of coffee plantations. Within La Campa, farmers describe themselves as coffee producers once their plantations reach 0.5 manzana (approximately 0.33 ha).[20] A survey in 1994 showed that 79.4% of the 108 households in the sample raised coffee, but only 18.6% had 0.5 manzana or more. In 1997, a follow-up survey of 38 of these households found that 44.6% had increased their area in coffee over the 3-year interval, but only 8 of these households (21%) had managed to expand their coffee holdings to 0.5 manzana or more. This included new plantations that had yet to produce coffee. The remainder of the sample had no coffee, or had not expanded their plots between 1994 and 1997. Although the sample is small relative to La Campa's population, additional observations support the conclusion that around 20% of the households had established plantations large enough to be considered market-oriented producers by 1997.

Membership in the Honduran Association of Coffee Producers (AHPROCAFE) provides another indication of the inequitable distribution of larger coffee plantations. AHPROCAFE is one of four major coffee-producer organizations in Honduras, and La Campa growers started a local chapter in the early 1990s. AHPROCAFE disseminates information, facilitates access to credit, and distributes funds for road maintenance. The membership count gives an approximate idea of the number of farmers who saw themselves as coffee growers (owners of at least 0.5 manzana of coffee). In 1994, 102 coffee growers had joined the chapter; in 1998 it included 162 members.[21] Although the growth in membership is striking, La Campa had an estimated 809 households.[22] Only one-fifth of La Campa's households had enough coffee and sufficient interest to find membership in AHPROCAFE worthwhile.

As other scholars have noted, processes of market integration and globalization benefit some individuals more than others (Basu 2006; Netting 1993), and the reasons are diverse. Netting (1993) discusses how individual talent and work ethics can lead to very different household economic trajectories, even when people start out with similar resources. Macrolevel political and economic factors influence whether small farms, large farms, or cooperatives have advantages in particular

markets (Collins 1995). Regardless of the specific conditions, development processes often exacerbate existing inequities (Nissanke and Thorbecke 2006). For La Campa, integration into global coffee markets occurred concomitantly with land privatization, changes in traditional governance institutions, and disproportional advantages to those who were already better-off. Those with ambition and adequate resources at the beginning of the coffee boom were able to claim land beyond their subsistence needs, plant coffee, and acquire inputs to attain highly productive plantations. Many people could not.

Despite the trend toward land concentration and inequality, La Campa's early experiences with the coffee market built confidence, and reinforced optimism regarding the benefits of coffee production. The general population saw that coffee growers typically increased their cash income, expanded their coffee plantations, and were able to make improvements to their houses or pay tuition for their children to attend secondary school. Even people who were not able to invest in modern coffee production methods attempted to expand their production through the 1990s. Farmers began to speak of coffee as if it were a panacea for their economic difficulties. At the municipal level, authorities anticipated that government subsidies tied to coffee and the new income from municipal taxes on coffee (captured as a tax on land improvements) would support rapid advances toward long-held goals: improved roads, better communications, education, and health care, and perhaps electricity. As coffee became more prevalent and increased its contributions to household and municipal coffers, it became more important. Informal conversations suggested that people saw coffee as a symbol of wealth, progress, and development. Whether or not farmers adopted "technified" methods, they melded traditional knowledge with information gleaned from IHCAFE agronomists and spread by word of mouth. They created plantations that combined coffee varieties, shade, and inputs in ways that fit their land's characteristics, household economies, and labor resources. By 1999, coffee had become integral to many Campeños' plans, regardless of their economic situation, to improve their lives and create better opportunities for their children. The implications for their community and its forests were nevertheless mixed.

Forest-Change Dynamics

The processes of coffee expansion, decline in common-property institutions, and increasing market linkages appear to represent a context conducive to deforestation. I asked many people about their perceptions of how the forests were changing during the 1990s; the following were typical responses:

> *"There used to be a lot of timber [until] the sawmills came. Now saplings are growing again; water used to be abundant but now it's drier."*[23]
>
> *"It's hard to find firewood now, it [the forest] is destroyed or fenced."*[24]
>
> *"Now we're taking care; before, we didn't. We used to cut down trees even in the middle of town but now there are fewer trees."*[25]
>
> *"The forest used to be beautiful but the sawmills ruined it … now it's recuperating."*[26]

People generally agreed that forests had been diminished and were not the same as they used to be. They did not claim to be protecting forests from use, but they felt their uses were not as destructive as commercial logging. Many people asserted that the logged areas had begun to regrow. Municipal authorities estimated that forests still covered over 60% of municipal lands, and foresters asserted that areas logged in the 1970s and early 1980s had begun to regenerate by the time COHDEFOR was expelled. "There is abundant regrowth in some places," asserted one forester.[27]

Interviews as well as observations indicated a variety of land uses and transformations. Whether or not forests were regenerating, relatively stable, or being cleared varied by location within the municipio and individual land-use decisions. The mountain forests seemed to be experiencing the most dramatic transformations due to new coffee plantations; parts of the lowland forests were recuperating from logging while other parts were being converted to agriculture. During walks between *aldeas* between 1994 and 2000, I saw sections that were dense with growing pine trees or mature forest, interspersed with new or expanding clearings. The view from the ground was too complicated to draw any conclusions about trends in forest-cover change.

Satellite Image Analysis

In order to understand the processes of forest change in La Campa, I worked with colleagues to conduct a time-series analysis of satellite images. The analysis incorporated Landsat 5 TM satellite images from 1987, 1991, 1996, and 2000. All of the images selected were taken in March, which is near the end of the dry season and typically before the first rains. Areas with forest cover are most apparent in the dry season because annual crops have not yet been planted and undergrowth is sparse and dry. The images were geometrically rectified and registered, and subsequently calibrated to correct for sensor drift, sun angle, and atmospheric conditions. An overlay function confirmed that each image overlapped the others exactly. Thereafter, the images were independently classified using training samples (ground-truthing observations) collected in the study area to train the computer to recognize the land-cover classes. The classes for agriculture, young fallows (1–3 years), pasture, settlements, and water (nearly nonexistent) were aggregated to create a nonforest class. The most prominent land cover in the nonforest class is agriculture. The forest class included forested areas with a canopy cover of 25% or more, based on forest plots in La Campa and observations in the surrounding region. The decision to use a "forest" and "nonforest" class allowed me to address the question of whether deforestation or reforestation was occurring; the use of two classes also facilitated the multitemporal analysis. An independent, supervised classification was undertaken for each of the four images using a Gaussian maximum-likelihood classifier. Classification accuracies exceeded 85% for each image. Subsequently, a change-detection analysis was carried out to identify changes in land cover across each two-date interval. An image grid-addition technique was used to detect land-cover changes across the three image intervals (1987–1991,

1991–1996, and 1996–2000). The final result was a categorical map (change image) that revealed trajectories for each pixel across the intervals (Green et al. 2005; Tucker and Southworth 2005).

In March 2000, I conducted ground truthing with a research team to verify the results of the 1987–1991–1996 image analysis and collect training samples for the 2000 image. We collected information on land-cover and land-use histories for 121 randomly selected points in La Campa through direct observation and interviews with landowners. The results showed that 84.4% of the 64 training sample points classified as forest or reforestation in the 1987–1991–1996 time series were correct; 85.9% of the 57 points classified as nonforest or deforestation were correct. Where direct observation contradicted the image classification, a change in land use since 1996 frequently explained the discrepancy (recent land clearing or young fallow). Three points classed as "reforestation" were actually shade coffee. Misclassification also occurred for three points in pine forests; the canopy cover was too sparse to be classified as forest by satellites. In 7.4% of the random points, a discrepancy between the image classification and direct observation occurred near edges of forests or fields, indicating that either GPS error on the ground or classification error had resulted. This field verification provided assurance that the classifications were not the result of additive errors, which can occur as change grids are created during a multitemporal analysis.

Results of Change-Detection Analysis and Factors in Forest Dynamism

The change-detection analysis confirmed that municipal authorities were correct in estimating that approximately 60% of the land was forested during the early 1990s; residents were also correct in asserting that reforestation exceeded deforestation during the mid-1990s. The figures have been updated to reflect the municipio's most recent boundaries, accounting for the separation of Caiquín in 1995, and the area that remains in dispute with Caiquín. Trapichito is not shown because it falls within Caiquín; however, La Campa owns the land title and continues to manage it. Table 5.3 shows the area of La Campa that is in dispute, the total area, and the area above 1,200 m, where coffee is produced for the market.[28] When forest cover

Table 5.3 Characteristics of La Campa's territory

Part of territory	Area (ha)	Percent of total area (%)
Disputed area	1,311.13	11.08
Area at 1,200 m or above	7,673.67	57.07
Total land area (ha)	12,332.57	100

by year is examined, it appears that forests have been expanding gradually since 1991 (Table 5.4). Dynamic changes in forest and nonforest cover become apparent when the change images for each interval are examined (Figs. 5.2, 5.3, and 5.4; Table 5.5).

Table 5.4 Forest cover from satellite image analysis by year

Year	Forest area (ha)	Percent of total area
1987	7,827.21	63.86
1991	7,626.78	62.22
1996	8,193.24	66.84
2000	9,038.52	73.74

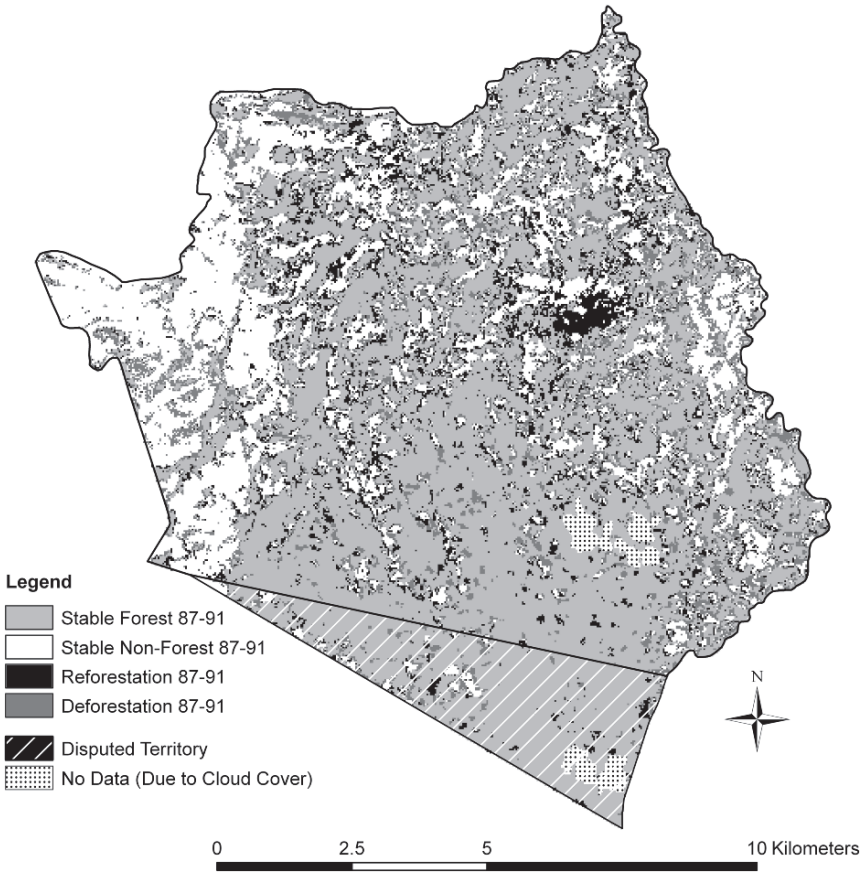

Fig. 5.2 La Campa land-cover change, 1987–1991

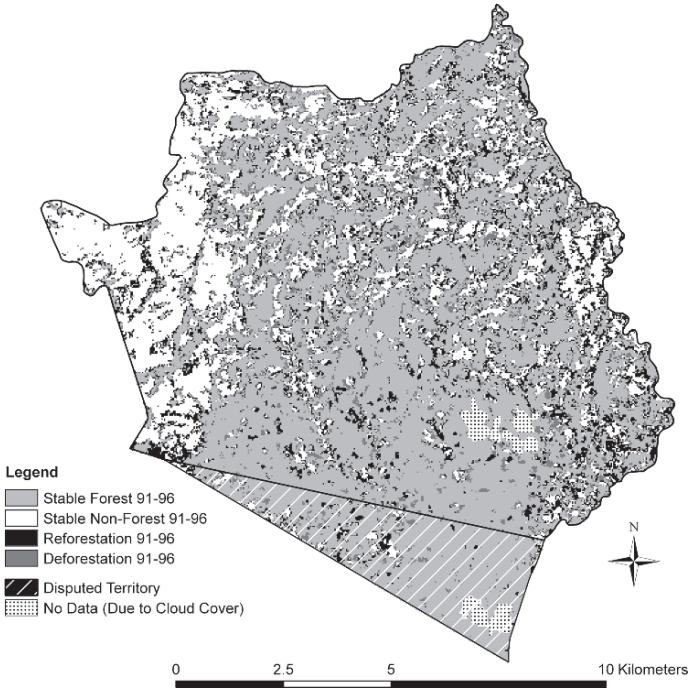

Fig. 5.3 La Campa land-cover change, 1991–1996

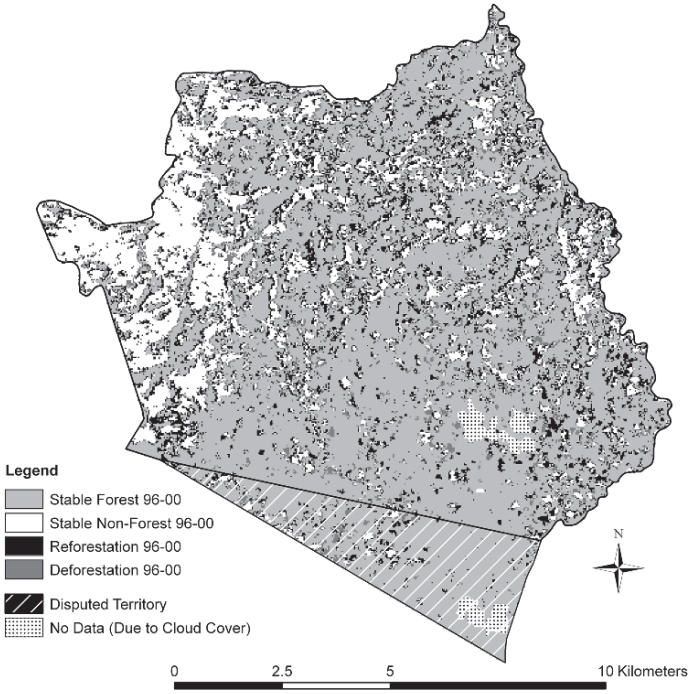

Fig. 5.4 La Campa land-cover change, 1996–2000

Table 5.5 Land-cover change trajectory across four image dates, 1987–1991–1996–2000

Date range	LC trajectory	Area (ha)	Percent (%)
1987–1991–1996–2000	F-F-F-F	5,489.46	44.79
1987–1991–1996–2000	F-F-F-NF	295.92	2.41
1987–1991–1996–2000	F-F-NF-F	477.9	3.90
1987–1991–1996–2000	F-F-NF-NF	1,12.05	0.91
1987–1991–1996–2000	F-NF-F-F	657.18	5.36
1987–1991–1996–2000	F-NF-NF-F	297.54	2.43
1987–1991–1996–2000	F-NF-NF-NF	270.45	2.21
1987–1991–1996–2000	F-NF-F-NF	226.71	1.85
1987–1991–1996–2000	NF-NF-NF-NF	1,848.33	15.08
1987–1991–1996–2000	NF-NF-NF-F	639.54	5.22
1987–1991–1996–2000	NF-NF-F-NF	248.13	2.02
1987–1991–1996–2000	NF-NF-F-F	442.44	3.61
1987–1991–1996–2000	NF-F-NF-NF	116.19	0.95
1987–1991–1996–2000	NF-F-F-NF	100.8	0.82
1987–1991–1996–2000	NF-F-F-F	732.6	5.98
1987–1991–1996–2000	NF-F-NF-F	301.86	2.46

F = Forest; NF = Nonforest

Table 5.6 Change in land cover, 1987–2000

Date range	Land-cover change	Area (ha)	Percent (%)
1987–1991	Reforestation	1,251.45	10.21
1987–1991	Deforestation	1,451.88	11.85
1991–1996	Reforestation	1,574.46	12.85
1991–1996	Deforestation	1,008.00	8.22
1996–2000	Reforestation	1,716.84	14.01
1996–2000	Deforestation	8,71.56	7.11

Reforestation

In each forest-cover change image, regrowth is scattered in small patches. Reforestation mainly represents young fallows (approximately 5–15 years old), that have grown enough to exceed 25% canopy cover. The pace of regeneration relates to soil quality and other biophysical conditions of the site, which can vary with respect to slope and prior use. For the 1987–1991 interval, a large area of reforestation in the upper right (northeast) part of La Campa is the result of regrowth after a forest fire.[29] In addressing the evidence for reforestation between 1991 and 1996 (Tables 5.5 and 5.6), two processes appear to be major contributing factors: (1) abandonment of marginal fields to the fallow cycle and (2) regrowth of logged or burned areas through natural successional processes. First, the patches of regrowth in the southwest (lower left) part of the municipio occur on logged sections; some of these areas were reportedly left in highly disturbed and eroded conditions by loggers. Logged areas that are regenerating tend to be in sections furthest from settlements or on land unfavorable for agriculture. Wherever people left logged areas

alone, pine forests sprouted through natural succession. Second, fields left to fallow in the mid- to late 1980s were secondary successional forests by the mid-1990s. COHDEFOR's expulsion brought on a period of new claims for land, as discussed above, and a corresponding abandonment or fallowing of marginal fields. One might expect that an equal area would be cleared as had been fallowed, but several factors changed that equation, especially increasing availability of fertilizer and a greater frequency of plowing in association with fertilizer and extended cultivation. These factors can result in greater productivity, so farmers with any of these advantages needed less area to produce crops.

A small fraction of the regrowth in the 1991–1996 interval may be attributed to the expanding plantations of shade coffee. While it is true that maturing coffee fields with shade are classed as reforestation, new coffee fields appear as deforestation or nonforest for several years after planting, because it takes some time for canopy cover to shade the ground. In addition, many farmers were experimenting with sun-grown coffee at that time, and IHCAFE and AHPROCAFE figures show that coffee fields represented only 1% of the municipal land area by 1996. Those figures probably undercount the total area in coffee because they exclude the small plots (less than 0.3 ha) planted by producers who did not grow enough coffee to find participation in IHCAFE programs worthwhile. Even if expanding shade coffee represented 2% of the land area by 1996, it was not enough to account for the reforestation trend.

In the 1996–2000 interval, small patches of reforestation evidently represent fallowed agricultural fields, secondary successions expanding on the edges of stable forests, and maturing plantations of shade-grown coffee that were established in the early to mid-1990s. The expansion of coffee reduced the area dedicated to milpas and pasture; evidently people with sufficient land and labor chose to invest in coffee rather than maintain a maize surplus or livestock. Even though people in La Campa generally like to own livestock, farmers report a decline in their livestock ownership during the 1990s. Several factors contribute to this process: farmer decisions to invest in coffee rather than livestock, perceived risks of investment in livestock because of disease incidence and thievery, and reduced area in communal pasture that formerly provided free grazing. Only a few farmers reported livestock as a significant source of income. As farmers invested more in coffee instead of milpas and livestock, cleared land that was not appropriate for coffee production or plowing tended to be put in fallow. Through informal conversations with farmers in the highlands, I learned that some decided to let areas grow back or expand because they liked to have a patch of forest to provide firewood and timber for household use. In many cases, they reported that the forest would provide land to expand coffee production or to pass on to their children. Three farmers expressed an explicitly conservationist rationale; one of them told me that he had decided to conserve and expand forest on his land to protect a spring and provide a refuge for wild animals. He had allowed 10 ha of pasture and fields to regrow as forest through claiming and protecting land over a 30-year period. Out-migration also appears to be a contributing factor to forest regrowth in certain patches; household surveys revealed several

instances in which adult children had left to work in an urban area and their fields were lying fallow under their parents' stewardship. Given that household surveys did not track migration's impact on land use, it is not possible to determine the extent to which permanent and circular migration by La Campa landholders contributed to forest expansion between 1991 and 2000. Another factor appears to be declining dependence on agriculture among some segments of the population (Chapter 7).

Deforestation

Deforestation on the landscape primarily reflects clearing of new fields for annual crops and coffee plantations. A smaller amount of the deforestation represents the area cleared for houselots or public buildings, such as new schools. In the 1987–1991 interval, deforestation slightly outpaced reforestation, apparently tied to the clearing for houselots, coffee, and new agricultural fields that occurred after COHDEFOR's expulsion. Subsequently, deforestation occurs at a slower rate than reforestation processes. Trajectories of F-F-NF-NF and F-NF-NF-NF (F = forest; NF = nonforest) most likely represent clearings for permanent use. These represent 3.12% of the change on the landscape. Around the image, patches of deforestation also result from the thinning of communal forests where harvesting exceeds the rate of regrowth, and canopy cover falls below 25%. Given that these dry tropical pine forests tend to be sparse and open, even small changes in canopy cover can be enough to move a pixel from forest to nonforest class. For example, one of the randomly selected training sample points in 2000 fell in the middle of a communal forest. It had been classified as forest in 1996, and nonforest in 2000, but trees grew all around. At this particular location, however, a large pine tree had died and fallen to the ground. Evidently the loss of that single tree's crown cover had switched the classification to nonforest.

Stable Nonforest

Areas that have long been occupied by settlements and cultivated fields dominate the nonforest class (see Table 5.5). Rocky outcroppings, patches of long-enduring pasture, and soccer fields constitute most of the remainder. The majority of stable nonforest is located in the lowlands, along the principal road to Gracias and where the valleys of Nueva Esperanza and the plains of Monqueta and Jilguarapis were cleared by loggers and settled by farmers. Across all four image dates, only 15.08% consistently has been nonforest. Some of the nonforest area, particularly along the western edge of the municipio, includes lowland communal woodlots and livestock zones where former resin tapping and logging degraded the soil, and ongoing firewood harvesting inhibits forest regrowth. Sparse tree cover nonetheless endures and regeneration is occurring slowly in the less accessible sections.

Stable Forest

The municipio's stable forest area represents 44.79% of the total land area. Most of these forests lie in the mountains despite the expansion of coffee; the Montaña Camapara is the largest, densest patch of forest that remains in La Campa (although it now falls within the disputed zone claimed by Caiquín). Most of the enduring pine-oak forests are sparse and located at a distance from the municipio's major population centers (the Centro, Cruz Alta, Nueva Esperanza, Mataras, and Mescalio). Older, heavily shaded orchards and coffee fields (less than 0.25–0.5 ha) are also counted as forest cover across all images. These orchards often grow in conjunction with pine trees or adjacent to forests, so it is not possible to distinguish them from forest. Based on the average size of orchards, they represent less than 0.5% of the municipio's total area. The image analyses do not, however, capture the process of forest thinning that residents have observed, particularly in communal woodlots and livestock zones. A good deal more of the municipio, including several public woodlots near the Centro, have a number of standing trees, but they have become too sparse to be interpreted as forest in satellite image analyses. Nevertheless, the proportion of stable forest is striking, and suggests that institutional factors have helped to maintain the forest cover. In particular, the municipio's prohibition on logging slowed the progression of forest destruction. The council supported public woodlots and grazing areas, which *aldea* residents protected for their common benefit. Municipal government has intermittently placed constraints on forest clearing, and residents have helped to limit excessive deforestation by voicing their demands to the council and complaining about individuals who violated norms and rules for claiming land. As mentioned above, a number of farmers also decided to maintain patches of forest as they claimed land for their private use.

Dynamic Land Cover

The most striking aspect of the change-detection analysis is the dynamism that appears in the land-cover change trajectories. Nearly 40% of the landscape experienced a change in land cover between 1987 and 2000. Even with the decline of shifting agriculture with annual slash-and-burn fields, La Campa's landscape retains the vestiges of the forest-field-fallow cycle. Farmers clearing new land or fallows still use slash-and-burn methods, and farmers continue to return long-cultivated fields to fallow if they become overgrown with weeds or too infertile. Cyclical processes also relate to the use of marginal patches of land for a short time, followed by brief fallows. This pattern of use occurs more commonly among poorer households that have enough land for field rotation but are unable to establish permanent cultivation due to the marginality of their land or inadequate resources to purchase fertilizer. For example, the trajectories of F-NF-NF-F, NF-F-F-NF (3.25% of the change image) appear to fall in this category. Part of the dynamism relates to the biophysical characteristics of the region. The relatively thin soils that typify most of La Campa make it difficult to maintain land under permanent culti-

vation, even with the use of chemical fertilizers. Farmers leave land in fallow to renew fertility, as well as to provide forest products in the interim. The cycling between forests and fields represents an effective adaptation to the constraints of the environment for agriculture (Vasey 1979).

The relatively open canopy cover of the pine-oak forests also contributes to the appearance of dynamism. The growth or loss of a few trees can change the image classification that is the basis for quantifying forest-cover change. Thus the trajectories that indicate constant switching between forest and nonforest cover (F-NF-F-NF or NF-F-NF-F) are less likely to be genuine changes in land use so much as small changes in canopy cover in sparse forests, shaded coffee fields, or orchards. Such anomalous changes represent 4.31% of the observed dynamism, yet they also imply the dynamic interactions between people and the landscape through small-scale decisions (cutting a tree for firewood, trimming shade trees in coffee fields, or putting off pruning until shade becomes dense). Most land-cover changes cycled across longer intervals of 8–10 years. In addition to fallow cycles, dynamic changes can relate to unplanned patterns of use and disuse as farmers find themselves unable to cultivate parcels, heirs migrate to work outside the municipio, temporary clearings are made, or other factors lead to abandoning or clearing land. More broadly, land cover reflects the ongoing changes brought on by logging, adoption of export-oriented coffee, improving transportation networks, and changes in institutional arrangements that permitted the de facto privatization of much of La Campa's common property.

These processes have had different impacts across La Campa's territory and over time; lowland forests experienced logging excesses during the 1970s and 1980s, while highland forests became the focus for conversion to coffee plantations in the 1980s and 1990s. Areas near settlements have lost more forest, but households have also planted orchards and living fences, or left areas to regrow. Areas located further from roads and at higher altitudes have tended to retain more forest, but with the expansion of coffee, these "remote" locations have had increasing pressures from ambitious farmers. Thus, patterns of privatization and forest conversion have proceeded unevenly across the landscape, in relationship to perceived incentives, institutional arrangements and transformations, and individual or household-level actions. The patchiness of the landscape reveals a dynamic history and current processes of change that link, in turn, to national policies and programs that have promoted various means to stimulate economic production: state-controlled forest production, land titling and privatization, and incentives for export coffee production.

In summary, the dynamism in the landscape reflects people's adaptations and comprehension of the land's biophysical characteristics and variations, historical and current land-use patterns, and higher-level political and economic impacts on the municipio. This dynamism provides a counterpoint to representations of human-forest relationships as linear processes. It suggests that forest transformations can have cyclical elements of destruction and regrowth even as continued exploitation leads to cumulative changes through time. In places where forests persist despite long-standing exploitation, transformational processes of clearing and fallowing land contribute to forest cover maintenance as well as human subsistence. In La Campa, part of the

forest cover is temporary and transitional. As patches are cleared and others are fallowed, overall forest area is conserved but a significant proportion is cycled in and out of fallow over decadal or longer intervals. Even so, this transitional forest cover provides shelter for wildlife, sources of firewood and timber, and helps (even temporarily) with conservation of water and soil. It is not the mature, ostensibly permanent forest cover that conservationists traditionally aim to foster, but it serves to meet human needs and provides a buffer for the areas on the landscape with enduring forest cover. If considered within a narrow time frame, La Campa's experience conforms in some ways with forest transition theory; forest cover declined as Honduras pursued forestry as a path to development, and as economic contexts offered alternatives, the forest is recovering (cf. Klooster 2003; Rudel 2002). However, La Campa also suggests a different interpretation, particularly if current quantitative data are linked to what is known about historical change processes. Today, and evidently in the past, the landscape has diverse patches of forest that reflect many different histories of use and transformation, which can be conceptualized as varying stages of forest transition within a relatively small area. A focus on deforestation, afforestation, or cyclical patterns proves unsatisfactory to understand the dynamic interactions between people and forests in this long-inhabited, continuously exploited landscape. The depleted nature of the lowland forests, the decline in wildlife, and the conversion of mountain forests to coffee indicate the trade-offs that people have made through time, sometimes unintentionally, between supporting livelihoods and maintaining their resource base. Their forests also bear the scars of state intervention. La Campa's experience nonetheless indicates that a level of resilience in human-forest interactions may exist in contexts where diverse interventions induce simultaneous processes of deforestation, afforestation, degradation, and recuperation on a landscape.

Chapter 6
Coffee Culture, Crisis, and Adaptation

Global and Local Dimensions of the Coffee Crisis, 1999–2003

Coffee has long been La Campa's beverage of choice. Served weak and sweet, coffee simmers in a pot on wood-burning hearths through most of the day. The whole family drinks it with every meal; toddlers sip it from plastic baby bottles. Compared to other beverages, coffee has the advantages of being a household crop, readily available, and inexpensive. A few spoonfuls of coffee grounds can be made to last all day by adding water and sugar or panela (hardened treacle). For households that do not produce coffee, it can be easily obtained from neighbors or bought in small bags, sold for a few cents in any of the tiny, housefront stores. Expansion in coffee production and market integration through the 1990s transformed coffee from a subsistence crop into La Campa's principal commodity. Municipal authorities used coffee production as the main criterion for taxing residents. As households adopted or expanded market-oriented coffee production, coffee began to rival maize as the most important crop, and other traditional activities such as pottery making and sugarcane production (for panela) declined because their productive schedules competed with the coffee harvest. The coffee-producing area increased from an estimated 160 ha in 1995 to 284 ha by 1999, and coffee production grew from 74,889 to 344,294 kg.[1,2] Many La Campa households had become dependent to some degree on income from coffee, and they expected that it would continue to grow if they increased their production.

At the end of the twentieth century, however, coffee prices plunged to their lowest levels in 100 years[3] (Lewin et al. 2004; Osorio 2002). For the 1999–2000 harvest, prognosticators had forecasted a slight downturn in worldwide production and modest price increases given that Colombia and Brazil lost part of their crop to bad weather. Instead, large harvests from Africa and Southeast Asia more than compensated for the declines in Latin America, and a bumper crop of coffee flooded the market (Flores de la Vega et al. 2002). The coffee crisis that ensued had its roots in the demise of the International Coffee Agreement (ICA) in 1989 (Osorio 2004; Ponte 2002). Freed of regulatory mechanisms, coffee-producing nations increased production at will through the 1990s. Although severe frosts damaged Brazil's coffee plantations in 1994 and led to a brief period of higher prices,

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

Brazilian producers replanted and expanded their fields (Lewin et al. 2004). Coffee harvests rose, and new players in the international coffee markets contributed to the global glut. Vietnam emerged as the world's third-largest coffee producer in 1999 (ICO 1999) and challenged Colombia's position of second-largest producer as its expansion continued (D'Haeze et al. 2005). Coffee production exceeded demand as the supply grew, and prices declined.

Increasing supply represented only one of the transformations that drove down coffee prices in international markets. Importers, roasters, and distributors took advantage of the ICA's disintegration to extend their control over the coffee commodity chain (Daviron and Ponte 2005). New technology allowed roasters to improve the taste of low-quality Robusta coffee, while new management techniques reduced the quantity of coffee beans that buyers and distributors had to keep on hand in warehouses. Coffee retailers added value by associating coffee with social attributes and creating a wide range of specialty products that had as much to do with appealing to certain values as selling coffee. These processes continue, as Daviron and Ponte (2005) comment: "… coffee sold on the international market and the coffee sold as a final product to the consumer are becoming increasingly 'different.' This happens because it is not the *material quality* 'content' that roasters, retailers, and cafés are selling, but mainly *symbolic* and *in-person service quality* attributes" (p. xvii). The resulting structural transformations in the market have led to an increasingly inequitable distribution of profits (Lewin et al. 2004; Ponte 2002; Talbot 1997). In the 1980s, coffee growers received an estimated 20% of the profits. By 2000, that proportion dropped close to 10% (Talbot 2004).

Throughout Central America, falling prices sent growers into debt. Unemployment and underemployment increased markedly among the 1.4 million people who worked directly in coffee production. Temporary employment declined by 20%, and permanent employment fell by 50% (Flores de la Vega et al. 2002; IDB/USAID/WB 2002; Varangis et al. 2003). During the 2000–2001 harvest, prices fell so low that most growers found it hard to pay pickers. Coffee beans rotted on the bushes, and some coffee growers abandoned their fields (Osorio 2004). Malnutrition increased among the poor rural population, social tensions increased, and migration to urban areas and across borders grew (Bloomer 2003; Osorio 2005). The crisis lasted through the 2002–2003 harvest season, and then prices began to recover enough to compensate producers' costs. Market analysts, nonetheless, pointed out that the importers' and distributors' market power constrained the possibility that the coffee growers' share of earnings would increase (IDB/USAID/WB 2002; Lewin et al. 2004).

The coffee crisis did not hit everywhere equally. As prices fell, La Campa's coffee growers made a variety of adjustments. Life became more difficult, but with few exceptions, Campeño coffee producers did not endure hunger or loss of livelihoods, or find it necessary to abandon their coffee and out-migrate. Most households continued to pick coffee; new fields planted before the crisis began to produce and municipal coffee production continued its expansion throughout the crisis despite the dismal market price. Given that the coffee crisis had more severe impacts elsewhere in the region, this chapter explores the experiences of Campeño coffee

producers during the crisis, and the factors that contributed to their relative resilience compared to their peers in other parts of Central America.

Interviews and a survey of coffee-producing households, conducted in February and March of 2003, provide the principal data to examine the impacts of the coffee crisis in La Campa. The survey was drawn randomly from the 2002 municipal tax records, which listed every household with at least 1 *tarea* (0.04 ha) of coffee. Interviews were conducted purposively with a subset of the sample respondents, and several larger producers who did not fall in the sample. In order to understand Campeños' resilience and adaptive choices, I first define the concepts and consider the hardships experienced by La Campa coffee growers during the coffee crisis. Subsequently, I focus on the farmers' adaptations to the crisis, and what their strategies suggest for development and forest-cover change in La Campa.

Hardship and Resilience in the Coffee Crisis

Resilience and hardship are relative concepts. According to the Resilience Alliance (2005b), "A resilient ecosystem can withstand shocks and rebuild itself when necessary. Resilience in social systems has the added capacity of humans to anticipate and plan for the future." Thus resilience includes the ability to learn, self-organize, and recuperate when shocks occur. For this discussion, "resilience" is defined as the ability of an individual or a group to cope, persist, and adapt to hardship, crisis, or changes in the status quo while increasing their ability to meet future challenges. "Hardship" refers to an experience of severe stress, difficulty, adversity, or suffering that challenges the status quo of people's lives. Although I focus on economic hardships, any aspect of a person's life can present hardship. Resilience becomes apparent when people (or ecosystems) encounter stresses. Adaptive capacity provides another useful concept; it means the degree to which individuals, groups, and social-environmental systems can adjust to hardship without significant declines in health, disruptions of social relations, or degradation of the natural environment. Adaptive capacity is a central component of resilience (Resilience Alliance 2005a).

One of the clearest indicators of economic hardship is difficulty in meeting basic needs. During the 2003 household survey, I asked respondents whether the coffee crisis had reduced their ability to obtain basic goods, clothing, medical care, school supplies, or other goods and services. Across the sample of 37 households, 33 households (89.2%) reported that the coffee crisis had reduced their ability to meet at least one of their needs. Clearly, the coffee crisis had a widespread impact. As discussed previously, however, the expansion of coffee had uneven benefits across the population. It seemed likely that the coffee crisis would also impact people differentially, and that people who have the most coffee (presumably most dependent on its income) would be the most impacted by the crisis.

Instead, the data reveal that the households who had less land in coffee (2 ha or less) more frequently reported difficulties in meeting their needs for basic goods, clothing, medical care, or school supplies compared to the larger coffee

Table 6.1 Effects of the coffee crisis on the ability to meet necessities by coffee plantation size

	Percent of total households[a] with area in coffee of			
Low coffee prices have	≤0.6 ha % (N = 13)	0.7–2.0 ha % (N = 14)	≥2.1 ha % (N = 10)	Total households % (Total N = 37)
Reduced ability to obtain basic goods (N)	24.3 (9)	16.2 (6)	10.8 (4)	51.3 (19)
Reduced ability to buy clothing (N)	18.9 (7)	8.1 (3)	5.4 (2)	32.4 (12)
Reduced ability to pay for health care (N)	13.5 (5)	16.2 (6)	0 (0)	29.7 (11)
Reduced ability to buy school supplies (N)	18.9 (7)	5.4 (2)	2.7 (1)	27.0 (10)
Reduced ability to meet other needs (N)	5.4 (2)	13.5 (5)	21.6 (8)	40.5 (15)
Total households with reduced ability to obtain one or more necessities (N)[b]	29.7 (11)	32.4 (12)	27.0 (10)	89.2 (33)

[a] Many households reported more than one necessity that could not be met
[b] Each household is counted only once in the summary total
Source: 2003 household survey conducted by author and assistants

producers (Table 6.1). Households that reported less land in coffee also tended to be those that had less total land area and fewer financial resources compared to other Campeño households. In La Campa, as elsewhere, the coffee crisis had the gravest effects on those who had the fewest resources. In only one aspect did larger coffee producers more frequently report difficulties than smaller producers: reduced ability to meet other needs. The growers who cited this problem said that they had not been able to sustain adequate inputs of fertilizer, labor, or other maintenance for their coffee plantations. By contrast, many smaller producers reported that they did not buy fertilizer, or always applied less than the recommended amount. Many of these producers did not report a reduction in labor inputs, but because they depended primarily on household labor, they could not reduce household expenditures by reducing labor inputs.

The fact that some households did not report economic stresses due to the coffee crisis also merits attention. While a slight majority noted difficulty in obtaining basic necessities, less than one third of all households reported problems in obtaining clothing, school supplies, or medical care. Four households reported no difficulties at all. These results reflect the diversity in people's access to social and natural resources, alternative employment options, and to some degree, individual perceptions of hardship. Coffee growers varied in the criteria by which they assessed the coffee crisis. Some of the respondents had always lived with minimal resources. As long as they have food, shelter, and health, they do not complain for lack of goods and services that they have never had. As one coffee grower explained to me, "We don't use fertilizer because we can't afford it. We raise our own food. We don't have very much coffee … when the prices are high, we might be able to buy

new clothing. But when the prices are low, it doesn't change the way we live." From his perspective, buying fertilizer or new clothes was not a necessity but a rare occurrence under any circumstances. He and his family were accustomed to living without goods and services that others might consider critical. The coffee crisis did not represent a hardship beyond the usual challenges of his daily life, and he saw coffee as a supplement to his livelihood rather than a primary source of income.

Don Victor, a young coffee grower from a relatively well-off La Campa family, acknowledged that low coffee prices made it more difficult for him to purchase basic goods and clothing for his wife and three young children. Then he paused and said, "But I can't say that it has affected us much; no, I can't say that." The comment seemed contradictory, but he explained that he had harvested plenty of maize to feed his family. He added that his income had increased during the coffee crisis because a maturing coffee field had come into production. Even though coffee prices were low, the expanded production and sales had added to his total household income. At the same time, he acknowledged that the increase in coffee area added to his expenses for chemical and labor inputs, thus he had barely broken even. Then he shared that he had survived a serious car accident that had totaled his pickup. The coffee crisis paled by comparison with his brush with death.

Such complexity characterized farmers' responses regarding their experiences with the coffee crisis. Many factors combined to influence individual assessments of the coffee crisis and its impacts on their lives. However, shortfalls in household budgets, crop losses, illness, accidents, and inadequate medical care are familiar events for most Campeños. Expanding coffee production, market integration, and good prices during the 1990s had not resolved these problems. Campeños must adjust to repeated challenges to life and livelihood, and this most likely contributes to their resilience. In addition, most Campeños pursue a variety of livelihood activities.

In 2003, Juancito Molino, the son of one of the largest coffee growers in La Campa, had 2.8 ha in coffee, a new house under construction in Mescalio, and an eighth-grade education. He and his wife, a primary school teacher, had many material resources, including a motorcycle, solar panel, black-and-white television, and a propane refrigerator. By La Campa standards, they were wealthy. When coffee prices fell, they could not cover agricultural expenses or meet outstanding loan obligations. Their lives changed radically. To pay his debts, Juancito sold a parcel of mature coffee, and moved to live with relatives in Gracias. He took a job as an ambulance driver for the hospital in Gracias. His wife left her teaching position in Mescalio to be with Juancito, and decided to continue her studies toward a degree in secondary education to obtain a higher salary. Juancito noted: "Everything is related. When prices are low, it's not possible to maintain the plantations, and pests cause damage. If you get sick, there's no money for the doctor. And if the weather is bad [for the maize harvest], there are no resources to cover that either. Everything is difficult when prices are low." Nevertheless, Juancito planned to plant more coffee when prices improved. By living with extended family, he and his wife reduced their living expenses while they waited out the crisis.

As Juancito's experience suggests, reductions in household income due to low coffee prices provide another indicator of the impacts of the coffee crisis in La Campa. Just over a third of the sample (37.8%) said that the coffee crisis had reduced their incomes. Nearly a third of the surveyed farmers asserted that they had experienced no change in income (32.4%), while 29.7% reported that they had increased their income during the years of the coffee crisis. No clear relationships emerge between the area planted in coffee and changes in household income during the coffee crisis (Table 6.2). However, the people who reported a decline in household income, regardless of the size of their coffee plantations, were more likely to report difficulty in purchasing basic goods (Table 6.3). Four households who reported income improvements said that they still found it difficult to obtain basic goods; their expenses had grown more quickly than their incomes. The coffee crisis exacerbated their circumstances, and people's hopes to improve their lives in the short term had to be adjusted as coffee prices plunged. Most families nevertheless managed to produce enough maize and other crops to meet their demand for food; they were not dependent on coffee income to feed themselves.

A comparison of La Campa's experiences with those of other coffee-growing communities helps to contextualize Campeños' relative resilience during the coffee crisis. Comparable data were collected from small coffee growers in Guatemalan and Mexican communities during a similar period in 2003 (Eakin et al. 2006). In Guatemala, 67.9% of the respondents reported a decline in income, and 96.4% said that the coffee crisis had reduced their ability to purchase basic goods. For Mexico, 86.7% reported a drop in household income, while 96.7% noted that they had trou-

Table 6.2 Relationship between area in coffee and income change during the coffee crisis

	Percent of total households with area in coffee of			Total households
Change in income	≤0.6 ha % (N)	0.7–2.0 ha % (N)	≥2.1 ha % (N)	% (N)
Income decreased	13.5 (5)	13.5 (5)	10.8 (4)	37.8 (14)
No change in income	16.2 (6)	8.1 (3)	8.1 (3)	32.4 (12)
Increased income	5.4 (2)	16.2 (6)	8.1 (3)	29.7 (11)
Total % (N)	35.1 (13)	37.8 (14)	27.0 (10)	100 (37)

Source: 2003 household survey conducted by author and assistants

Table 6.3 Relationship between income change and ability to obtain basic goods

	Reduced ability to obtain basic goods		
Change in income	Yes % (N)	No % (N)	Total households % (N)
Income decreased	29.7 (11)	8.1 (3)	37.8 (14)
No change in income	10.8 (4)	21.6 (8)	32.4 (12)
Increased income	10.8 (4)	18.9 (7)	29.7 (11)
Total % (N)	51.3 (19)	48.6 (18)	100 (37)

Source: 2003 household survey conducted by author and assistants

Table 6.4 Comparison of coffee crisis impacts and major household concerns in Guatemala, Honduras, and Mexico

Percent of households that experienced	Guatemala % (Total N = 28)	Mexico % (Total N = 60)	La Campa, Honduras % (Total N = 37)
Decreased income (N)	67.9 (19)	86.7 (52)	37.8 (14)
Reduced ability to obtain basic goods (N)	96.4 (27)	96.7 (58)	51.4 (19)
Reduced ability to purchase clothing (N)	85.7 (24)	71.7 (43)	32.4 (12)
Major concerns related to low coffee prices (N)	89.3 (25)	81.7 (49)	56.8 (21)
Major concerns related to illness in family (N)	46.4 (13)	63.3 (38)	67.6 (25)

Source: 2003 household survey conducted by author and assistants

ble buying basic goods. In general, more of the Guatemalan and Mexican coffee growers said that their families had a difficult time meeting all of their needs, and they reported fewer adaptations to the coffee crisis than La Campa farmers. Nearly all of the Guatemalan and Mexican respondents answered that low coffee prices represented a major preoccupation for their households, 89.3% and 81.7% respectively. By contrast, 56.8% of La Campa respondents agreed that low coffee prices were a major concern (Table 6.4), but worried more often about illness striking the family (67.6%). In light of the contrasts with the Guatemalan and Mexican respondents, Campeños' responses raise the question of how they adapted to the crisis. Did aspects of life in La Campa provide resources that were not available to coffee growers in other locales?

Adaptations to the Coffee Crisis

Campeños pursued a wide range of adaptive strategies to mitigate the difficulties posed by severely reduced income from coffee. Similar to coffee producers throughout Central America, many of the producers in the sample (43%) reported reductions in coffee maintenance during the crisis. Most had reduced fertilizer use and weeding (Table 6.5). The few who applied fumigants stopped their use. Farmers usually make these adjustments as a last resort, because reducing maintenance in coffee plantations has deleterious consequences. Plant productivity declines, susceptibility to disease increases, and infestations spread (IHCAFE 2001). The remaining 57% who made no changes in their coffee management were mainly those who applied few or no chemical inputs, had less than 0.7 ha in coffee, and depended primarily on household labor. Only two household heads reported that they leveraged other resources to maintain coffee plantations without cutting back on fertilizer or labor inputs. One sold his ox, the other drew on income from his wife and children who had salaried positions. The latter man explained, "I have lost money to maintain the coffee, but I have other resources [to draw on]." These

Table 6.5 Types of adaptations and livelihood strategies reported by coffee growers

Types of adaptations (1999–2003)[a]	Percent of households % (Total N = 37)
Borrowing money[b]	59.5 (22)
Buying land[c]	51.4 (19)
Buying livestock	46.0 (17)
Selling livestock	43.2 (16)
Reducing investments in coffee (includes labor reductions)	43.2 (16)
Adding new crops	37.8 (14)
Planting (or preparing to plant) more coffee	37.8 (14)
Expanding area planted in subsistence crops	27.0 (10)
Selling land	21.6 (8)
Reducing area planted in subsistence crops	18.9 (7)
Adopting new income-oriented activities[d]	10.8 (4)
Total households that made at least one livelihood change	75.7 (28)

[a] Many households reported multiple adaptations

[b] Includes loans during the preceding 5 years. Two of the borrowers had repaid their loans by 2003

[c] Purchases of land were not necessarily related to the coffee crisis

[d] Includes off-farm employment and new business ventures (e.g., fish pond, hog production)

Source: 2003 household survey conducted by author and assistants

two men believed firmly that coffee prices would improve soon, and they did not wish the health of their plantations to decline as long as they could find a way to cover the costs.

Borrowing money represented the single most common strategy to overcome short-term losses of income. More than half (59.5%) of the sample took on debt during the coffee crisis. Eleven families borrowed money through their memberships in microcredit cooperatives, which had been established in the 1990s with seed money from several non-government organizations (NGOs). The borrowed amounts were small, usually less than 500 lempiras (about $60). Three farmers reported loans from relatives or friends, and one received an advance from the intermediary who purchased his coffee. Six respondents reported taking out modest loans through credit programs offered to coffee producers by banks and coffee-related organizations, but these programs evaporated as the crisis dragged on. Those who obtained bank loans had privately titled land to put up as collateral. In contrast to many coffee producers in other parts of Central America, only a few Campeños had outstanding debts when the coffee crisis began. Ironically, their limited access to credit from banks, since most did not have private land titles, had protected them from indebtedness at a time when they could least afford to repay loans.

A variety of adaptations involved changes in land use. Twenty-seven percent (27%) expanded the area planted in maize, beans, or sugarcane, and 18.9% reduced the area planted in subsistence crops. Campeños sought alternative agricultural commodities; 37.8% began to plant crops that they had not planted previously.

Sugarcane was a popular choice for those with available land at lower elevations. Farmers explained that sugarcane had become more profitable due to the climbing price for white sugar. Rural households had returned to buying traditional panela, and driven up its price. One group of farmers pooled their resources to buy a *trapiche* (a simple sugarcane mill) and planted a large area with the goal of selling panela in local and regional markets. Other farmers planted yuca or vegetables, and one person started an orange tree orchard with an eye to the market. A small group of men and women started a vegetable-growing cooperative in Cruz Alta, using land loaned by a member and start-up funds donated by an NGO. A notable dimension of diversification in La Campa is that it did not occur under government programs, which in some areas have promoted a single crop for increasing income. Many such programs have failed because markets and consumers cannot absorb a large, sudden increase in the supply of niche crops or specialty items. La Campa farmers independently sought options that appealed to their interests and resources, which resulted in a variety of decisions. As a result, they did not face excessive competition to sell the crops and goods they had decided to produce. When contrasted with Mexican and Guatemalan coffee growers, Campeños demonstrated a wider range of adaptations, especially in changing the area planted, adopting new crops, and adjusting their crop mix (Eakin et al. 2006).

A number of La Campa coffee growers sold or purchased land during the coffee crisis. One fifth (20%) of the sample reported selling land. More than half of the respondents (51.4%) bought land between 1999 and 2003. Land purchases occurred for a variety of reasons, from helping out a neighbor who needed money, to anticipating children's future land needs, to planning for new coffee plantations. Land acquisition showed a strong association with increases in income: 10 of the 11 households with improved incomes bought more land. In three cases, people bought land with money gained by selling a less desirable parcel. While most of Central America's coffee producers struggled to make ends meet, a surprising proportion of La Campa producers were able to expand their landholdings, a choice that could augment their capacity to weather future market shocks. Those fortunate enough to acquire land did so as other residents felt the need to sell it. The existence of households that sold land shed light on an unanticipated gap in the survey: by focusing only on current coffee producers, no data was collected on Campeños who might have been compelled to sell out. Only through interviews did it become clear that the coffee crisis, in conjunction with privatization processes and the municipal council's decision in 2000 to allow land sales to outsiders, had created the first landless farmers in the municipio. Their numbers were small (I learned of only three cases), but it was a dramatic departure from a long tradition in which every adult Campeño had once had an assured right to claim a parcel from communal land for private use. Very little undesignated communal land was left by 2003.

Surprisingly, almost 40% of the farmers in the survey planted (or prepared to plant) more coffee during the coffee crisis. People who planned to expand their coffee were divided almost evenly among farmers with decreased, stable, or increased incomes. These optimists explained that coffee prices always fluctuate,

and they were confident that prices would increase to previous levels again. They wanted to be ready. This attitude apparently contributed to La Campa's steady increases in coffee production during the coffee crisis. The decision to expand coffee also reflected the low wage rate in La Campa compared to most other places. For smallholders, dependence on household labor and labor exchanges allowed coffee to be managed with low labor expenditures. In nearby Santa Bárbara, coffee growers found that the cost of hiring labor exceeded the price they could get for their coffee beans. Meanwhile, the Guatemalan and Mexican farmers did not report plans to expand coffee plantations. They evidently had no interest, too little available land, or inadequate resources to take the risk.

Changes in livestock ownership represented another type of response to income shortfalls. Sales of oxen, horses, or cows bring in money that can be invested in other activities, while livestock purchases represent additional assets for the household. Oxen are prized for their strength, and horses provide the most common form of transportation besides walking. Chickens and pigs are the most numerous domestic animals; they add relatively affordable protein to the diet but they are risky investments. Several people commented that they had lost chickens and piglets to infectious diseases. Although many adaptations reflected market conditions, life events also influenced farmers' decisions. Four households in the survey had experienced the death or serious illness of a family member during the coffee crisis. These households took on debts for medical care or funeral costs, and had to change labor allocations. For other households, the departure of grown children for marriage, off-farm employment, or schooling changed labor availability. A logical decision was to decrease the area planted in subsistence crops.

Interestingly, no one in the survey mentioned that they sold firewood, timber, or non-timber forest products to bolster household income during the crisis. A number of studies have shown that forest resources can provide a form of self-insurance for poor people (Arnold and Ruíz Pérez 2001; Chambers and Leach 1989; Kusters et al. 2006), but despite the availability of forest resources, Campeños did not discuss this aspect. McSweeney (2004) notes that within a rural population, there is likely to be a range of variation in the degree to which people rely on forest products to augment income during times of economic difficulty. Within La Campa, there are several households that sell firewood to neighbors who prefer not to cut it themselves, but there was no indication that this activity increased during the crisis. The demand to buy firewood is low in La Campa because most households cut their own. Selling firewood in Gracias can be profitable, but to do this legally, a permit from the municipal council is required for each sale. I was not able to discover if anyone was selling firewood to Gracias regularly; it appeared to be an intermittent activity. As for non-timber products, the forests provide only a few goods that are valued in the market. Most of these (honey, bee's wax, edible fruits and mushrooms) are too scarce or seasonally limited to represent a reliable source of income. As a result, farmers view the economic value of forests primarily in terms of timber resources and the potential to be converted to other land uses. Municipal laws, availability of other economic options, and a growing awareness that forests provide environmental services (Chapter 7), may also influence Campeños' reliance on forest products as a source of income.

Case Studies of Household Adaptive Strategies

Case studies, drawn primarily from information collected during 2003, illustrate how available resources, household contexts, and individual decisions influenced farmers' experiences with the coffee crisis. The first two cases represent households with relatively more land in coffee and greater resources. The latter two cases illustrate the experiences of La Campa households with relatively few material resources, but which vary in their land areas and social resources.

Two Examples of Better-Off Households

Case 1. Mario Cárcamo and Elena Santos lived in Mataras and represented the upper end of La Campa's socioeconomic spectrum. Their six-room, concrete block house was built around a patio, and they had electricity from a solar panel. They owned 14 ha of land in four parcels, of which 9.5 ha were planted in coffee. They reported that their household income had been halved since the beginning of the coffee crisis. Elena, a schoolteacher, was bringing in a steady income, but it was inadequate to support their two daughters living in Gracias to attend the teacher's college, their three youngest children, and four grandchildren who lived with them. Mario had raised coffee for 13 years. Before the coffee crisis, he had built a concrete *beneficio* (coffee depulping mill), complete with running water, rinsing channels, and large concrete patios for drying the washed beans. In the first 2 years of the coffee crisis, he continued a high level of maintenance for his fields. To cover the costs, he sold off his livestock and borrowed more than $2,000, using their one privately titled parcel as collateral. In the third year of the crisis, he stopped buying fertilizer and fumigants. To save money on labor, he cut back from three weedings per year to one, hired fewer pickers, and reduced the number of pickings. He also planted less maize and beans to save on fertilizer costs, but harvested enough to meet household demand. He did not plant additional crops. In response to my questions, he replied, "What else could I grow? I don't know anything else worth planting." He remained optimistic that coffee prices would improve, and kept abreast of news through his membership in AHPROCAFE's local chapter. From the perspective of his neighbors, he was fortunate. He owned a pickup truck to transport coffee to market, and he earned some income by processing coffee and providing transportation for smaller coffee growers.

Case 2. Juan Rodríguez and Marisela Martínez owned 21 ha of privately titled land at prime coffee-producing elevations. Juan had been growing coffee for 15 years, and had 8.4 ha in production. When I first met them in 1995, they had just moved from their mountain homestead to a white-walled adobe house with a tile floor and five rooms in the Centro. Early in their marriage, he had left to seek work in the United States. On the way, he regretted his decision to leave Marisela, who was pregnant with their first child. He returned, determined to stay with his family and make a living in La Campa. Drawing loans from his extended family, he cleared

6 manzanas (4.2 ha) of mountain forest to plant coffee during the early 1990s. The new plantations expanded the 2 manzanas (1.4 ha) already planted. At the end of 1994, prices spiked and he made unimagined profits. He planted more coffee and bought a pickup truck. By 2003, they had five children between the ages of 4 and 13 years. Juan reported a growing income during the years of the coffee crisis. By using less fertilizer, eliminating fungicides and pesticides, and reducing the frequency of weeding and intensity of picking, he managed to cover minimum maintenance costs. He admitted that things were difficult with low market prices, but declared, "I know exactly what I need to break even. If I can't cover my costs, I'll raze the plantations and find something else to do." As a member of one of the most entrepreneurial families in La Campa, he was already preparing for that eventuality. With one brother, he planted tomatoes to sell in urban markets. With another brother, who had returned from a period of work in the United States, he started a small hog farm. He planned to plant potatoes, expand tomato production, and raise more chickens to sell eggs. Marisela, an excellent cook, sold food during religious holidays to pilgrims who came to worship in the church. Through these ventures, in addition to ample production of maize and beans, they had a relatively secure and robust household economy. Juan was a member of a coffee-growers' association and a microcredit cooperative. He had taken out several small loans, but he had no debts at the time of the survey.

The comparison of Mario's and Juan's experiences points to a key role for diversification to manage market shocks. Juan reduced investments in coffee as soon as the prices fell instead of borrowing to maintain inputs, and he worked with his brothers to develop new sources of income. Mario had more financial responsibilities than Juan, with grown children to support in college. Although Mario had more evident material wealth, he did not see a way to invest in new ventures and still meet his obligations. The men contrasted in their attitudes and personalities. As other scholars have noted (e.g., Netting 1993), individual differences can be an important factor in household resilience and the accumulation of resources. Mario preferred to wait out the coffee crisis; Elena's income made this decision more feasible. Juan saw the coffee crisis as a warning to seek alternatives to support his family. Neither family faced food shortages or serious threats to their well-being. Compared to Mario's and Juan's households, most households in La Campa had fewer resources to draw upon.

Two Examples of Less Advantaged Households

Case 3. Doña Patricia Santos and her husband, Saul González, lived with their seven children (ages 8 months to 13 years) in a one-room house, built partly of adobe and partly of poles with mud caulking. Together they owned 1.75 ha of land under a village title. In 1998, they had sold off a parcel of land to pay medical expenses when a child fell ill. They planted their first coffee in 1997. They had only 0.2 ha of coffee and a similar area for beans. Yuca and pineapple grew around their

plantation, which was shaded by a variety of fruit trees. Although they produced very little coffee, they sold all that they could, and the older children skipped school to work as coffee pickers during the harvest. They had not changed the management of their coffee plantation, but they struggled to maintain a low level of fertilizer inputs. They were not members of AHPROCAFE. Most of their land, composed of three small parcels, was used to raise maize. In 2002, strong winds damaged the ripening maize and they lost 85% of the harvest. When I interviewed Patricia in February 2003, the family had already run out of maize for the year. Patricia was among the few who told me that providing food for her family was her major concern. She was bringing in most of the family's income by selling pottery; she was a founding member of the Palá Pottery Cooperative and had close relationships with the other women. She worked almost every day at her pottery, even when the weather was damp and her hands ached from working the cold, wet clay. When not in the fields, Saul worked long days as an adobe brick maker, which brought in a nominal wage. When I asked her if they had difficulty obtaining basic goods, clothing, or other necessary things, she exclaimed: "We lack for everything!" Patricia asserted, however, that their income had not changed during the coffee crisis. "We don't have enough coffee to make a difference," she noted. "The land gives us what we need."

Case 4. José Perez lived with his wife, Honoria Diaz, and five children (aged 3–10 years) in a three-room, adobe house with a dirt floor. The house was surrounded by blooming flowers and verdant medicinal plants that Honoria collected; fruit trees grew all around. They owned 6.3 ha of land under a village land title. They had 1.4 ha in coffee; their first plantation was 7 years old in 2003. Barring bad weather, they planted enough maize to meet their needs. Despite the coffee crisis, José said that his income had increased slightly that year; a new coffee field had begun to produce, and he had more coffee to sell. He had recently expanded his maize field and planted sugarcane. He sold his oxen team, which he had trained himself, to purchase a *trapiche*. At that time, he had to rent oxen to plow his field, but he was planning to buy two calves to train as oxen when coffee prices went up. In addition, he and Honoria raised onions, garlic, and basil to sell locally. With the assistance of an NGO, he built a pond to raise trout. In the few years before our interview, he had reduced fertilizer inputs for the plantation due to lack of money. The family suffered a setback when one of his brothers died, and then his father-in-law. He went into debt to pay for the funerals and wakes. Friends loaned him the money, and he did not have to pay any interest. José was a member of AHPROCAFE, and he wanted to convince the local chapter to prioritize the construction of a road near his house. From his perspective, the worst thing about the coffee crisis was the lack of resources to maintain his plantations for optimal productivity.

The contrasting situations faced by these two households highlight the importance of adequate landholdings, practical knowledge, social networks, and alternative sources of income. José had enough land to diversify into alternative market crops, and he pursued support and training to start the trout pond. His skill in training oxen enabled him to sell them at a profit to finance the equipment to

process sugarcane. When tragedy struck, José was able to draw on friends and extended family to meet his unexpected financial needs. Patricia and Saul had little land, and little hope to purchase more. Their extended families and friends lived under similar constraints. Compared to José and Honoria, Patricia and Saul had more limited social and material resources. The loss of their maize crop had placed the family in a precarious position for the coming year. Yet they had occupations (pottery and brick making) to fall back on when agricultural activities failed to meet their needs.

Dimensions of Resilience and Adaptive Capacity During the Coffee Crisis

The case studies and survey data indicate that diversified livelihood strategies, flexibility in land use, and participation in social networks and groups contributed to farmers' (and households') capacities to adapt to the coffee crisis. I consider each of these adaptations in more detail in the following sections.

Diversification

Scholars assert that diversity in agriculture and livelihood strategies can help protect rural populations from market shocks and global economic transformations (Lewin et al. 2004; TERI 2003). As the case studies suggest, La Campa's households are diversified in the variety of occupations and activities pursued by household members, and this was already true before the coffee crisis. Although every coffee-growing household had at least one person dedicated to full-time agriculture, 18 households (48.6%) also had one or more members with an occupation outside the agricultural sector. In all, 31 people in these 18 households had a nonagricultural source of income. Thirty-two percent (32%) of these had a full-time, salaried position (teachers, extension agents), but most jobs represented part-time, self-employment as potters, brick layers, bread makers, seamstresses, and small-scale vendors. Women were more likely than men to have an income outside of agriculture; 67.7% of the individuals with non-agricultural work were female. Men, however, control most of the income generated from coffee growing and farming.

Staple food production represents an important component in La Campa livelihood strategies. Nearly all La Campa households grow their own maize, and many also produce frijoles and a variety of minor crops. In 2003, 100% of the surveyed households produced maize, and 78.54% usually produced enough to meet their annual consumption needs. Therefore, a majority of the households were self-sufficient in their most important food crop; maize is consumed in the form of tortillas with every meal. In La Campa, tortillas are the meal, and anything else is

called *con que* (colloquially, "whatever else"). Frijoles are the second most important food, and people eat them several times a day when available. Eighteen (48.7%) of the 37 sample households produced frijoles, and 11 (61%) of these usually met their annual consumption needs. A number of respondents believed that it was less expensive to buy frijoles than to raise them, and some farmers explained that they had stopped planting frijoles because they had sustained high losses to plant diseases or severe weather.

Production of minor food crops, such as fruits, adds to household diets and increases agricultural diversity. Farmers reported an average of 4.7 crops, including coffee, which probably underestimates the number of crops actually produced. Follow-up interviews and visits with a subset of respondents revealed that they had neglected to report minor crops that were designated for home consumption. Fruit trees, vegetables, yuca, izote (a *Yucca* spp. that serves as an ubiquitous living fence and produces an edible flower), and pineapple (used for soil conservation) were most typically excluded from farmers' self-reports of crops in the survey. Several farmers noted that food shortages and failures in the maize harvest occur periodically, and bananas provide the main food during those times. With the combination of staple foods and minor food crops, most La Campa farmers still raise a good portion of the food they consume. Many small coffee growers in other parts of Central America have to purchase most of their staple foods. They faced hunger or starvation as coffee prices dropped (Bloomer 2003; Rice 2003), and food shortages were aggravated by a drought that hit parts of the isthmus during the coffee crisis (Lewin et al. 2004).

As La Campa households made decisions to expand or diversify their productive activities, they explored a wide variety of options. As mentioned, they frequently made changes in staple crops, coffee, or sugarcane. Diversity in existing production was complemented by the adoption of new activities, on and off the farm. People experimented with unfamiliar endeavors by adopting new crops, investing in livestock, joining cooperatives or taking off-farm jobs. Interviews suggested that as coffee prices fell, pottery production also increased. Potters said that they produced less pottery when coffee prices were high, because their help was needed in the fields. With coffee prices low, pottery production renewed.

Diversity was also present within existing coffee plantations. Traditional coffee production throughout Mexico and Central America incorporates shade (Gonzalez 2001; Moguel and Toledo 1999), while modern or "technified" methods reduce or eliminate shade (Rice and Ward 1996). Nearly all of La Campa's coffee is grown in shade. When planted with a variety of shade trees, a coffee plantation can mimic natural forest structure (Gobbi 2000; Moguel and Toledo 1999). Shade-grown coffee is more biodiverse than sun-grown coffee in terms of vegetation, arthropods, birds, and wildlife (Perfecto et al. 1996), which may support better resiliency in ecosystem services as compared to sun-grown coffee. In addition, shaded plantations produce coffee beans with better flavor. The amount of shade varies with farmer preference, and sometimes with the age of the plantation (Albertin and Nair 2004). Campeños also reported that shade had to be adapted to the elevation, because less shade is needed at higher, more humid locations. Most Campeño

coffee growers favor *guamo* and bananas for shade and plant citrus and native fruits to eat, share with neighbors and sell locally for extra cash. Those who hold traditional Lenca beliefs intentionally leave some fruit for birds and wildlife to show respect for the spirits of the land. Some shade trees also provide fodder for livestock or branches for firewood. Thus shade-grown coffee contributes to resilience by protecting biodiversity, and offering material resources and supplementary food sources for households (perhaps even maintaining ecosystem services).

Flexibility in Land Use

La Campa's farmers use their land for multiple productive purposes. Nearly all of the 2003 sample (91.9%) reported having fallow or forest land in reserve; and they had about half of their land under cultivation (Fig. 6.1). Fallow lands typically rotate with agriculture, and provide farmers with the option of planting more crops, or adopting new crops, without having to raze coffee plantations or reduce maize fields. When facing duress, farmers may sell fallows instead of fields in which they have invested recent labor and maintenance. On average, only 28% of their land is dedicated to coffee (Table 6.6). No La Campa coffee producer in the sample had planted all of his land in coffee, and most qualified as "microproducers." The median area in coffee was 0.7 ha (1 manzana) among the surveyed households.

Fig. 6.1 View of multiple-use landscape of agriculture, secondary successions, and shade-grown coffee (coffee in lower center of photo)

Table 6.6 Descriptive data on land area and land use from household survey

	Mean	Median	Standard deviation	Minimum	Maximum
Land area held (ha)	6.67	4.20	6.922	1.05	31.50
Total area cultivated (ha)	3.32	1.42	4.149	0.44	19.60
Area planted in coffee (ha)	2.07	0.70	3.172	0.04	12.60
Percentage of land in coffee	28%	22%	0.2201	1%	80%
Years of planting coffee	11.95	7.0	9.490	2	33
Number of crops reported	4.70	4	1.579	2	8

Source: 2003 household survey conducted by author and assistants

La Campa farmers, however, have been producing market-oriented coffee for a relatively brief period. Other parts of Central America have a generations-old tradition of coffee production for the market, and in those areas coffee has come to dominate the landscape. If La Campa coffee growers continue to expand their coffee plantations at the expense of other agricultural activities, they may lose the flexibility provided by multiple-use landholdings.

Participation in Groups

Social groups and networks provide a context for creative activities and sharing of resources. Through participation in formal groups, people can commiserate, share common interests, and work toward shared goals. When compared with their Mexican and Guatemalan counterparts in the cross-national, comparative study, Campeños demonstrated a far higher participation in groups. Whereas 30% of the Mexican households and 17.9% of the Guatemalan households reported group participation, 78.4% of La Campa households had at least one member who participated in a group (Eakin et al. 2006). Three types of groups are common in La Campa: coffee producers' organizations, microcredit cooperatives, and small business cooperatives. Coffee producers' organizations are local chapters of national organizations. Two of the four major coffee organizations were active in La Campa during the crisis: AHPROCAFE and ANACAFEH (National Association of Honduran Coffee Producers). Both organizations provide technical recommendations, assist with road construction and maintenance, and at times facilitate loans to members. Not surprisingly, almost half the sample reported participating in one of these groups. Microcredit cooperatives, promoted by international and national NGOs, were very popular because they provided a way to obtain loans at reasonable interest rates. Several craft sales cooperatives were focusing on pottery production in an attempt to capitalize on La Campa's fame for artisanal Lenca pottery. In addition, a few small groups formed to produce vegetables and sugarcane cooperatively during the crisis with start-up capital from donor agencies and programs. Campeños reported that they joined groups to gain access to the benefits offered, but their responses showed that

Table 6.7 Benefits reported from participation in groups

Types of benefits	Type of organization: Microcredit cooperative % (N = 11)	Coffee growers' organization % (N = 16)	Craft sales cooperative % (N = 3)	Total[a] % (N = 30)
None yet	0 (0)	6.7 (2)	3.3 (1)	10.0 (3)
Loans and financial assistance	23.3 (7)	10.0 (3)	3.3 (1)	36.7 (11)
Road maintenance	0 (0)	10.0 (3)	0 (0)	10.0 (3)
Technical assistance and information	0 (0)	10.0 (3)	0 (0)	10.0 (3)
Multiple benefits	13.3 (4)	16.7 (5)	3.3 (1)	33.3 (10)

[a] Thirty adults representing 29 households reported participating in a group
Source: 2003 household survey conducted by author and assistants

not all members had received benefits (Table 6.7); some people doubted that any benefits would come their way but were willing to wait and see. Coffee farmers did not believe that the government had done anything significant to help them during the crisis; the coffee retention program that had been legislated to help with exactly this type of crisis fell far short of hopes because it had not been designed to store coffee over such a long period of depressed prices. Campeños' willingness to join groups in part represented their determination to find solutions to their economic challenges. Moreover, they wished to take advantage of the seed money that NGOs and donor agencies were making available to organized groups (see Chapter 7).

Participation in groups also can be seen as another way for Campeños to reinforce their social networks and extended family ties, which represented an integral part of many households' adaptive capacity. Farmers drew on their social networks for financial support for new enterprises and times of emergency. Besides participating in organized groups, a number of households mentioned that they participated in informal labor exchanges with extended family and friends. By sharing in labor, small producers can keep their labor costs low, but still undertake major tasks. Shared tasks and informal group activities also reinforce social ties and provide opportunities to exchange information and ideas.

Resilience Reconsidered

As the preceding discussion indicates, resilience in La Campa relates to the variety of resources and livelihood strategies available to people. Although communications networks, access to medical care, and transportation remain inadequate, many people have adequate land for subsistence crops and to experiment with alternative agricultural activities. Social networks and group activities provide contexts that

help people mitigate the severity of economic and personal difficulties. Although not discussed as a central factor in this chapter, Campeños also benefit from rights to communal woodlots and livestock zones for pasture and firewood. The fact that most households produce a major part of their own food, barring bad weather and crop failures, comprises a significant factor in their resilience.

La Campa's general experience of constrained access to material goods and services must also be factored into the assessment of resilience. To some degree, Campeño coffee growers perceived less hardship during the coffee crisis because most of them live constantly with shortfalls in resources and income. To the extent possible, they spread their risk by producing staples, raising a variety of minor crops, working seasonally in nonagricultural occupations, and participating in groups to share information, work toward common goals, or gain access to small loans. Campeños benefit from few government programs, so they do not look to the national government to provide assistance. The lack of government assistance may foster flexibility, creativity, and collaborative efforts to overcome their economic challenges. At the same time, their long-term resilience and adaptive capacity may be undermined because the national government has not fulfilled its responsibilities to provide public services that are integral to health, well-being, and economic growth: medical care, potable water and sanitation systems, affordable education beyond primary school, and efficient transportation and communications networks. Campeños have endeavored to meet these needs through their own resourcefulness and NGO assistance, but health services and education would benefit greatly from additional support.

The Honduran government, however, faces extreme challenges to provide basic services and infrastructure. The coffee crisis followed on the heels of Hurricane Mitch (1998), and recovery from these consecutive blows to the national economy will require years of investment and rebuilding (CLACDS 1999). Meanwhile, most international donor agencies continue to concentrate on promoting market production and, despite lingering concerns for food security, lend less attention to the fundamental importance of maintaining subsistence production, improving primary health care, increasing access to education, and building diversified livelihoods. The experience of the coffee crisis suggests that the shortcomings in each of these dimensions exacerbated the crisis for the millions of people whose livelihoods depend overwhelmingly on coffee.

Most Campeños appeared in general to be more resilient than coffee producers in other places; perhaps the biggest factor was that coffee has not yet undermined their traditionally diversified livelihood strategies, replaced subsistence production, or reduced the possibilities of adopting alternative activities by bringing reserve or fallow land into production. At the same time, Campeños demonstrated a range of variation in adaptive capacity and resilience during the coffee crisis. Some households found it more difficult to adapt to the crisis; households with the least land (and presumably without a member in the wage labor force) faced the greatest difficulties. Discussions with one of La Campa's health care workers in 2003 revealed that children from the most impoverished households showed signs of malnutrition by the third year of the coffee crisis. The nurse noted that these households did not produce enough maize to feed themselves, and did not have enough land, educa-

tion, or social resources to find other employment than picking coffee. The presence of malnutrition, the emergence of landless farmers, and cases of households with inadequate land show that some members of the community could not meet minimal needs and lacked the resilience that characterized the majority of the population. These circumstances appeared to be linked to the increasingly inequitable distribution of land and resources in La Campa. In this regard, La Campa's resilience at the community level contains gaps and fault lines.

Implications for Forest Transformations

The coffee crisis presented ambiguous implications for changes in forest cover. Qualitative assessments of interviews, surveys, and observations of land cover in 2003 provide the sources for this discussion of forest change during the coffee crisis (2000–2003).[4] If farmers had chosen to clear forest to plant new crops, or if they had razed coffee forests to plant annual crops, deforestation would have increased. However, if farmers had abandoned coffee or out-migrated, forest regrowth would have occurred. Responses from interviews and surveys suggested that neither of these decisions became a pattern in La Campa. None of the households in the sample reported abandoning coffee or transforming plantations to annual crops. While the survey would have missed people who abandoned coffee entirely, sold out, and out-migrated, interviews and the process of searching for farmers who fell in the sample did not find a case where someone had sold out and moved away permanently due to the coffee crisis. About 10% of the farmers selected for the sample, however, could not be located because they had left their coffee fields in the care of a relative during temporary migration to work in an urban area. Some of those who had migrated temporarily left behind agricultural fields that started to regenerate with tree cover. Absentee landholders, who had purchased coffee plantations in La Campa as an investment, typically abandoned their plantations as well. I was able to document this as I sought out households in the survey. Abandoned fields were full of weeds and bushes laden with rotting coffee cherries, and neighboring households were able to confirm that these usually were owned by nonresidents or people who had migrated temporarily. Abandoned coffee fields did not tend to become forest or fallow; following the coffee crisis, owners returned or sold to other coffee growers. Evidence for clearing is stronger. Among the sample, 27% of the households expanded production of staple crops and alternative market crops presumably by clearing part of their fallow or forest lands. Planting new coffee (37.8%) and adopting new crops (37.8%) often involved clearing forest or fallow; some households reported multiple activities that implied forest clearing. Not all new planting involved clearing, however, because sugarcane and vegetable production typically started in small plots that were already cleared on people's houselots. While I heard many reports of expanded planting, only 18.9% of the survey households reduced land in subsistence crops, mainly by leaving it fallow. The survey data, therefore, suggest that clearing fallow and forests exceeded land abandonment and fallowing during the crisis.

Farmers who purchased livestock tended to use grazing land in communal or individually held forest parcels instead of clearing forests or fallows for pasture. Meanwhile, existing coffee plantations continued to grow under the shade of maturing trees. While most coffee producers manage shade by thinning periodically, they reduced this type of labor-intensive maintenance during the coffee crisis. One farmer reported that increasing shade served to protect his coffee and reduce weed growth. Although the heavier shade reduced plant productivity, it was an acceptable trade-off while he was unable to provide adequate fertilizer and other maintenance. In short, the qualitative data indicate that adaptations to the coffee crisis continued to produce a patchy landscape in which some fallows and forests were cleared, some fields were left to fallow, shaded coffee plantations grew to mimic forest cover, and some secondary successions continued to regrow into mature forest. Neither deforestation or reforestation appeared to be dominant on the ground, but personal observations are insufficient to assess change objectively. While coffee producers may have cleared more land than they fallowed during the crisis, their reports do not encompass the communal forests and mountain reserve that ostensibly experienced regeneration under increased protections during the same period (Chapter 7).

Development and Social Change with Respect to the Coffee Crisis

In the wake of the coffee crisis, policy analysts and development specialists have argued that producers of fine Arabica coffees need to become more specialized, and pursue options such as fair trade, direct marketing, and the creation of unique brand names to distinguish themselves. All of these are promising options for La Campa coffee growers, but they will have to overcome a number of obstacles, not the least of which are Honduran policies and institutional arrangements that complicate direct marketing and fair trade contracts. For farmers who do not produce high-quality Arabica beans, market conditions may compel them to switch to alternative crops (Lewin et al. 2004).

Better diversification is also acknowledged as a component for greater resilience in future price drops. More generally, proponents of market integration and productive transformations advocate the implementation of safety nets to support the poorest households in times of market transition (Basu 2006). The aim is to reduce the exacerbation of poverty and inequality that have become evident in globalization processes. It is not clear, however, how safety nets might work, especially for commodities like coffee that experience repeated boom and bust cycles. Efforts to protect coffee farmers from price shocks, including Honduras' coffee retention program, have had mixed results, and tend to benefit the largest farmers rather than the smallholders. Replacing coffee with other monocrops may only reproduce cycles of boom and bust as farmers compete to sell the same crop. Moreover, development studies suggest that national government and international donor interventions to promote development sometimes exacerbate poverty and destabilize local

systems (cf. Krznaric 2006; Mistry 2005). In La Campa's case, experience with COHDEFOR inculcated a deep distrust of government interventions, and accentuated their preference to seek development on their own terms (Chapter 4). La Campa's farmers, and the community, have been able to develop a comparatively proactive stance to seek development opportunities because the Honduran government has been less interventionist than many other developing nations' governments (Eakin et al. 2006). Moreover, La Campa leveraged its nominal financial resources by drawing on communal labor.

Policy makers continue to argue that economic development leads to a "trickle down" of benefits that redistribute the unequal concentration of wealth (Basu 2006). While it is true that some benefits of development become accessible to the general population, trends show that wealthy individuals and nations have continued to amass disproportionate wealth through time (Edward 2006; Wade 2004). Even in the microcosm of La Campa, it is apparent that the people who planted coffee first were building upon preexisting (if modest) advantages. These fortunate ones made significant gains when prices were high, and some continued to consolidate their gains, even during the coffee crisis.

There are no guaranteed recipes for success in development, but La Campa's experience suggests that fostering resilience should be given greater attention. La Campa provides only one example, but these data echo other studies that show a range of experiences for individuals, households, and groups. The findings show that people are more resilient to market shocks when they have access to diverse social, material, and natural resources. Access to cultivable land including fallows and forests, multiple livelihood options, social networks, and participation in groups all contribute to a robust resilience for those who have these resources and use them diligently. Most Campeños proved their resilience in that they had enough to eat, were able to compensate for cash flow problems, and made successful changes in their livelihoods to overcome the difficulties of the coffee crisis. Moreover, a number of households strengthened their ability to confront future shocks as they acquired land and started new economic ventures. Inequitable distribution of resources, however, can undermine resilience.

Inequities in resources and individual success are inevitable due to differences in individual abilities and circumstances, but a truly resilient social system implies the capacity to moderate and mitigate extremes of wealth and poverty. In La Campa, as elsewhere, resource transfers more often benefit the privileged, while resource losses disproportionately affect those who are barely getting by. If the poorer households continue to lose land to the better-off, and do not gain access to better education, health care, and opportunities for alternative employment, their ability to survive the next crisis will be eroded. Moreover, the less privileged probably will contrast their predicament with the lifestyles of their better-off neighbors. Social tensions increase when inequities become pronounced (Basu 2006). From the perspective of those who must continually struggle to meet minimal needs, life may not only seem harder, it may feel more unfair. If the process of unequal accumulation of goods and resources continues, it could complicate Campeños' ability to identify common goals, and their willingness (despite social tensions) to undertake

collective action to achieve them. Thus far, Campeños have maintained a context of shared experiences despite socioeconomic inequities. Compared to neighboring municipios, La Campa has lower rates of delinquency and crime (La Campa alcalde, July 26, 2007, personal communication), which may reflect and perhaps reinforce the communitarian tradition and the social capital it generates. Campeños, for the most part, continue to face similar challenges, work together in their fields, and participate in the same groups and social networks. If wealthier households cease to participate in community obligations, or if poorer households find themselves with diminishing access to land and services, the people may find it harder to maintain a shared sense of community and the responsibility that it implies. If the better-off households are freed of the institutions that historically required their participation in community service, and if the informal mechanisms of social reciprocity decline, it is likely that resilience at the community level will decrease. While better-off coffee producers' capacity to diversify increases their households' resilience to market shocks, it may come at the expense of overall community well-being. The process is still unfolding.

Chapter 7
Changing Lives, Changing Forests: Many Ways to Build a Future?

Tucker: "What is the biggest change that you have seen in your lifetime?"
La Campa elder: "People no longer die of hunger."

At the beginning of the twenty-first century, La Campa remains one of the more extensively forested municipios in western Honduras. Along with nearby Lenca municipios of Belén, San Manuel de Colohete, and La Iguala, La Campa has been recognized by the national government as 1 of 18 "green municipios" with a sustained record of forest conservation.[1] La Campa's forests have undergone and continue to experience substantial human interventions, yet forest cover has regrown and appears to be expanding. Forest transformations have occurred in association with social, economic, demographic, and political changes that challenge Campeños to maintain their community and its natural resource base while improving their lives. This chapter explores current processes of change that promise to continue transforming people's lives and the community, as well as their forests. It reviews transformations discussed previously and introduces additional dimensions of social and forest transformation. The discussion addresses apparent contradictions, hopeful signs, and issues of concern. It asks: How are ongoing processes influencing the community and the forests of La Campa? Through exploration of La Campa as a social-ecological system, it evaluates aspects of Campeño life that appear conducive to sustainability and other aspects that seem contradictory. It concludes with a synthetic assessment of why La Campa forests have recurred and endured, and considers what lessons and insights La Campa's experiences have to offer for the challenges of achieving community-based sustainable forest management.

Trends in Local Change

My rented, four-wheel drive pickup was stuck in heavy, clay mud up to its axles. I was caught in a downpour above Cruz Alta, and the runoff had transformed the tire tracks in the dirt road (which had been a walking path only eight years earlier) to flowing streams with 8-inch deep mud. I searched for rocks alongside the road and broke off branches to brace the tires; it was a struggle to walk, as mud sucked at my hiking boots. My efforts

C.M. Tucker, *Changing Forests: Collective Action, Common Property, and Coffee in Honduras*.

made no difference, the tires only spun. I finally honked the horn, hoping to get the attention of research team members who were waiting up ahead. Instead, two boys from a nearby coffee farm showed up, followed by their father. They brought a machete to cut branches, and a shovel to open a ditch to drain off some of the water from the road. Then a pickup with chains on its tires appeared around the bend in the road, coming at full speed with wheels spinning and mud flying. La Campa's alcalde was at the wheel, and he slowed his momentum just enough to maneuver around my pickup and call out, "I'll be right back! Two cars are stuck beyond you and I'm going to get the people!" My helpers and I placed more cut branches under the tires, and on my next attempt to move the pickup, it lurched free of the mud. I shouted thanks to my helpers, who waved and smiled as I drove off. I picked up a research team member and we proceeded another half mile, only to slide off the road while descending a steep, mud-laden slope. The alcalde's pickup reappeared, loaded with eight people huddled in the back against the steady rain. They piled out to help push my pickup back on the road. Everyone laughed as they pushed and shared their stories; their pickups had become mired in a section with mud so deep that no vehicle would be able to pass until the road dried out. The drivers had used their cell phones to call the alcalde for help. They freed my pickup, and with no further mishaps, I retrieved the rest of the research team and we returned safely to the Centro. A few days later, I ran into the alcalde. "My next project," he declared, "will be to lay gravel on all the mountain roads!"
(Excerpt, field notes, July 2007)

Many of the transformations that La Campa has experienced in the past 30 years are perceived as genuine development by the people of La Campa. The implications for social relationships and forest cover have been mixed. The transformations can be broadly classed as (1) improving transportation and communications infrastructure, (2) increased access to formal education and off-farm employment, (3) a decline in traditional religious beliefs and ritual practices, (4) changing migration patterns and increasing interactions with outsiders, and (5) shifts in traditional patterns of land use and agricultural production. I will examine each of these transformations, recognizing that they have occurred as interrelated, rather than separate, trends. All of these trends fit under the broader umbrella of market integration and globalization processes.

Improving Transportation and Communications Infrastructure

After nearly a half century of endeavor, Campeños have succeeded in their long sought-after goal of building roads that link the lowlands to the mountains, and all of the major villages to each other. Nearly all of the roads have been built within a 10-year period. The first road to allow vehicular traffic to the mountains was completed in 1994 and gradually expanded. In 1999, roads expanded at a rapid rate when La Campa benefited from an influx of disaster-relief funds in the wake of Hurricane Mitch. La Campa did not suffer major impacts from the hurricane's torrential rainfall; residents think that the forest cover helped to mitigate the damage. Although La Campa's streams exceeded flood stage, only a few minor landslides occurred on steeply sloped fields, in one case damaging a newly planted coffee field. La Campa received funds for road reconstruction, but since its roads had not been damaged significantly (they barely existed), the alcalde used the money to

open new roads to connect Cruz Alta with Mataras, Mescalio, and Apangual. Road construction involved driving a bulldozer along footpaths to widen them and, in some places, opening breaches in mountain forests. Although parts of the roads remain little more than bulldozer-wide dirt paths, they have revolutionized transportation in the municipio. A 3-hour walk from Mescalio to La Campa has been reduced to a 45-minute drive when the road is dry and passable. Road construction has brought improved access to markets. With five or six buses a day to Gracias, as well as the increasing number of private vehicles, transportation of coffee, pottery, and other products to urban buyers has become quicker and easier. Visitors to La Campa no longer see men, women, and children carrying burdensome loads of pottery on their backs as they walk to markets.

Improved communications became possible with electricity, which reached the Centro in 2001. A center with eight computers and a satellite link to the Internet was set up with another grant; now students in La Campa can look up information online and communicate through e-mail with friends and family who live elsewhere. Perhaps the most significant move toward better communications has been the construction of a cellular telephone tower in La Campa. Cell phones can be purchased for the equivalent of 3 or 4 days' wages in rural Honduras (~$30), and minutes can be purchased for 25 lempiras (~$1.30). Even people of humble means can afford a phone. La Campa jumped from the era of hand-delivered mail and telegraph messages to digital and satellite communications in less than a decade. When electricity arrived, it also brought refrigerators, electric appliances, televisions, and the option for people to stay up long past dark. The demand for *ocote* (resinous pine wood that served traditionally for light after sundown) has fallen dramatically. Young adults, especially in the Centro, see themselves as citizens of the nation and welcome the opportunity to acquire the material goods advertised on television. The growing adoption of consumer values and national identity present challenges to the traditional, community-centered lifeways that honored frugality and simplicity, out of necessity as much as philosophy. Improvements in educational opportunities also have reinforced these new trends.

Education

The advent of a significantly higher level of education in La Campa has brought advantages for the children who have been able to continue their education, but it also has carried ramifications for traditional beliefs and practices. For indigenous and traditional cultures, national educational systems have tended to pose a conundrum. Although schooling may be seen as an avenue to better opportunities and social mobility, it may also expose children to values and ideas that undermine culture and traditional lifeways. National governments often use the educational system to assimilate minorities and produce pliable populations (Boutilier 1992; May and Aikman 2003). Children learn more than reading, writing, and arithmetic; they learn how they are supposed to think and act as citizens of a nation. Despite

these potentially problematic dimensions of education, Campeños have sought better education as part of their overall intent to improve livelihoods. This is true even among families that continue to practice traditional rituals and hold beliefs in spirits of the earth.

Twenty years ago, primary schools had yet to be built in many of La Campa's *aldeas*, and children in outlying settlements faced a 2- or 3-hour walk to school. Many families needed their children to help at home, so few children finished sixth grade. Moreover, rural schools had difficulty keeping teachers; several household heads reported that their education ended when teachers simply left. Today, all of La Campa's eight *aldeas* have permanent primary schools, and eight *caseríos* (hamlets) have primary schools funded by the Honduran Program for Community Education (PROHECO).[2] PROHECO has been joined by the Program for Literacy and Basic Education for Youth and Adults in Honduras (PRALEBAH) to increase reading, writing, and basic math skills among people who did not obtain or complete a primary education. In addition, a number of young adults (and some older adults) have participated in EducaTodos (Educate Everyone) an alternative education initiative that disseminates lessons by radio. Participants listen to lessons, follow along with printed materials and complete assignments that are corrected by local EducaTodos teachers. PROHECO, PRALEBAH, and EducaTodos have employed Campeños with ninth- or twelfth-grade diplomas as teachers and local coordinators. The opportunities for local, salaried positions have further convinced parents that education can result in wider employment options and greater income security than a livelihood based primarily on agriculture and artisanal production.

Accessible primary schools have meant that more children complete the sixth grade. Increasing numbers of young people pursue secondary education and a few Campeños from better-off households have gone on to postsecondary education. By comparison, their parents averaged less than 4 years of schooling, and their grandparents often received less or no formal education. The difference in years of education between adults aged 15–34 and adults over age 35 proves to be significant at the 0.000 level (see Table 7.1).

Historically, La Campa students could only obtain a secondary education by leaving home to study in Gracias. Few parents could afford the cost of boarding their children and paying tuition. Out of growing interest in the opportunities provided by education, parents and the municipal council prioritized obtaining a secondary school. In 1993, the Centro founded a secondary school, the Instituto San Matías (ISAMA). At the time, it was only the third secondary school in the

Table 7.1 Independent t-tests: education levels of La Campa adults by age group, 2003

	Ages 15–34 years (n=61)	Ages 35 years and older (n=55)	Significance (two-tailed)	Standard error
Mean years of schooling	5.77 (s.d. 2.929)	3.73 (s.d. 2.966)	0.000	0.548

Source: 2003 Household Survey

entire Department of Lempira (the cities of Gracias and Erandique each had a secondary school). In order to establish the school, La Campa had to lobby for national recognition and funding for teachers' salaries. The bureaucracy moved at glacial speed to consider La Campa's petition for secondary school teachers, and it was not clear that it would be approved. Primary school teachers in the Centro agreed to teach secondary school classes in addition to their regular duties. For more than a year, the teachers taught primary school during the day and secondary school in the evening, so students could continue their studies without interruption. In the beginning, they had no guarantee of compensation for their double effort. Eventually the school obtained official recognition and salaries were granted retroactively.

The school drew students from around La Campa as well as Caiquín, San Manuel de Colohete, and San Sebastián. In short order, the school had to find more space and got permission to use rooms maintained by the Catholic Church, pending the construction of a new school. La Campa was not only more economical than other secondary school options, many parents deemed it safe, secure, and free from the distractions of an urban environment. Some families had kin and friends in the Centro who offered to lodge and supervise their children at little or no cost. A few Centro households took in student lodgers to earn income; for some widows and single women, student lodgers have become their main source of revenue.

In general, parents want their children to go to secondary school, even though it remains an unrealized dream for many rural households. Secondary school is an expensive proposition. Students must pay school fees and purchase school uniforms, books and supplies. Unless they reside in the Centro, they must obtain food and lodging. In addition to the expense of secondary education, some families find it difficult to let children continue their studies due to competing needs for household labor. Interestingly, and in contrast to some other parts of the world, parents are just as likely to prioritize education for their daughters as for their sons. When men's and women's educational attainment are compared, no significant difference are found; the mean years of schooling for men and women is very similar (Table 7.2). Several mothers told me that girls need a career or a vocation to make a living because there is no guarantee of finding a good man. In poorer households, girls may learn to make pottery or take a course in sewing, but families with adequate means send their daughters to school for as many years as possible.

Over the past decade, Campeños have increasingly claimed the teaching positions in La Campa's schools. In contrast to the previous teachers who were

Table 7.2 Independent t-tests: education levels of La Campa adults (ages 15–90) by gender, 2003

	Males (N = 58)	Females (N = 58)	Significance (two-tailed)	Standard error
Mean years of schooling	4.83 (s.d. 2.909)	4.78 (s.d. 3.319)	0.929	0.580

Source: 2003 Household Survey

assigned to La Campa from distant urban areas, Campeños who obtain local teaching positions want to stay. Many of them are motivated by a desire to help their community, and they bring dedication and enthusiasm to their work. As teachers, they are highly respected and receive a salary that is more than adequate to live well in La Campa. The fact that many of La Campa's best and brightest young people choose to stay in La Campa, given the opportunity, suggests that the communitarian tradition continues to be valued and passed on.

Education has added a new dimension to social heterogeneity in La Campa and is linked to economic success. Teachers and other professionals who choose to stay in La Campa have been able to translate their salaries into landholdings and modest material wealth relative to other Campeños. It has opened new opportunities, and for some people it has released them of ties to the land. By the time that Campeño teachers have their own classrooms, they are well-versed in national culture and values. They encourage children by word and example to adopt the perspectives of dominant Honduran society. They have promoted Western ideas of conservation and concern for climate change to their students, and some of them view traditional beliefs as indications of ignorance. For the parents who continue to practice Lenca rituals, the disparagement of their beliefs is a price that must be paid to give their children wider employment options and a chance for a better life.

Decline in Traditional Religious Beliefs and Ritual Practices

Many traditions are experiencing flux as La Campa has become more integrated into markets, and people face continual scrutiny by teachers and ardent Catholic priests. The teenage daughter of a family that continued to practice traditional rituals told me that her teachers criticized old beliefs and practices. She reported, "In school the teacher said that our parents are wrong to do pagos, because the earth doesn't need payments, so we shouldn't believe in them." One *sabio*, Don Luis, explained to me that pagos (see Chapter 2) have undergone great changes in La Campa due to pressure from the Catholic Church:

> *Everyone used to perform pagos. They performed them in broad daylight, and it didn't matter if everyone knew what you were doing. This was long ago, before I can remember. But then the priests said that pagos were not a Christian activity, and that the earthly spirits*, ángeles de la santa tierra, *must be demons because they weren't in heaven, so pagos were devil worship.*
>
> *But I don't agree. Everything that happens during a pago follows prayers that honor God and Christ. So God comes first and foremost, and everything that happens is with God's blessing. The priests don't understand. But believers began to hold the ceremonies at night because the priests got mad when they saw pagos. So it took all night long and into the morning. People would finally eat around 11 a.m. Some people's faith in the spirits began to wane. Many stopped doing pagos, and only a few people do them regularly anymore. There are hardly any in the Centro, but I've heard that many people in the mountains still do it, but they keep it very secret. No one talks about it.*

Today, all but my closest friends in La Campa deny believing in spirits or pagos. When I ask older Campeños what they know about pagos, many share detailed

knowledge that suggests more than oral history. The context of open opposition by the Catholic Church has become a major impediment to expressing beliefs in spirits or traditional rituals. In the past 10 years, the Catholic Church in Lempira has developed an active youth program that sponsors meetings for singing religious songs, prayer, and fellowship. The Church holds youth retreats in different locations and provides free transportation, food, and lodging for everyone who attends. Participation in the group is one of the few social activities available in La Campa, so it has become very popular. At the same time, the priests and lay leaders have created a context in which they can indoctrinate youth in Catholic ideology. Directly and indirectly, the Church's teachings disparage traditional beliefs, and encourage young people to adopt the dominant faith. Facing devout children, parents and grandparents are caught in a double bind: if they share beliefs in spirits and pagos, they may lose their children's respect, and open themselves to public criticism if their children decide to tell the priest or devout laypeople. But if they cease to honor spirits, believers fear that the spirits may become angry. For these people, the only solution is to remain silent and perform rituals in secret.

As suggested in Chapter 2, the traditions and beliefs expressed in pagos may implicitly support sustainable or less wasteful practices in daily lives, but this is difficult to assess because public expression of these beliefs has been suppressed. Compared to people in industrialized societies, the people of La Campa have relatively few material possessions, and most of them depend on their own agricultural production for sustenance. They use far less water, waste little or no food, and next to nothing is discarded until all possible uses are exhausted. Although the increase in packaged goods and snacks has created a garbage problem, people tend to put containers to new uses and burn waste paper in cooking fires. The tendency to recycle used items is a practical adaptation to economic constraints. For those who still believe in earthly spirits, it may also reflect concern not waste resources as part of respect for the earth as implied in pagos. Such an attitude complements a conservation ethic, but if current trends continue, the practice of pagos may eventually vanish along with the possibility of building on traditional beliefs to strengthen conservation efforts. At the same time, new perspectives favorable to conservation may be emerging.

Migration

Temporary migration for work in other parts of Honduras is part of many Campeños' life experience. Historically, young men went to pick coffee in Santa Bárbara during the months of harvest, while others joined the military and gained a broader perspective through service around Honduras. Some chose not to return, but it seems that ties to family, land, and community drew many migrants back. The promise of freely granted land, a long-standing right for all native Campeños, must have been an important consideration as young men decided where they would settle down. One man explained that he had served for several years in the military and had planned to settle in a city. His mother insisted that he return to visit. During his visit, he fell in love with a local girl, married her, and decided to

stay (much to his mother's satisfaction). Women also have migrated temporarily to work in urban areas, often as domestic servants. More recently, both men and women have found work in the *maquilas* (manufacturing plants) in the city of San Pedro Sula, but many return to settle in La Campa.

Existing data is inadequate to understand whether the rate of permanent out-migration has changed in recent years. It is easier to identify people who returned, or who married into La Campa, than it is to determine who has departed permanently. Indeed, during each visit I have encountered people who have returned after extended absences, and learn of others who have left. Meanwhile, intermunicipal migration has been long-standing among La Campa and its neighbors, especially San Manuel de Colohete, San Sebastián, Caiquín, and Gracias. Because La Campa is small and many families are interrelated to varying degrees, it can be difficult for children to identify eligible marriage partners. Since the founding of ISAMA, the school has become a place for young people to broaden their prospects. Church youth programs, participation in workshops, and even bus trips to Gracias also present opportunities to meet members of the opposite sex. Marriage patterns tend to be patrilocal, so women who marry men from other municipios generally move away, while Campeño men typically settle with their brides in La Campa. Of course, there are exceptions in which men have taken advantage of the opportunity to acquire land through their Campeño wives and become landowners. Overall, it does not appear that the level of intermunicipal migration represents more than a small but steady interchange of people.

The growing presence of urban-based outsiders in La Campa represents a more transformative process than the continuing marital exchange with nearby municipios. After a hiatus during the coffee crisis, outsiders began to purchase land to grow coffee and make a profit. A few settle in La Campa, but usually non-Campeños hire a local manager to take care of daily operations and visit periodically. Most have considerable resources and higher education than the average Campeño, and only a few make an effort to integrate with the community. In other coffee-growing areas of Honduras, the concentration of wealth and land among a minority of the population has been associated with increasing social tensions and violence. One nonnative coffee producer explained that La Campa's relative tranquility was an attraction, especially when compared to higher levels of violence in other coffee-producing areas. Yet he wondered if La Campa could avoid the rise of social tensions and anger against wealthier people. He had joined local groups and helped in community projects in hopes of gaining Campeños' acceptance.

Shifts in Traditional Land-Use Patterns, Productive Activities, and Property-Rights Regimes

The traditional property-rights regime, based on common property, has been replaced by a system oriented toward private rights and ownership. The processes of change reflect

a combination of national policies, local changes in land use, demographic change, and evolving perceptions about the security of common property under Honduran law. National land-titling efforts divided municipal ejidos into village titles (see Chapter 5). As coffee production expanded during the 1990s, an interrelated process of land privatization and concentration occurred, reducing the communal areas available for residents' joint use. A similar pattern occurred in other parts of Central America and Mexico as coffee was adopted as an export crop (Greenberg 1989; Williams 1994). These shifts in land use and property rights have fundamentally challenged the communitarian tradition and its principles of shared rights and responsibilities for communal land and natural resources. Although individuals and families have always varied in their resources, coffee has marked certain people as especially advantaged, and the concentration of land has led to a new social class in La Campa composed of the households that lack sufficient land and resources to meet subsistence needs.

Collective Action for Development and Natural Resource Protection

Many of the processes occurring in La Campa appear to undermine the conditions that have been favorable in the past for collaborative efforts to manage natural resources. People are no longer required to work many days every year on maintenance or construction of community infrastructure. With the privatization of land, the cooperation and interest in managing common property have also fallen. Yet as property rights have transformed and traditional venues for collaborative work have declined, new contexts have emerged for collective action and joint management of natural resources. The following discussion focuses on two major dimensions of collective action that are influencing forest management in La Campa: (1) potable water projects and the creation of the Montaña Camapara Watershed Reserve (hereafter Camapara Reserve), and (2) forestry-based cooperatives intended to foster economic development.

Collective Action for Water Management and Watershed Protection

Montaña Camapara (hereafter Camapara) is the highest point in La Campa at 1,869 m. It is the only part of La Campa that may contain nearly undisturbed forest; residents believe that the forest was never cut down because it was too moist and cool for agriculture. The mountain watershed contains numerous springs; its runoff feeds streams that run eventually to the Río Cocire, which forms part of the border between the Departments of Lempira and Intibucá. The people have recognized the mountain as a water source for generations. During the late 1980s and 1990s,

each of La Campa's *aldeas*, including the Centro, wanted a potable water system. They sought funding and technical assistance from NGOs, international donors, and national programs to build their water projects. Cruz Alta and Tontolo were the first *aldeas* to draw water from Camapara through a collaborative project supported by FEDECOH and the National Aqueduct and Sewage Service (SANAA) (Navarro 2002). Subsequent water projects were developed for Mataras, Apangual, Cañadas, the Centro, and their outlying settlements. The Centro's water project encompassed San Matías and neighboring houses in the areas known as Arenales and Monqueta. Villages in the municipio of Gracias also turned to Camapara for their water. By the early years of the twenty-first century, 17 settlements depended on Camapara to supply their water; 5 of them were located in the municipio of Gracias. Nearly all of La Campa consumed water from Camapara.

Water project construction and maintenance in La Campa relies on the participation and determination of village residents. Each project proceeds through a series of similar steps, usually beginning with a petition by village residents to the municipal council for support. The municipal council typically has little or no funds for water projects, so municipal and village authorities must seek funding from outside sources. Over the years, La Campa's water projects have received support from a variety of sources, including Solidaridad International (a Spanish development agency), the Honduran Secretariat of Health, Lempira Sur (a collaborative development program involving the Honduran Secretariat of Agriculture and Livestock [SAG], the FAO, and the Government of The Netherlands), as well as SANAA and FEDECOH. Most projects have involved funding from several agencies at different points in the planning and construction. Typically, funding covers materials and the project beneficiaries must provide labor. Every water project also must identify a water source that is adequate to meet community demand for the foreseeable future and develop a technical plan for building the water-collection cistern at the source, laying the pipeline from the mountain to a village water tank, and constructing an efficient distribution system to reach all of the beneficiaries. The technical plan represents a major hurdle for most villages, because they do not have anyone with an engineering background or the necessary experience. Several villages have received the needed technical assistance from Peace Corps workers, and others have sought advice from NGOs or donors.

All of the village projects impose a set of requirements for people who wish to receive water. Most of these institutional arrangements reflect a consensus reached by participants, who agree to provide labor as their contribution to the project. Each water project has succeeded in developing clear rules of participation and enforcing them. Typical rules include the following: (1) All beneficiary households provide labor throughout the construction process. The number of days of labor depends on the duration and difficulty of the project, but by the end of construction, everyone works nearly the same number of hours on all facets. (2) Household heads who refuse to work or fail to complete their fair share are excluded from the water project. (Thus shirkers face a severe penalty if they do not fulfill their labor obligations.) (3) Households are permitted to hire a laborer to fulfill all or part of their labor obligations. A female-headed household that does not have an older son, for

example, generally makes an arrangement with a male relative to work its share. (4) One person's share of the labor can gain only one hookup to the water line. (5) Participants must attend project-related meetings. If a household head cannot attend a meeting, another household member or a substitute must attend. (6) Each beneficiary household takes responsibility to lay its own pipeline from the main water line to the house or patio, install its own water spigot, and, if desired, install a household cistern. These rules reveal the capacity of Campeños to design and follow through with institutions that fit their local situation and to enforce them. These elements are associated with successful management of common-pool resources (Ostrom 2005), but also apply to other collective action contexts.

The Centro's experience provides an illustrative example of constructing a water system. Unlike other villages, the Centro's project was undertaken to replace an old water system that had been built in the 1970s. The old system drew water from a spring located in a nearby communal forest, which had become degraded with resin tapping, logging, residents' firewood collection, and livestock grazing. The water was silty, and the flow was too low to meet demands during the dry season. As a result, Centro residents were highly motivated to construct the new water project. In the early 1990s, the Centro and its adjacent neighborhoods obtained support from FEDECOH to purchase materials to build a new system with water drawn from Camapara. The process took almost a year, and workers from participating households labored on the project 2 or 3 days out of nearly every week, except during the peaks of the planting and harvesting seasons. The most demanding phase involved building the retention dam and laying the pipeline on Camapara, which was a 3-hour walk from the Centro. At this time, there were no roads into La Campa's higher elevations, although construction of a road to Cruz Alta was to start in 1994. Women rose at 3:00 a.m. to prepare fresh tortillas for their husbands and sons to take with them, and the men departed in darkness to walk up to the work site before the day dawned. They worked for about 6 hours and then walked back, resulting in 12-hour days of unpaid labor. Mules and horses carried many sacks of cement and pipes, but sometimes men had to help carry the materials. They had to chisel through rock outcroppings and dig ditches through muddy soils to lay the pipelines, and cope with the cloud forest's drizzle and rain that complicated the process of laying concrete and placing pipes. The project benefited, however, by the enthusiastic participation of many of the Centro's adolescent boys and young men. The water project committee encouraged young men's participation by declaring that no one would be allowed to join the water project after construction began, and that no households would be permitted to buy into the project or open an additional line after construction was completed. Although the majority of the young men had yet to identify a marriage partner, a number of them wanted to assure access to water for their future households. The council cooperated by approving young men's petitions for houselots in San Matías and Arenales, where land was still available. As the project neared completion, these young men laid pipes to future yards, and created anomalous sights of water spigots sticking up in the middle of fallow lots with no buildings in sight. Gradually, the young men founded their own households and built houses on the lots.

As each water project completed construction, villages formed a Junta de Agua (water committee) to oversee maintenance of the water system and collect monthly water dues. Every household head in the water project is expected to serve periodically on the water committee, which typically includes a president, vice president, secretary, and treasurer who are elected democratically by all the water project beneficiaries. The treasurer collects dues and keeps track of the funds in a bank account. The dues, currently set at 12 lempiras ($0.63) per month, serve to cover maintenance expenses. The water committee develops schedules for monitoring, cleaning, and maintaining the system, and every household must assist with maintenance duties according to their turns in the schedule.[3] Although group coordination and system maintenance inevitably present challenges, for the most part the water committees work well, and failures of beneficiaries to perform their duties occur rarely. The success of water committees and beneficiaries' dedication to fulfilling their responsibilities reflect well-designed institutions and water's integral importance to life. It also relates to the system of maintenance. Water flow is cut off periodically for treating the cisterns and cleaning the retention dam. Everyone has a recurring experience of water scarcity which is inconvenient even though it is announced in advance. These days remind people of the time when they did not have running water, and how difficult life would be if the water were not going to run again. They do not take water for granted, and this prompts concern to protect the supply.

Establishing the Camapara Reserve

> *The forests are life, the forests give life. That's why we have to protect them.* (Member of La Campa's Environmental Protection Committee)

During the 1990s, water committees observed that residents were clearing forests for maize fields, coffee, and pasture on the slopes of Camapara and worried the new clearings could affect the water supply. One farmer opened a clearing that came within 20 m of one of the retention dams. Individual memories differ as to who first pushed to create a protected area on Camapara, but people agree that the water committees of several villages brought their concerns to the municipal council and requested that Camapara be protected from further clearing. The requests found a receptive ear in the alcalde, who moved to prohibit further clearings on the mountain, and thereafter sought external support to formally establish the protected area.

The process of setting aside Camapara as a reserve proved complicated and continued through two alcaldes' terms of office. Landowners on Camapara resisted the idea that their activities posed a threat to the water supply, and did not want to abandon their land. Although a majority of Campeño households drew water from Camapara and people generally favored protecting the water supply, some were ambivalent or unconvinced about the need for a reserve. A former president of a water committee related,

> *My family had a claim to some of the land on Camapara, but we had never cut down the forest. When I noticed that people were cutting down Camapara's forests, I was very concerned because it could affect the water that we [village residents] had worked so hard to get. I wanted to protect our water source. Our committee was the first to protect its water supply; we fenced off 60 manzanas [42 ha] to prevent clearing. But some other water committees didn't want to put up fences*. (Interview, July 15, 2007)

In 1999, the FAO-funded Lempira Sur project (which subsequently became Southern Lempira Extension Project, or SEL) lent technical assistance for creating the Camapara Reserve. The project entailed agricultural outreach as well as assistance to create the reserve. Solidaridad International joined the effort. Tensions mounted with landowners settled on Camapara when they realized that their land could be expropriated to create the reserve. A determined group of Campeños, most of whom had served on water committees, worked on a personal level to convince recalcitrant parties that their land and homes would be worthless if the water dried up or became contaminated. Lempira Sur extension agents endeavored to build community-wide support for the reserve through seminars explaining the risks posed to Camapara's water supply by clearing, agriculture, and forest fires (Navarro 2002).

Protecting Camapara not only involved building support and overcoming resistance among different parties within La Campa; it required collaboration with neighboring municipios. The border marker at the intersection of La Campa, Santa Cruz, and Caiquín boundaries falls on the slopes of Camapara. In Santa Cruz, most of the Camapara watershed had been deforested for some time, and coffee plantations of Caiquín landowners were advancing onto Camapara from the south. Given this situation, La Campa's municipal council and water committees realized that effective protection of Camapara required the participation and support of Santa Cruz and Caiquín.

Municipal authorities and Lempira Sur representatives invited the authorities of Santa Cruz and Caiquín to participate in creating the Camapara Reserve, and extension efforts distributed relevant information. The three municipios gradually reached an agreement to support the reserve. Santa Cruz and Caiquín agreed to prohibit further incursions into Camapara, but did not commit to relocating their residents who had settled on the mountain's slopes. Meanwhile, Campeño water committees, the municipal council, and supportive residents sought to relocate the approximately 20 households on La Campa's side of Camapara. Some families refused to leave, and others demanded compensation as a prerequisite for relocating. Residents were divided on the issue of compensation because some of the landholders on Camapara had cleared the land without council permission; it seemed unreasonable to pay people to leave land that they had claimed illegally in the first place. The biophysical conditions of Camapara, however, worked in favor of relocation. One coffee producer admitted that she had tried to grow coffee on Camapara, but the plants produced poorly in the cold, wet environment. She noted, "It made more sense to abandon the coffee and support the protected area." Campeños familiar with the area generally agree that maize and coffee do not grow well at such high elevations. Eventually, Don Jacinto (Don Alcides' successor)

offered alternative parcels of land and a modest payment for the families that had to relocate. In the face of public pressure and limited alternatives, landholders on Camapara departed and the forest began to reclaim the coffee plantations, maize fields, and pastures.

Today, Camapara's 324 ha have been fenced with barbed wire through a cooperative effort by all the villages that benefit from its water. The reserve also serves as a wildlife refuge because no hunting or grazing is allowed within the reserve's borders. Hiking into Camapara in 2006, I found vigorous secondary succession on formerly cleared land and few signs of recent human presence other than the retention dams (Fig. 7.1). A recent FAO publication touts the Camapara Reserve as an example of successful interorganizational cooperation (Navarro 2002). Nevertheless, the reserve exists in a context of uncertainty. It falls within the disputed area with Caiquín, and until the border dispute is resolved, La Campa lacks clear jurisdiction over its portion of the mountain. It is uncertain whether the people of Caiquín have developed similarly effective institutions to protect Camapara.

Collective Action for Economic Development Through Organized Groups and Cooperatives

A number of development-oriented groups and cooperatives have formed in La Campa during the past 2 decades. Participants built upon previous experience with collective action for community projects and goals, but the idea to seek economic benefits by forming commercially oriented groups appears to have come from external organizations. The agroforestry groups formed by COHDEFOR represented the first experience of attempting to increase household income through group effort. These groups came together because of COHDEFOR's promises of livelihood improvements, and ended as the Social Forestry System faltered and La Campa's populace compelled their dissolution. In the wake of the Social Forestry System's demise, Honduras has continued its efforts to jumpstart rural development by granting funds to groups that meet conditions for funding. Most of these programs have operated with international donor funds. Projects in La Campa have received funding from most of the major international donor agencies, NGOs, and government programs operating in the Department of Lempira, including FEDECOH, World Vision, Care International, and Solidaridad International. In addition, the ONILH has been active, particularly in promoting microcredit cooperatives. The following discussion will focus on the San Matías Indigenous Lenca Agroforestry Cooperative (Cooperativa Agroforestal Indígena Lenca de San Matías, Limitada, CAFILSAML) and its successor, the San Matías Agroforestry Cooperative, because of their dependence on forest resources.

CAFILSAML focused on the reestablishment of resin tapping. Between 1987 and 1995, Campeños and the municipal council strictly enforced the community accord that no commercial production would be permitted in La Campa's forests. A group of former resin tappers, including Renán, petitioned the municipal council

Fig. 7.1 (**a**) Secondary succession on the edge of Camapara (**b**) retention dam for a village water system on Camapara

in 1995 for a special permit to renew tapping. The alcalde, Don Alcides, supported the proposition out of recognition that these households were among the poorest in the municipio, and had few employment options or sources of income. The passage of the Agricultural Modernization Law in 1992 had given municipios the right to make certain forest management decisions. The law gave legal backing to La Campa's forest governance rights, and the municipal authorities could authorize forest production. However, for the project to proceed, COHDEFOR would have to provide oversight and develop a management plan. Campeños had varying opinions about resin tapping and the return of COHDEFOR, but the municipal council welcomed the opportunity to collect a tax on each barrel of resin. Resin tappers inaugurated CAFILSAML with 140 members from the villages of Cañadas, Cruz Alta, Tontolo, and San Matías. They signed a contract to sell resin to Fondo de Resinas, a private firm with a monopoly on Honduras' resin. The management plan from COHDEFOR cost 430,000 lempiras ($42,500) (López and Mejía 2002), which the Fondo de Resinas loaned to the cooperative along with a loan for resin-tapping materials. Thus the group became indebted early on. They started out optimistically, but their experiences soon repeated the patterns they had faced in the early 1980s. Prices dropped from 1,200 to 800 lempiras per barrel. Members left the cooperative, and remaining resin tappers felt compelled to collect as much resin as possible in an effort meet debt payments. In violation of the management plan, they began to tap young pines (thus stunting growth and compromising potential timber value). Then in 2000, pine bark beetles (*Dendroctronus frontalis*) infested pines in the resin-tapping zone. COHDEFOR recommended logging the infested trees and removing them before the infestation spread; Lempira Sur offered a loan to the cooperative to purchase a portable sawmill. Resin tappers accepted the offer, but it placed them 200,000 lempiras ($11,800) deeper in debt.

The tappers received basic instruction on sawmill operation and succeeded in removing much of the infested timber, which they sold as charcoal and sawn board to urban markets. An evaluation by the Lempira Sur project during 2001 gave optimistic projections for the cooperative (López and Mejía 2002); however, resin prices stayed low. The sawmill suffered maintenance problems due to lack of replacement parts, and as cooperative leadership endeavored to find technical support, the sawmill lay useless for months. The debt grew as interest accumulated at 26% per year. Membership fell to less than half of the original number. One member, who was supporting two children alone, regretted that he had ever joined the cooperative. "We are working just to pay off the loan," he commented; "The cooperative hasn't helped improve my life at all." Soon afterward, he left the cooperative and put his energy into planting coffee. By 2004, resin tapping was suspended. Although the sawmill was repaired, it generally stood idle. Their debts far exceeded their ability to repay the loans. It is unclear why donors, lenders, and cooperative members anticipated high profits given their prior experience with market fluxes.

Although CAFILSAML had encountered many problems, in 2004 the FAO leadership in Honduras decided to push the members to renew the cooperative, and approached Don Alcides to guide it. The cooperative was reborn as the San

Matías Agroforestry Cooperative in July 2005. It took on the existing debt and gained funding from SEL, formerly Lempira Sur, and the Access to Land Pilot Project (PACTA). PACTA was funded by World Bank and aimed to establish sustainable rural enterprises and assist landless and land-poor families with land acquisition (Korczowski et al. 2005). An enterprising group in Cañadas took over the sawmill operation and began work under a new management plan. Don Alcides and the executive board set about diversifying the cooperative beyond the sawmill by offering participation to a wide range of local enterprises. La Campa had a number of incipient groups that were trying to reach markets: the Japanese International Cooperation Agency was sponsoring a group to make crafts from pine needles, Lempira Sur was supporting a group that made *papelín* (ornamental paper products) from fibrous, native plants, and several new pottery groups had formed. A group of young men had received training to produce miniature ceramics as souvenirs and wanted to find buyers, and frustrated resin tappers, led by Renán, had started a cooperative to plant sugar cane and sell panela. Don Alcides met with each group. He proposed the formation of an integrated cooperative through which they could join forces to gain funding, technical assistance, and training in business management and accounting. Most of the groups that he approached joined the cooperative. Although Campeños had reason to be skeptical about the likelihoods of success, people were willing to try. At the same time, interviews with participants revealed pessimistic undertones. They noted that groups often promised more benefits than were actually realized; some people did not work their share or made promises that they failed to fulfill. One veteran of group organization efforts noted that people start out enthusiastically, but when they realize how much work it really takes, they get discouraged and some quit. Despite setbacks, this man remained convinced that cooperatives and community groups had the potential to improve livelihoods and income. Evidently, many people in La Campa shared similar views.

By the end of the second year, the cooperative had grown to include 110 families and 14 small businesses, many representing the least privileged Campeños. Many of the businesses relied upon La Campa's natural resources for their raw materials, and aimed to achieve a stable livelihood through sustainable resource management. The cooperative's intraorganizational structure and responsibilities had been defined, and the central administration served as a clearinghouse to provide technical, financial, and legal resources for its constituent enterprises. The debt of the previous cooperative had been paid off, mainly due to the sawmill's lumber sales. At the same time, the cooperative had accepted a new loan of 2,200,000 lempiras (about $115,800) through PACTA. Limitations continued to challenge the small businesses, but many cooperative members expressed optimism that their businesses would be successful. They hoped to find customers and markets; several of the cooperatives' member organizations produced goods that Campeños rarely bought (e.g, ornamental paper, or pine needle crafts). The cooperative planned to build a centralized shop in the Centro to sell goods from its constituent enterprises, but the shop's success would depend upon drawing clientele to La Campa.

Collective Action in Synthesis

As the above examples suggest, collective action remains a part of Campeños' daily lives, although it has undergone major changes in the past century. In contrast to the early days of the municipio, most communal labor activities have devolved from the municipal level to the village level. Instead of requiring able-bodied men to work a certain number of days each year, the municipal council summons labor crews only for occasional tasks, such as urgent repairs to schools or other primary infrastructure. The water projects have now become a central focus for communal labor, and this provides a shared experience for nearly all Campeño men and some women. Similarly, cooperative efforts to protect Camapara from incursions have emerged out of the concern to protect water sources in perpetuity. In addition, people have taken advantage of national development programs and international aid initiatives. Insofar as development programs and financial assistance have helped La Campa to protect its forests and improve livelihoods, the successes have grown out of local participation and persistence despite setbacks and failures. External support has been instrumental for small business cooperatives and enterprises. Even though the amount of debt that these small businesses carry seems high relative to their current incomes, the groups provide new opportunities for employment and alternative sources of income. The expansion in entrepreneurial effort resonates with the rapid pace of market integration, the influx of external funds, and the associated evolution of collective action.

La Campa as a Dynamic Social-Ecological System

The history of La Campa shows that the people and their forests have adapted to social, economic, and political perturbations. To understand La Campa's experiences with forest transformations and sociocultural change, it is helpful to evaluate it as a dynamic social-ecological system. Viewing it in this light recognizes that social and ecological dimensions interact to create systemic relationships that change through time. Because many Western approaches to resource management and development have not increased resilience to inevitable stresses or fostered sustainability, the assessment of apparently sustainable systems may provide useful insights. The social-ecological system of La Campa presents dimensions that support sustainability, but also reveals challenges and apparent weaknesses that could undermine the resilience of the people and their natural environment. To examine the resilient aspects of the system, I follow Folke et al. (1998). They note that resilient and sustainable social-ecological systems involve management practices based in local knowledge, and underlying social mechanisms that support sustainability. La Campa seems to have embodied both of these dimensions through most of its history, but current processes are changing the contexts in which traditional knowledge applies.

Management Practices Based in Local Knowledge

Historically, Campeño management practices focused on slash-and-burn agriculture and agroforestry gardens. They incorporated knowledge regarding soil fertility, processes of plant growth, and the behavior of fire. Slash-and-burn agriculture was part of the human-managed cycle of forest renewal and regeneration; people cleared patches in mature forest and then abandoned them to long fallows (Fig. 7.2). Similar to other parts of the Americas, this subsistence-oriented system evidently fostered a biodiverse, resilient landscape (Alcorn and Toledo 1998; Worster 1990). From an ecological standpoint, temporary fields created small-scale disturbances that allowed forests to regenerate rapidly: a single burn to clear trees typically leaves seeds that can sprout and stumps that coppice the following year. In areas under permanent cultivation, such as house gardens and orchards, people incorporated a multiplicity of native and introduced plants that added variety and nutrition to their staple diet of maize and beans.

In the present, people continue to favor a diverse set of annual and perennial crops, but the practice of fallowing land after a few harvests has almost been eliminated. It is typical for farmers to cultivate fields until weeds invade; then fields are abandoned for a short fallow period. Other factors, such as landowner absences or economic travails such as the coffee crisis, may also lead to field abandonment. Fields used for a long period regrow more slowly than slash-and-burn fields used only 1 year, and they are likely to have more herbaceous than tree species (Murphy and Lugo 1986; Styger et al. 2007). Today's short fallows appear to be less resilient

Fig. 7.2 Regeneration in lowland communal forest

to regenerate forest cover and provide fewer sources of firewood or timber than the long fallows under the slash-and-burn regime (Dalle and Blois 2006). Yet La Campa continues to have forests at many successional stages, and the conversion of long fallows to short fallows has mainly occurred in flatter, more fertile areas. By intensifying production in the places most suited to agriculture, Campeños have been able to reduce pressure on the forests located on steep, easily eroded slopes. Therefore forests regrow in the areas least suited to agriculture, and they provide timber and firewood that is not available in short fallows. Coffee represents another form of intensification in previously forested areas. The system of production incorporates Campeño understanding that coffee grown under shade is healthier and more resilient; they also recognize the advantages of organic matter provided by shade trees. The resulting "coffee forests" limit erosion and provide income, food sources (fruit trees) and firewood (when coffee is pruned). In short, coffee plantations provide many of the advantages of secondary successions for wildlife and people. Most Campeño households maintain a parcel of forest as well as patches of fallow, fruit trees, and fields. Campeño traditions of maintaining a diversified subsistence strategy has extended to intensive agricultural production and commercial activities while continuing to apply traditional knowledge and practices that include forest maintenance. La Campa's experience also indicates that local knowledge can develop through time as people encounter new opportunities and challenges.

Social Mechanisms That Support Sustainability

Campeños have developed a number of social institutions and mechanisms that underlie or reinforce sustainable dimensions of their social-ecological system: (1) accumulation and transmission of local ecological knowledge across generations and its integration in daily life, (2) institutional arrangements that foster sustainability and resilience, (3) rituals and traditions (sometimes indistinguishable from institutions) that reinforce beliefs and affirm behaviors that foster resilience, and (4) a world view and cultural values that support resilience (cf. Folke et al. 1998).

Accumulation, Transmission, and Integration of Local Ecological Knowledge

Similar to many agricultural societies around the world, Campeño parents pass on their ecological knowledge to their children as they work together in fields, plantations, and homes. The details of what is learned vary with the knowledge and capacity of the teacher. Labor exchanges, although they are becoming less common as people become focused on wage labor, provide opportunities to share experiences and impart ideas among kin and neighborhood groups. Coffee growers' organizations (Chapter 6) represent a forum to learn modern and "technified" methods of production, but at the same time people critique techniques that they have

tried. The nexus of Western knowledge and local knowledge in La Campa opens the possibility of integrative approaches to address concerns over plant infestation and disease, comparative advantages of chemical and organic fertilizers, and the balance of sun and shade that works well for different microenvironments. The preference for diverse agricultural crops entails a socially transmitted knowledge that continues to distinguish Lenca agriculture and coffee plantations from Ladino agriculture (Bass 2006). It is the exception rather than the rule for government programs to recommend diversified livelihood strategies. In the aftermath of the coffee crisis, however, IHCAFE and coffee producer organizations have begun to recommend diversification, in part through introduction of a variety of shade trees into coffee plantations. The methods being recommended by technicians bear notable resemblance to traditional Lenca agroforestry.

Institutional Arrangements

Historically, Campeños had a number of institutions that influenced forest use and land-cover change, such as *emboletamiento* (Chapter 2) and rules about land use that constrained people's clearing options (see Chapter 3). These institutions helped to moderate the speed of forest transformation and encourage people to claim only as much land as they needed for subsistence. As a result, access to land remained relatively proportional to household labor and food demands. The contexts of land use have now changed with privatization. Current rules prohibit forest clearing and cutting of mature trees without permission. For example, people who cut trees for timber on communal land without a permit must plant trees to compensate for the loss. The *juez de policia* said that there are a few cases every year, and he makes a personal visit to the violators to make sure new trees are planted within a year of their transgressions. In the past 5 years, the municipal council has also created an Environmental Protection Unit and hired a forest guard to monitor Camapara and the rest of La Campa's forests. A group of concerned citizens who live and farm in the highlands have formed an Environmental Management Committee voluntarily; the members reinforce the forest monitoring effort around Camapara, Cruz Alta, and Tontolo.

Campeño social and ecological resilience has been supported by its communitarian tradition and institutions for local governance. Institutions required communal labor and service in local government, therefore Campeños had to balance individual priorities with communal obligations. Communal labor built social cohesion, but given the inevitability of personality clashes, interpersonal tensions, and shirkers, the community also developed mechanisms to enforce rules and mediate conflict. Social cohesion had to be constantly reinforced and renewed through the exercise and occasional modification of the rules, as well as the mediation of conflict. Reviewing the municipal archives revealed a steady stream of conflicts over land, incidents of domestic violence, shirkers who resisted their duties, siblings who competed for inheritance rights, and people (including some authorities) who sought to gain influence or control resources

by dubious means. Campeño social organization and the communitarian tradition did not avert conflict or prevent the expression of the darker sides of human nature. Instead, they provided a framework in which people could deal with conflict and misdeeds directly, and take broad-based action when municipal council members' actions and the rules themselves came into question. This capacity was severely tested during the period of COHDEFOR's interventions because the problems that ensued could not be resolved through internal community mechanisms alone (see Chapter 4). Even so, their well-honed experience of addressing conflict and affirming the communitarian tradition helped to mitigate the escalation of internal tensions.

Institutions that support social equity and participatory governance, including access to natural and social resources, may be just as important for ecological sustainability as institutions that constrain the exploitation of natural resources. La Campa faces shortcomings in social equity and participatory governance, yet it has supportive dimensions. People continue to work communally in the context of water projects, village projects, and cooperative ventures that require cooperation and joint effort, even though communal labor at the municipal level has declined. These efforts reinforce social capital while maintaining human-built and natural resources.

Traditional Beliefs and Practices

> *I've already said to Padre Celestino: Why did you priests force us to develop certain traditions in the past, and now you're trying to take away those same traditions?* (Campeño farmer)

Traditional rituals, ceremonies, and other customs have provided a means to internalize or encode social and ecological knowledge; they also helped to build community by affirming shared values and beliefs. The traditions of pagos (see Chapter 2) served as a means to communicate respect for natural processes and acknowledge human dependence upon natural resources. *Guancascos* confirmed social and economic ties to other Lenca communities. As noted, criticism and opposition by the Catholic Church and the national educational system have diminished the practice of pagos. In 2003, La Campa's priest prohibited the *guancasco* with Belén, evidently for its pagan overtones and apparent adoration of the images of the saints.[4] It is nonetheless noteworthy that La Campa, San Manuel de Colohete, and Belén celebrated their *guanco* ties until recent years. Today they are among the few municipios recognized as practicing successful forest conservation. Although historical contexts and topography have supported the survival of forests in these municipios, their shared experiences of forest conservation raise the question of whether the *guancasco* rituals might have reflected (perhaps reinforced) underlying beliefs that encouraged sustainable uses of their natural resources. Now Western ideas of conservation are penetrating La Campa and providing a new rationale for sustainable practices.

The Festival of San Matías continues; it is an annual highpoint that celebrates the Campeño origin myth, local traditions, and the beneficence of their patron saint. The coordination of community patrols, fee collectors, and logistical arrangements for festival vendors also serves to integrate many members of the community in a cooperative effort that resonates with communitarian traditions. Even though the priests decry the worship of saints' carved images, they do not oppose the Lenca music, dances, and displays of public devotion to San Matías during the festival, evidently because the monetary offerings constitute an important source of income for the Diocese of Santa Rosa de Copán.

World View and Cultural Values

Folke et al. (1998) note that world views and cultural values of respect, generosity, reciprocity, redistribution, patience, and humility typically appear in resilient social-ecological systems. La Campa's history reveals all of these values, and they were reinforced through communal obligations of labor and service. In general, Campeños held that no person was better than any other and respected others for their integrity, hard work, and willingness to cooperate. Of course, Campeños vary in their individual adherence to these principles, and people adjust their expectations of behavior to the person in question. Understanding individual faults and virtues helps community groups to work more efficiently, at least some of the time. People express admiration for those who can be relied upon to do their share of work in the community, and describe outstanding young people approvingly as being well-behaved, hard-working, and respectful (parents use these adjectives to describe desirable qualities in future sons- or daughters-in-law). Good behavior entails fulfillment of duties, willingness to help others, humility, and honesty. Campeños still live by many of these values. An example comes from my fieldwork:

> *I ran into José [a young coffee grower] on the way back from Mescalio this evening. He asked me if I'd happened to see an envelope along the path. It had dropped from his pocket and contained the entire payment for the coffee harvest that he'd just sold to the intermediary. The money had to pay all of his pickers and outstanding debts; he'd been retracing his path for hours in hopes of locating it, but his hope was fading as darkness fell. I hadn't seen it, although I had taken the same route. 'Are you going to announce it on the radio?' I asked. [Public service announcements from radio stations in Gracias are a common way of spreading news and making announcements.] 'I can't announce that I lost an envelope full of money,' he pointed out. 'Who knows what kind of people would go looking for it! But I guess that I can say that I lost a package.' Two days later I saw him again and asked if there was any news. José smiled; one of his pickers had walked all the way from Mescalio to José's home in the Centro early that morning to give him the envelope. All the money was there. The picker was from one of the poorest families in Mescalio; he had found the package on the path. When he heard José's announcement, he decided to return it. I expressed amazement that someone would return such a large sum of money, especially when he had such need. José nodded. The man had explained that he was raised to believe that money gotten without hard work can bring no good. He had been taught that if a person found a lost item, a week had to pass to give the owner a chance to claim it. José added that he was fortunate that the money had been found by an honest person.* (Excerpt, field notes, February 19, 2003)

José's experience reveals that he did not count on people's honesty, and he knew Campeños might make self-interested decisions despite community values. Nevertheless, adherence to principles of reciprocity is not atypical. Campeños do not advertise acts of generalized reciprocity and generosity; therefore they are hard to document. The tradition of leaving food by the doors of families who have run out of maize, or giving away the first ripe ears of maize when your own family is eager to eat them all, may have lost its relevance now that food is widely available in local housefront stores. Yet everyday generosity represents a form of generalized reciprocity, and it endures in numerous small gestures: a lift to Gracias offered by a vehicle owner, the sharing of eggs, bananas, and ripe fruit among neighbors, a cup of coffee and bread offered to a stranger.

Dimensions of Unsustainability and Challenges to a Sustainable Future

Evidence for resilience and sustainability in La Campa contrasts with apparently contradictory processes and potential threats to the social-ecological system. These include threats to the environment, concentration of land in the hands of a better-off minority, a decline in participatory processes in municipal government as alcaldes have claimed authoritarian power, and a diminution of community control over forest governance as private owners have claimed communal forests.

Threats to the Environment

The introduction of chemical inputs has increased the productive capacity of the land, but chemicals also introduce toxins into the environment. Nearly all farmers in La Campa use chemical fertilizers. Farmers vary in their use of herbicides to control weed growth, but they are easily available. Pesticides are not as popular and are rarely applied to maize or other food crops. Coffee production introduces toxins because large growers tend to follow IHCAFE recommendations to use the full spectrum of agrochemicals, including fungicides and pesticides, to ensure a good harvest (cf. IHCAFE 2001). Coffee processing represents a greater problem because many producers own their own manual *beneficios*. Traditional *beneficios* require a steady flow of water to carry away the juice and debris as cherries are separated mechanically from the coffee bean. Processing pollutes the water used to wash beans, and the wastewater can have damaging impacts on streams. The largest producers are the major contributors to this problem. This issue is drawing the attention of Campeños who live near the streams contaminated by the wastewater, and some people hope to organize to pressure coffee growers into adopting a cleaner technology. IHCAFE is concerned to provide better processing options by supporting *beneficios ecológicos*, which use comparatively little water.

Concentration of Land

Privatization of land has reduced access to common-property land, and increased pressure on the remaining communal forests and grazing lands (see Chapters 5 and 6). Traditional mechanisms of constraining land acquisition dissolved as land privatization advanced rapidly in the wake of COHDEFOR's departure, and the council failed to enforce limits on land claims. The expansion of coffee production exacerbated the processes of land concentration because the better-off coffee growers tended to increase their wealth and use it to purchase more land from their poorer neighbors. The process accelerated when the council allowed outsiders to purchase land in La Campa, breaking a centuries-old institution that prohibited outsiders and nonresidents from obtaining community land. The inequities in land ownership appear to be growing. Although most of the land continues to be owned by Campeños, the increasing gap between the better-off and worse-off suggests that the foundations of community cohesion face an unprecedented challenge. It is too early to know whether the arenas for collective action and community governance will be able to counteract the potentially negative impacts of growing socioeconomic heterogeneity within La Campa.

A Decline in Participatory Processes in Municipal Government

The past few alcaldes have come from relatively privileged backgrounds, with relatively high levels of education and economic resources. They have been charismatic, unwavering in their convictions and determined to leave their mark on La Campa. Perhaps because of their overriding sense of mission, they have aimed to consolidate their power and influence through assertive decision making rather than consensus building. They have ties to political authorities and people in positions of regional and national power, giving them more opportunities to obtain favors and assistance that support their objectives for local development. For the most part, alcaldes pursue widely acceptable development goals, such as road building and school construction, but when residents and council members have had concerns or disagreed with the proposals, they have had limited opportunity to influence decision making.

Only in a few instances, when a large group of citizens presented a united front before the council to oppose an alcalde's actions, did the alcalde change course. In one instance, an alcalde decided to suspend the prohibition on the sale of alcoholic beverages during the Festival of San Matías in order to collect liquor sale taxes and boost municipal income. Following the festival, the liquor sales continued, and sellers told their neighbors that they had paid a large sum of money for an annual liquor license. Although the *ley seca* (dry law) had once been seen as an affront to individual freedom, many people had come to see it as beneficial. It didn't stop liquor sales or consumption, but it helped to keep drunks off the street, eliminated public drinking, and reduced alcohol-related aggression and injuries. A large group of residents and the priest were incensed that the alcalde would endanger community safety to build the tax base. When the alcalde confronted an

overflowing, angry crowd at the municipal session, he asserted that he had never contemplated annual liquor licenses and declared that it was simply a misunderstanding. Subsequently, the bars were closed (or returned to selling liquor surreptitiously behind closed doors).

Except for moments of public outrage, it has become typical for recent alcaldes to introduce a proposal, gain the tacit approval of the council, and implement decision with minimal deliberation or discussion of alternative viewpoints. As a result, the traditions of participatory governance have been undermined, and judicious voices with valuable perspectives have been excluded or ignored. It is not clear whether this pattern will continue, or whether it is a temporary aberration. An interesting dimension is that recent alcaldes have apparently been given freer rein because citizens as well as the council had confidence that the alcaldes' decisions would benefit La Campa. Indeed, each of the men has worked diligently to bring improvements to the municipio. Most of the recent advances in infrastructure occurred due to these alcaldes' efforts. Road building, school construction, installation of electricity in the Centro, an Internet and computing center, the agroforestry cooperative, potable water projects, an ecotourism initiative, a community museum featuring local pottery, and a soccer stadium were among the overt accomplishments gained during their periods. These men, all native Campeños, were not only ambitious visionaries, but they leveraged ties to people with resources and influence in San Pedro Sula and Tegucigalpa. They had established these ties during periods of study and work outside La Campa, and they returned to La Campa with aspirations to make a difference. Despite the noteworthy advances that they achieved, their work also has brought unintended consequences and difficulties.

The alcaldes' terms of office coincide with the concentration of land and wealth in the hands of a minority, and a widening gap between the well-off and everyone else. They favored land privatization and market integration policies that disproportionately helped people who were already better-off. As a consequence, La Campa's poorest residents have less access to arable land and forest resources. With inadequate land and few productive options, it is more difficult for the least advantaged to pay for an education that could provide alternative sources of income in lieu of agriculture. If they are compelled to overexploit communal forests due to their limited alternatives, common-property forests will be further degraded. Although regrowth is occurring in some places, La Campa's lowland communal forests have fewer species and lower tree density than similar, private forests in the area (Tucker et al. 2007). This appears to reflect their history of exploitation by residents as well as loggers, and resin tappers. Increasing inequity may lead to social tensions if the poor are not given fairer access to land, forests, education, and the opportunities enjoyed by the better off.

Decline in Common Property and Community Control over Forest Management

With privatization of land and forests, much of the responsibility for forest protection has shifted from the community to individual owners, who may or may not prioritize forest conservation. Currently, many Campeños value forests for their

products and services. They see forests as providing water, sheltering wildlife, and moderating temperature extremes. Some recognize that forests play a role in preventing erosion, and they assert that forests should be conserved. Private owners, however, can clear their land without council approval (but they cannot sell timber commercially). If incentives change and give them opportunities to gain more income by cutting down their forests, they may choose to do so. By contrast, common-property land may be more supportive of community and ecological resilience when the owner-users have institutions that require a shared decision-making process before major changes are implemented. Unfortunately, common property in Honduras has fewer protections under the law, and is more vulnerable to interventions and expropriations by the state than private property (Tucker et al. 2007).

Private property in La Campa presents challenges for sustainability on at least two fronts. First, it allows individuals to make independent decisions that may be prejudicial to the community and the environment. Second, private property has favored the privileged and outsiders while placing the rest of the population at a disadvantage for maintaining or acquiring land needed to support livelihoods. Even though people attempted to stop and reverse cases of land grabbing, the process occurred too rapidly to enact equitable institutions for land distribution that fit the new technological and economic circumstances (Chapter 5). If the process had occurred more slowly, a plurality in the community might have found a way to defend the communitarian tradition's tenet that all Campeños had equitable rights to land for livelihood.

In terms of forest protection, it is difficult to determine if privatization is deleterious or advantageous. Many private owners protect their forests. Although they have the right to clear the forest on their land, that eventuality is constrained within La Campa because people are still part of closely knit social networks and public criticism is an effective means of encouraging locally acceptable behavior. In La Campa, cutting trees indiscriminately or for profit is not socially acceptable. Social pressure, however, is not likely to influence non-Campeño and absentee landlords who have acquired land in La Campa. Similarly, conservation of communally owned forests depends upon institutions that constrain exploitation and promote sustainable levels of use. But if community institutions fail to protect forests or enforce constraints, and people do not care enough to limit uses, then communal forests can be overexploited. Therefore the type of property (communal or private) does not assure conservation or degradation; the institutions associated with property rights shape the outcomes (Gibson et al. 2002) in association with the social contexts in which they are embedded (McCay and Jentoft 1998; Petrzelka and Bell 2000).

Dynamic Change, Forest Conservation, and Paths to a Sustainable Future

Tucker: "Why does La Campa still have so much land in forest while many other municipios have problems with deforestation?"

Campeño forest guard: "It is because of COHDEFOR, because it used to sell off our timber. I still remember when I was only a child, maybe 6 years old. People got really mad because COHDEFOR was ruining our forests. They had a big protest, they mounted loud-

> *speakers outside the municipal meeting hall and the whole Centro filled with people. They demanded that logging end. Ever since then, there have been no timber contracts approved in La Campa. Of course now there is the local agroforestry cooperative, but it's harvesting sustainably not just logging for profit, and it's got a management plan. Most people agree that forests should be conserved. There isn't much of a problem with illegal logging here."* (Excerpt, field notes, July 23, 2007)

In much of the developing world, natural resource conservation appears contradictory to development. La Campa faces a similar conundrum as it tries to improve infrastructure, gain living wages, and maintain diversified livelihoods. Historically, La Campa's poor roads constrained outside incursions and exploitation. Although people traded pottery regionally, and had regular contact with priests and external authorities, they had a great deal of autonomy in local governance. These conditions fostered self-reliance and bolstered the communitarian tradition that encouraged people to regard community well-being as an integral part of their personal well-being. People survived because they knew how to work together (even if they chafed at obligatory labor), and if they had a bad year, principles of reciprocity helped people to survive. The living conditions, however, were marginal. People died of curable diseases, suffered malnutrition, and endured periodic famines. These intolerable conditions demanded transformation; people harnessed their own labor and pursued available external support to improve their lives. Reviewing the past century of transformations in La Campa shows that people's food security, health, and general welfare have changed for the better. As one elder noted, Campeños no longer die of hunger. Whatever the challenges and risks created by recent development and change processes, it is crucial to remember the gains they have made. Today, in addition to the traditional agricultural livelihoods, they can attend school and learn a profession. People can communicate by telephone, travel to Gracias and more distant places by vehicle, and obtain basic health care at one of the municipio's two health clinics. Most households drink potable water and have latrines; some have modern plumbing. Markets have brought disruptions, but they have introduced new opportunities to diversify livelihoods, earn income, obtain education, and live healthier and perhaps more fulfilling lives. These alternatives increase the possibility that people will reduce their dependence on forest resources and allow fallows to become mature forest. New opportunities and alternatives for making a living have nevertheless come at a cost, including loss of cultural heritage with diminished traditions and growing social inequity. These costs have yet to be fully comprehended by the people (or myself).

There may be critical periods or historical moments in which people discover the dangers of natural resource degradation and choose to impede it. Scholars note that environmental crisis can provoke learning (Baland and Platteau 1996; Folke et al. 1998), but learning may occur too late to avoid lasting, detrimental environmental change. McKean (1986) points out that sustainable common-property institutions evolved in seventeenth-century Japan after elites deforested village commons to obtain timber; some of those forests were transformed to grasslands. In the case of La Campa, the devastation from uncontrolled logging in the 1970s and 1980s shook the people's conviction that forests were forever renewable and endlessly abundant.

Once their perspectives changed, they prohibited commercial logging, but it proved more difficult to design rules to limit subsistence harvesting of firewood or conversion of forests to fields.

The development of new forest management institutions has been partial, gradual, and sometimes uncertain. La Campa's experience indicates that it takes many years for people to develop effective institutions to manage natural resources, especially when a major disturbance transforms previously extant conditions or invalidates previous assumptions and institutional arrangements. Campeños have been adjusting to a new understanding of forest vulnerability for over 20 years, and they are still working to develop institutions that fit their evolving circumstances and perceptions. Their experience offers a precautionary note for environmental protection efforts and policies that attempt to foster or impose similar institutions across diverse contexts. Most environmental and development policies aim for (or demand) signs of improvement within the space of several years, without considering that advancements, whether environmental or economic, take time (Garduño 2005). Compared to many other communities, La Campa has a more solid background of collective action and governance conducive to developing new institutions and effective forest management. Even so, it is probably not possible to find a set of institutions sufficiently flexible and resilient to accommodate all potential disturbances and shocks. The best that people can do is to design institutions as well as they are able, given situations and challenges that they know and understand (Ostrom 1990).

Understanding Forest Persistence in La Campa

As the above discussion indicates, La Campa's forests have persisted because of the ways that sociocultural, institutional, biophysical and political-economic contexts have interacted in the community through history. Geography and limited accessibility helped to limit forest conversion in a context of subsistence agriculture and low population density. The lack of national interest in the Department of Lempira during the postindependence period provided people with the opportunity to maintain and refine appropriate institutions for governing community life and natural resource management. Although the form of local government was imposed by the Spaniards, the people were able to make it their own and give it meaning through the development of local institutions and a communitarian tradition that bound them together through shared land rights and obligations. These institutions and the communitarian tradition are experiencing major transitions, but thus far the changes have not led to community dissolution or forest destruction.

A critical dimension of forest persistence in La Campa is the patchy, cyclical nature of forest exploitation and regeneration, and the variability in the overall sequencing and severity of interventions. The biophysical characteristics have provided a context that encourages cycles of clearing and regrowth. The steep slopes and

rocky soils that comprise much of La Campa's land offer suitable conditions for pine-oak forests, but erode rapidly under annual crops. Cycles of clearing and forest regrowth on hillsides help to interrupt erosive processes. People are well aware of the limitations of the environment, and they have used forests in conscious and unconscious ways that permit exploitation as well as regrowth. These patterns do not constitute a homeostatic system; over time, biodiversity has evidently declined and forests have become depleted. Nevertheless, concatenated, cyclical transformations have helped Campeños to maintain a large area in patchy, variable forest cover historically and in the present. Due to ongoing social, institutional and economic transformations (such as job opportunities outside of agriculture and increased enforcement of forest protection rules), forest cover is experiencing a gradual expansion, but the patterns of forest change continue to be dynamic across the landscape.

By creating a landscape in which forest cover is varied and changes dynamically through time, Campeños increase their options and resilience. They do not see forests as an obstacle to livelihood (which began to occur when COHDEFOR kept people from using and benefiting from their forests). They view forests as a set of potentials and alternatives. Such a perspective provides incentives to maintain forest cover because it has so many uses and meanings for people. Forests provide a sort of "savings bank" for land, and multiple resources and benefits when they are in the process of regrowth. Campeños have also discovered that not all forest products are renewable, and that realization has led to the creation of the Camapara Reserve and private forests protected for a variety of personal reasons.

Summary

La Campa's experiences have relevance for a number of theoretical concerns and conundrums related to forest conservation, environmental change, and globalization processes. These can be summarized as follows:

- Forest cover may be far more dynamic in a rural, forested landscape than what is generally contemplated. La Campa's forest dynamism reflects its history of slash-and-burn agriculture, but forest dynamism may reflect adaptive strategies that merit greater study, given the implications for sustainable management. Instead of focusing on reforestation or deforestation, researchers may gain new insights for conservation and sustainable management by looking more closely at the implications of variability in forest transformations over time.
- Conservation can include dynamic transformations of secondary forests. If primary forests are destroyed and secondary successions dominate the landscape, then the concept of conservation cannot be about protecting intact forests. Instead, it maybe more useful to think of conservation in terms of maintaining or expanding overall forest cover and native plant and animal life. Conserved forests may include patches that switch back and forth between forest cover and fields, particularly if the system includes long fallows that allow the renewal of soils, woody plants, and a variety of animal habitats.

- It takes a very long time for effective institutions to develop for resource management. Even when people have organizational experience, many factors can complicate institutional development. Rapid social and economic changes pose particularly vexing challenges, and many efforts to support community-based development and local governance of natural resources are not given enough time to produce meaningful results. Many programs in Honduras last no more than 4 years (the period of a presidential administration). Beyond their commitment to prohibit commercial exploitation in its forests, Campeños have struggled to establish rules to control local use of forests. Today they have imposed fees for timber and fines for unauthorized clearing, and they have managed to protect a crucial watershed by creating and enforcing the Camapara Reserve. But even now, there are no limits on firewood extraction, and the communal lowland forests are visibly sparse and slow to regenerate.
- Forest-cover maintenance and expansion in a context of population growth challenge the assumption that population growth leads to deforestation. Thus La Campa's experience contributes to an expanding literature that regards population growth as only one of many variables that influence environmental degradation. Institutional arrangements appear to be particularly important in shaping whether demographic processes accelerate or mitigate environmental degradation (Varughese 2001). In La Campa's case, population growth occurred in conjunction with afforestation, a point emerging with forest transition theory and certain case studies (Rudel et al. 2002; Tiffen et al. 1994).
- Development programs can make a beneficial difference in people's lives if the people have the opportunity to shape the content and purpose of the support. In La Campa, funding for water systems, schools, and infrastructural improvements has come from NGOs, international donors, and government programs. However, La Campa petitioned for the support for the most successful projects. When Campeños requested a specific type of support, it went directly for the stated purpose. It helped that the programs and agencies tended to provide only technical and material assistance rather than cash. But if Campeños had not had a communitarian tradition or the experience of shared governance responsibilities, and the social capital to monitor and manage the use of materials for their designated purposes, the resources could have been diverted (and some may have been) or monopolized by a small segment of the population.
- The experience of environmental degradation can provide an opportunity for learning and institutional innovation. Shocks may have beneficial dimensions when they compel people to recognize weaknesses in their social-ecological system, and facilitate better comprehension and compensatory actions. If COHDEFOR had not interfered in La Campa's common property forests, the people might never have realized that forests could be utterly destroyed. Their own piecemeal, gradual exploitation had the potential to destroy forests, but not with the dramatic, undeniable visibility of the loggers' unrestrained clear cutting. It was also easier to view the degradation as a disaster when it was caused by an outside force; it allowed people to overcome internal differences more easily and agree on a course of action.

We live in a world where "deforestation is no longer a purely economic issue … as it is fast becoming a matter of humanitarian concerns mixed with long-term environmental ethics" (Williams 2003, p. 500). Therefore, regeneration and evolution of forest cover merits greater attention. Unfortunately, natural resource management is a confounding and contradictory process. No decision will have a completely beneficial outcome for all of the people or all aspects of a given environment; there will be trade-offs. Attempts to discover or impose universal remedies for deforestation emerge periodically, but none of them have had consistent results. What works in one place may fail miserably in another, and given the diversity of social and biophysical contexts of forest transformation, it should not be surprising that we find no broadly applicable solutions. As several scholars have argued, there are no panaceas to stop deforestation and encourage sustainable management (Berkes 2007; Nagendra 2007; Ostrom 2007). Humans lack comprehension of the ways that their actions will impact natural resources through time. In La Campa's case, forests have become depleted of large trees and wildlife, and over time plant and animal species may have been lost. Yet forest cover, even if depleted, is better than pasture or annual crops in terms of maintaining environmental services; moreover, forest cover can gradually mature.

I suspect that La Campa is representative of many places in which people's interactions with forests involve small-scale interventions that lead to a variable and dynamic forested landscape. A recent study of the Honduran landscape suggests that the trend in tree cover regrowth is widespread, and in part reflects the Honduran government's attention to natural resources protection (Bass 2004). Around the world, researchers have discovered evidence for reforestation, indicating that certain places have found ways to mitigate pressures for environmental degradation (Bray et al. 2005; Merino-Perez 2004; Nagendra 2007; Perz and Skole 2003; Rudel 1998). Similar to La Campa, many of these places have patchy, multiuse forests with long histories of human-caused transformations. These studies suggest that La Campa may be part of a larger trend, but part of the trend may be that researchers have begun to see evidence of long-standing dynamism in forests that has yet to be fully understood.

I hesitate to think that reforestation in La Campa will continue indefinitely. If history has taught anything, it is that the forests will regrow and spread for a period, and then some will be cleared. If there is any constant in the past century, it has been change. Forests have been transformed, collective action has diversified, and the communitarian tradition reflects a more limited set of shared experiences now that social heterogeneity has become magnified. Traditional spiritual beliefs have been fading, property rights have changed, and access to land has diminished. Today's youth do not have the confidence that they can claim land from municipal commons. Forests are sparser, but still omnipresent. And people have adapted. There is a clear-eyed realism and practicality in Campeños' visions of forests. While some look at forests as reserves for future agriculture, others view forests as necessary for watershed protection, shelter for wildlife, and sources of firewood and timber. Even though people have differing perspectives and more than one vision, they concur that forests are useful, and they have carved out spaces to work

together toward common goals. They are struggling together and separately to improve their lives and future prospects as they confront new challenges. These transformations have introduced new uncertainties to their lives and contribute to the process of adaptation, given that many of their previous traditions and practices no longer fit their current realities.

Their adaptive capacity traces back at least 500 years through the vicissitudes of Spanish Conquest and colonialism. Those who survived did so by adapting to shocking realities and melding new ideas with existing knowledge and resilient subsistence practices. Viewed more broadly, the past 10,000 years reveal ongoing forest transformations. Biophysical and climatic circumstances have interrelated with ebbs and flows in human populations, the rise and decline of civilizations, and the exchange of ideas and materials across space and time. There is no "natural" forest left in western Honduras; it has become a human-influenced mosaic of forested, agricultural, and urban areas that continues to change along with the humans who inhabit it. The futures of the people and their forests are intertwined and unclear, but La Campa's experiences suggest that there are opportunities for people to manage forests sustainably as dynamically changing resources.

Acronyms

AHPROCAFE	Honduran Association of Coffee Producers
ANACAFEH	National Association of Coffee Producers
CAFILSAML	San Matías Indigenous Lenca Agroforestry Cooperative
COHDEFOR	Honduran Forestry Development Corporation
FAO	Food and Agriculture Organization of the United Nations
FCN	National Coffee Fund
FEDECOH	Federation for Community Development in Honduras
ICA	International Coffee Agreement
IHCAFE	Honduran Coffee Institute
INA	National Agrarian Institute
ISAMA	Instituto San Matías
ONILH	Honduran Lenca Indian Organization
PACTA	Access to Land Pilot Project
PRALEBAH	Program for Literacy and Basic Education for Youth and Adults in Honduras
PROHECO	Honduran Program for Community Education
SANAA	National Aqueduct and Sewage Service
UNDP	United Nations Development Programme

Endnotes

Chapter 1

[1] All excerpts from interviews and Spanish-language documents included in this book were translated by me, unless noted otherwise. Note that the legal documents I consulted during my research are in La Campa Municipal Archives (LCMA) and COHDEFOR's Archives (CA) of the Gracias Management Unit.

[2] Household survey interview, April 29, 1994.

[3] Training samples are observations of land cover in specific places, which are documented with systematic observations, photographs, and spatial coordinates collected with global positioning system units. They are called training samples because they are used to train computer software to identify similar land covers. Subsequently, this information can be used with satellite images to compare land cover at various points in time.

[4] More recent conceptualizations have refined and critiqued this and other definitions of political ecology. See, for example, Escobar (1999) and responses, which include Anderson (2000).

[5] Until recently, Montaña de Celaque was considered to be the highest point in Honduras. It has now been determined that Cerro las Minas is 1 m higher.

Chapter 2

[1] See Newson (1986) for a detailed discussion.

[2] A document written by Francisco de Montejo, a Spanish governor in Honduras. It is kept in the Archivo General de Indias in Seville, Spain, and filed as AGI AG Montejo 24.9.1543 (cited in Newson 1986).

[3] It appears to be similar to the Xinca language of eastern Guatemala and El Salvador, which has not been linked to other Mesoamerican language families (Newson 1986).

[4] Personal communication, Mario Ardón Mejía, August 1993.

[5] *Asignación de ejidos a favor del pueblo de La Campa, 1732*. Fichas del Archivo General de Centroamérica 1983, Mario Ardón Mejía, compiler.

[6] *Baldíos* tended to be of inferior quality, because the best lands were the first to be given in royal grants to individuals considered meritorious. Crown lands were considered to be available for public use, thus private individuals or communal groups could utilize the land (Vassberg 1984). Quesuncelca had evidently been used by the Campeños for grazing and sugarcane fields prior to the request for legal title; it is not clear what motivated the people to seek formal rights in 1724.

If a hacendado had sought to usurp Quesuncelca, he could have gained the land by offering a better price for it than the amount paid by La Campa.

[7] Measures for a *caballería* vary, but in Honduras it typically entails 62 manzanas (Fletes et al. 1994) or 43.4 ha.

[8] "Yo, Pascual peres Alcalde … del pu^{o} d^{e} La Campa d^{e} la Juon desta ciud^{d} de G^{s} a dios y mis regidores principales y d^{e}mas común d^{e} dho pu^{o} … Paresemos ante VM [Vuestra Merced] como Jues subdelegado d^{e} medidas en esta juon y d^{e}simos que ynmediato a nro pu^{o} esta un parage nonbrado que Suncelca que … al lado del norte el cual es realenga y baldío sin dueño y porque los hijos del pu^{o} lo nesesitan p^{a} haser en el sus laborlitas d^{e} caña dulse y crian algun ganado y bestias siendo como es d^{e} utilidad p^{a} nosotros pedimos y suplicamos se sirva d^{e} mandar señor mida y amojone dho pedaso d^{e} tiera q^{e} d^{el} común lo pedimos y estamos prestos ha serbir a suma … que dios p^{a} con la cantidad que inportaze las cavallerías que ubiese y sacar título …" [*sic*] (Archivo Nacional de Honduras, Títulos de Tierras, Sunselca, Gracias, No. 275 [324]).

[9] The exact purchase price for Quesuncelca was 53 tostons and 26 *centésimos*. A toston was 0.5 oz of silver.

[10] Honduran sugarcane production never provided enough to satisfy more than a fraction of domestic demand; the difficulty of transportation and the expense of installing a sugar mill were prohibitive for most landowners. Although many landholdings planted small areas in sugarcane, only Tegucigalpa and Comayagua had large sugarcane estates. Most sugar was minimally processed and destined for local consumption (Newson 1986).

[11] Fifty couples had no children listed (evidently reflecting households with children under age 10 and older couples whose children had left home), but seven of these had taken in orphans. In all, 17 children were listed as orphans and three more were listed as "additional" (*agregados*). Perhaps these children came from families who could not manage to feed them; today in La Campa, it is still a custom that childless couples or families that want more children may be given them as "gifts" from parents who cannot care for them adequately. Four women were noted as *solteras agregadas* (additional, single women) living with a widow.

[12] *Curato de Gualcha y pueblo anexos: Colusuca, Coloete, La Campa, Caiquín, y Valle de Sunsulaca, 8 de Abril de 1796*. Archivo Eclesiástico de Comayagua, Caja 1: 1758–1799, Padrones. University of Texas at Arlington Special Collections, Roll 1. Maritza Arrigunaga Coello, compiler.

[13] *Curato de Gualcha y pueblo anexos: Colusuca, Coloete, La Campa, Caiquín, y Valle de Sunsulaca, 1797*. Archivo Eclesiástico de Comayagua, Caja 1: 1758–1799, Padrones. University of Texas at Arlington Special Collections, Roll 1. Maritza Arrigunaga Coello, compiler.

[14] A toston was valued at 0.5 peso; a peso weighed 1 oz, or 8 reals of silver (Fletes et al. 1994).

[15] A fanega equaled about 1.5 bushels (Newson 1986).

[16] *Queja de los indios de Piraera por los trabajos en el Puerto de Omoa y el recargo de tributos, 1752* (reprinted in Leyva 1991, pp. 246–248).

[17] *Queja de los indios de Lepaera por los trabajos que se han visto obligados a hacer en los llanos de Santa Rosa [de Copán] y las graves dificultades para cumplir con sus tributos ordinarios en la ciudad de Gracias* (reprinted in Leyva 1991, pp. 273–275).

[18] *Población de las provincias de Honduras. Matricula del año 1801. Governador de Honduras Ramón de Anguiano, 1 de mayo de 1804* (reprinted in Leyva 1991, pp. 276–288).

[19] "Que considerando ser un deber esencial la seguridad de la propiedad para evitar disputas que son perjudiciales … que actualmente el pueblo que represento se cree perjudicado por el de Caiquín que disputa parte de las tierras que reconocemos por propias … como careciesemos del título correspondiente, se nos dificulta la defensa de la parte que se intenta cercenar por el común de Caiquín. El pueblo de La Campa reconoce legal y legitimamente la propiedad de las tierras que posee, empero no tiene el documento que nos le sirviera para comprobar el señorio que de muchos años hace a venido trasmitiendo hasta el presente.

"A vuestra excelencia pido y suplico en primer lugar, el amparo de nuestras tierras y en segundo se sirva Señor Excelencia mandar que se nos remidan las tierras por los mismos linderos que

reconoce el pueblo, resultando de aquí el que se nos dé el título …" (Auxiliary Alcalde Juan Crisóstomo Orellana, Petition to the Governor of Gracias, March 28, 1864, Título del Terreno Ejidal, LCMA Caja de Títulos).

[20] "En vista la solicitud anterior, el gobierno acuerda conceder por vía de ejidos al pueblo de La Campa, las tierras que sus vecinos dicen haber estado poseyendo desde muchos siglos, con tal que su área no pase de las dos leguas cuadradas que expresa el Articulo 15 de la ley de 23 de junio de 1836, pudiendo los interesados mandar medir y rematar el exceso de terreno, si lo hubiese, conforme a las prescripciones vigentes …" (Jesús Ynestroza, Ministerio de Hacienda. Decree, March 28, 1864, LCMA Título del Terreno Ejidal, Caja de Títulos).

[21] The original survey measured Tontolo as 14.80 caballerías. An official in the capital, Comayagua, found an error in the arithmetic and recalculated the area as 13.30 caballerías.

[22] Título del terreno nombrado "Tontolo" en la jurisdicción municipal de Gracias. Comayagua, Agosto 8 de 1871.

[23] Sesión extraordinaria, November 15, 1925 (no page numbers visible in these municipal meeting minutes).

[24] Título de La Esperanza y Gilguarapis, 14 de Octubre de 1925. The title notes that Otolaca is composed of two parts known as "La Esperanza" and "Gilguarapis" and was sold by Doña Manuela Trejo to Gonzalo Mejía Nolasco.

[25] Interview, former alcalde of La Campa, July 6, 2007.

[26] Sesión ordinaria, March 1, 1938, LCMA Tomo 10, ff. 156–157.

[27] During the colonial period, an alguacil's role involved legal and ceremonial duties (Fletes et al. 1994), but by the time La Campa achieved municipal status, the position was considered to be of lesser importance.

[28] Sesión ordinaria, January 6, 1941, Acta 3, LCMA Tomo 12, f. 24.

[29] Trans. author.

[30] *Limas* are a mild-tasting, green-hued citrus fruit, similar in size to an orange, but not so sweet or acidic. They are not to be confused with limes or lemons, which are called *limones*.

[31] "La mayor parte del vecindario poseé guerta de platanal y café, arboles de naranjo y lima" (Benito Mendes, Letter to the Governor of the Department of Lempira, December 1, 1920, LCMA).

[32] Castegnaro de Foletti (1989) states that San Matías Day falls on February 23, which conflicts with what I learned in La Campa.

[33] The passage was written in 1788 by Josef Ortiz in San Salvador, and published in Carrasco (1982, p. 331).

[34] The Church aimed to end the devotion to images of saints in order to foster what it saw as a more pure focus on God. It seemed that the priest also hoped to increase pilgrimages to La Campa for the Day of San Matías, because he had more direct control over the offerings made in the Church. By this means, he would not have to share part of the proceeds with the caretakers, who took a portion of the offerings as reimbursement for their time and service.

Chapter 3

[1] Sesión ordinaria, November 15, 1921, LCMA Tomo 1.

[2] Sesión ordinaria, September 16, 1924, LCMA Tomo 2, f. 105.

[3] Sesión ordinaria, April 1, 1943, LCMA Tomo 12, f. 261.

[4] Sesión ordinaria, December 30, 1937, LCMA Tomo 10, ff. 125–127.

[5] Sesiónes ordinarias, October 15, November 1, November 15, and December 1, 1943, LCMA Tomo 13.

[6] Sesión ordinaria, March 1, 1943, LCMA Tomo 12, ff. 257–258.

[7] The council reiterated the rule requiring that fences around temporary fields be opened after the harvest "so as not to impede the entry of cattle," after *vecinos* of Guanajulque complained that certain people were not following the rule (sesión ordinaria, October 1, 1927, LCMA Tomo 4, ff. 173–174).

[8] Sesión ordinaria, July 15, 1921, LCMA Tomo 1, f. 37.

[9] In 1925, the council ordered all *vecinos* aged 18 years and older to provide 1 day of labor in fence repair in the zone adjacent to the Centro; even men over the age of 60 were expected to make a contribution (sesión ordinaria, November 16, 1925, LCMA Tomo 4, page number not visible in photocopy). This project may have constituted a special case, since those over age 60 were rarely called to labor. In 1926, the list of *contribuyentes* included 18-year olds (sesión ordinaria, February 15, 1926, LCMA Tomo 4, page numbers not given in this book of municipal meeting minutes).

[10] Sesión ordinaria, March 15, 1923, LCMA Tomo 1, f. 177.

[11] Sesión ordinaria, November 15, 1961, Acta 25, LCMA Tomo 23, ff. 91–92.

[12] Sesión ordinaria, October 2, 1937, LCMA Tomo 10, f. 100.

[13] "… en cumplimiento de orden superior se coloca nuevamente el puente sobre el Río Oromilaca … con cooperación de los vecinos de este pueblo" (sesión ordinaria, August 1, 1950, Acta 19, LCMA Tomo 18 p. 44).

[14] Verbal communication, alcalde of La Campa, May 2, 1994.

[15] "… estando próximo las lluvias torrenciales y estando en mal estado el puente que cruza sobre el río Gualiliquin, y siendo de gran importancia, es necesario su reconstrucción lo más pronto posible; aunque en el presupuesto municipal no hay fondos para dicha obra, pero con la ayuda de los vecinos se puede reconstruir. La Municipalidad y su consejo por unanimidad acuerda: Proceder al arreglo del puente en mención, solicitando la ayuda de los vecinos …" (sesión ordinaria, May 19, 1981, Acta 12, LCMA Tomo 33, f. 204).

[16] Sesión ordinaria, January 15, 1981, Acta 2, LCMA Tomo 33, f. 168.

[17] Sesión ordinaria, December 15, 1961, Acta 28, LCMA Tomo 13, ff. 98–99.

[18] Sesión ordinaria, March 1, 1943, LCMA Tomo 12, ff. 255–256.

[19] Sesión ordinaria, April 15, 1930, LCMA Tomo 5, f. 208.

[20] For example, the council required Guanajulque residents to provide 30 fanegas of lime for the new *cabildo* in 1929. When they didn't comply, the council repeated the order in 1932 (sesión ordinaria, March 1, 1932, LCMA Tomo 7, f. 30). The council ordered one week of work from *contribuyentes* in 1933 (sesión extraordinaria, February 2, 1933, LCMA Tomo 7, f. 129) and 1934 (sesión ordinaria on February 1, 1934, LCMA Tomo 7, f. 216). Contributions of 50 cents per *vecino*, and lime and bricks, were stipulated in the session of February 15, 1936 (LCMA Tomo 9, f. 48, 51).

[21] Sesión ordinaria, May 15, 1950, Acta 14, LCMA Tomo 18, ff. 30–31.

[22] "… se de orden a los Alcaldes Auxiliares de la respectiva Aldea de Mescalio se citen los que no han trabajado en el corriente año y caso faltaren se citarán de los mismos que han trabajado proporcionalmente pues están obligados ayudar hasta su debida terminación …" (sesión ordinaria, July 15, 1950, Acta 18, LCMA Tomo 18, f. 42).

[23] Sesión ordinaria, September 15, 1950, Acta 23, LCMA Tomo 18, f. 54.

[24] Sesión ordinaria, August 2, 1982, Acta 15, LCMA Tomo 34, f. 24.

[25] "… aunque corren sus ríos a inmediaciones del pueblo, dichos ríos arrastran muchas suciedades procedentes de varios puntos de arriba de sus riberas" (sesión ordinaria, March 15, 1923, LCMA Tomo 1, f. 177).

[26] Mandates of the national sanitary code applied by the municipal council are recorded in the session of June 2, 1924 (LCMA Tomo 2, ff. 84–85). During the next session (June 16, 1924, LCMA

Tomo 2, ff. 87–88), the council ordered compliance with the law and promised to impose legal sanctions for disobedience. The government periodically emitted orders for municipios to clean public areas (e.g., sesiónes ordinarias, February 1, 1930 [LCMA Tomo 5, f. 187], and August 1, 1933 [LCMA Tomo 7, f. 164]).

[27] Sesión ordinaria, March 15, 1923, LCMA Tomo 1, f. 177; sesión ordinaria, February 15, 1961, Acta 6, LCMA Tomo 23, ff. 29–30.

[28] Sesión ordinaria, September 1, 1982, Acta 17, LCMA Tomo 34, f. 29.

[29] The exemption for municipal officials appears by 1925 (sesión ordinaria, November 16, 1925, LCMA Tomo 4, f. 9), but may have existed from an earlier date.

[30] The 1923 budget notes a debt of 103 pesos to the secretary for 1922 (sesión ordinaria, January 25, 1923, LCMA Tomo 1, f. 163); the 1927 budget notes a debt of 44.25 pesos for the 1926 municipal secretary (sesión ordinaria, January 15, 1927, LCMA Tomo 4, f. 119). The secretary for 1933 was still owed more than half of his salary in 1934 (sesión extraordinaria, January 10, 1934, LCMA Tomo 7, f. 209). Debts owed to secretaries who served in 1936, 1937, and 1940 are noted in the 1941 budget (sesión ordinaria, January 10, 1941, Acta 4, LCMA Tomo 12, ff. 28–29).

[31] Sesión ordinaria, February 15, 1930, LCMA Tomo 5, f. 189.

[32] Sesión extraordinaria, March 5, 1930, LCMA Tomo 5, ff. 198–199. Subsequent *actas* do not record any answer from the governor.

[33] Sesión ordinaria, April 1, 1943, Acta 9, LCMA Tomo 11, f. 262.

[34] Sesión ordinaria, March 15, 1971, Acta 8, LCMA Tomo 30, f. 51.

[35] Sesión ordinaria, September 15, 1921, LCMA Tomo I.

[36] Sesión extraordinaria, January 10, 1951, Acta 4. Every person who owned a house in the Centro was ordered to be present for the duration of the Festival of San Matías or face a fine for disobedience.

[37] The fines varied by year or by project; in 1926 the council established a fine of 2 pesos per day for evading work on bridge construction (sesión ordinaria, July 1, 1926, LCMA Tomo 4, f. 61), the fine was 1 peso for missing roadwork in 1932 (sesión ordinaria, February 1, 1932, LCMA Tomo 7, f. 23), and later the fine was set at 50 cents per day (sesión extraordinaria, January 25, 1934, LCMA Tomo 7, f. 43). Many people evidently chose to work rather than pay their fines; in 1937, the floor of the telegraph office was completed by laborers working off fines (sesión ordinaria, October 15, 1937, LCMA Tomo 10, f. 103). Another individual worked 3 days on "public works" to pay off a single fine (sesión ordinaria, December 15, 1937, LCMA Tomo 10, f. 121).

[38] Sesión ordinaria, August 2, 1937, LCMA Tomo 10, f. 80.

[39] Sesión ordinaria, October 1, 1937, LCMA Tomo 10, ff. 100–101.

[40] Sesión ordinaria, November 15, 1937, LCMA Tomo 10, f. 110.

[41] Sesión ordinaria, August 1, 1922, LCMA Tomo 1, f. 131. During the following session, the council decided to suspend municipal work in progress until the situation was resolved, because the people were threatened by the scarcity of staple grains (sesión ordinaria, August 15, 1922, LCMA Tomo 1, f. 132). The council did not hold another session until September 22, 1922. Another food shortage occurred the following year (1923). The municipality sought permission from the Departmental Directorate of Primary Instruction to suspend school while the shortage lasted, because parents of school children could not provide them with food (sesión ordinaria, July 2, 1923, LCMA Tomo 1, f. 198).

[42] Sesión ordinaria, August 1, 1922, LCMA Tomo 1, f. 130; sesión ordinaria, October 15, 1925, LCMA Tomo 4, f. 1.

[43] Sesión ordinaria, August 1, 1922, LCMA Tomo 1, f. 131; sesión ordinaria, July 2, 1923, LCMA Tomo 1, f. 198.

[44] Sesión ordinaria, June 1, 1927; sesión ordinaria, October 1, 1937, LCMA Tomo 10, f. 100; LCMA Tomo 4, f. 148; sesión ordinaria, August 2, 1943, Acta 19, LCMA Tomo 12, f. 284.

[45] Sesión ordinaria, June 1, 1927, LCMA Tomo 4, f. 147.

[46] "… tomando en cuenta de una orden venida del Supremo Poder Ejecutivo y Gobernación Política Departamental que dice se haga efectivo a la siembra de postrera y frijoles, se acordó: que se exija a los vecinos de este pueblo a la siembra de postrera y frijoles en los lugares adecuados y que se puedan cosechar dichos cereales" [italics added in translation] (sesión ordinaria, October 1, 1937, LCMA Tomo 10, f. 100).

[47] The council ordered that the report be given on August 15, 1927 (sesión ordinaria, May 16, 1927, LCMA Tomo 4, f. 144), but nothing was done until October 1 (sesión ordinaria, October 1, 1927, LCMA Tomo 4, f. 173).

[48] La Campa residents recognize two major methods of plowing. If the field is relatively flat, with little risk of erosion, they employ the method known as *surco sobre surco* (furrow over furrow). This method plows the field with no space between the furrows, to loosen all the roots and weeds. Usually this involves plowing the field in two directions, known as *quebrada y cruzada*. First the field is plowed in one direction (the *quebrada*, or breaking earth), then it is plowed a second time across the original direction (the *cruzada*, or crossing). Finally, the plow passes one more time to furrow the field for planting. If the field slopes, farmers plow with the method called *patada de buey*. With this approach, the field is plowed in one direction against the slope, and a weed-filled space about 30 cm wide is left undisturbed between each row to reduce erosion.

[49] May 16, 1922, LCMA Tomo 1, ff. 119–121.

[50] May 15, 1926, LCMA Tomo 4, f. 49.

[51] In the lower elevations, Campeños prefer to apply two bags (100 lb each) of fertilizer (12-24-12 or 18-46-0, referring to the proportions of phosphorus, nitrogen, and potassium) for each manzana (0.7 ha) planted. About a month after applying fertilizer, they administer 100 lb of urea per manzana to encourage development of the cobs. In higher elevations, the pattern is similar, but urea is not applied due to climatic and soil differences. Farmers asserted that urea turned maize plants yellow in the mountains; they interpreted this as evidence that it was too powerful for that environment. The amount of fertilizer administered varies depending upon a household's resources. Households with more resources may purchase more fertilizer, but many households struggle to purchase even one bag of fertilizer. Farmers stated that their fields would not produce without fertilizer. High fertilizer prices can compel farmers to slash-and-burn a field because the method produces adequately for the first year. Some farmers experiment with fertilizers; one man purchased a bag of ammonium sulfate, because it cost half as much as other fertilizers, and mixed it with ash from the kitchen stove as an experiment to see if the maize would produce well. He later reported that the harvest was "regular," better than no fertilizer at all, but not as productive as with fertilizers such as 12-24-12 or 18-46-0.

[52] *Riwas* are made by grinding the kernels. The "milk" from the ground kernels is collected, then mixed back into the mash. The moist mixture is wrapped in banana leaves and roasted over the stove. *Riwas* are a delicacy available only during the early harvest; they are also a necessity for households that have exhausted their stored maize, because tortillas cannot be made from fresh maize.

[53] The Honduran Energy and Electricity Company (Empresa de Energía y Electricidad, or ENEE) oversees La Campa's rain gauge and approximately 80 others throughout the nation as part of their mission to track hydroelectric potential. ENEE is one of several entities that maintain rain gauges in Honduras. In La Campa, a husband and wife who live near the gauge received training to take daily measurements and complete reports that they turn in to ENEE employees when they pass through on inspection. The couple has performed the duty since the gauge was first established, and they receive a small stipend for their service.

[54] One household had nearly 1 ha in *pimienta gorda* to sell on the market, but it was unique. Other households with large harvests of achiote and *pimienta gorda* tended to sell it informally within the municipio.

[55] In parts of Spain, villagers also believed that phases of the moon bode good or ill for certain activities (Méndez Plaza 1900).

[56] Collectors noted that their time varied in relation to the amount of wood they decided to split. Some people spend a full day splitting wood to use for an extended period of time; they leave stacks of split wood and haul it home in increments. Although such stacks would be easy to appropriate, Campeños do not touch split wood left to season in the forest. If parts of a tree trunk and branches are left partly cut or scattered, subsequent collectors will chop it for their own use. Time constraints encourage some gatherers to cut small trees that can be entirely split in a brief period and hauled in one trip.

[57] A *carga* was a measure equating to 60 sticks of firewood, and a few of the older residents still refer to this measure as an approximate basis for calculating their own household use.

[58] The first mention of charging nonresidents for grazing their animals in La Campa's lands appears in the 1922 Plan de Arbitrios (sesión ordinaria, January 17, 1922, LCMA Tomo 1, f. 98). The fee is listed in subsequent tax plans into the 1950s (e.g., sesión ordinaria, January 16, 1950, LCMA Tomo 1, ff. 11–12) but no longer appears by the 1962 budget.

[59] 1994 household survey (108 households).

[60] Trans. author from field notes.

[61] Interview, April 17, 1994.

[62] Sesión ordinaria, November 15, 1921, LCMA Tomo 1, ff. 69–70.

[63] "La Municipalidad y Consejo acordó: que siendo de mucha utilidad los ocotales árboles para maderas de construcción los inmediatos a esta población, se prohiba el agotamiento de los pinares expresados inmediatos a este centro teniendo cuidado el síndico municipal de no extender boletas para rozas de milpa en los pinares inmediatos a la población, siendo la prohibición a dos kilómetros de distancia del centro" (sesión ordinaria, February 15, 1933, LCMA Tomo 7, ff. 132–133).

[64] Sesión ordinaria, September 1, 1927, LCMA Tomo 4, f. 161.

[65] Sesión ordinaria, June 15, 1927, LCMA Tomo 4, f. 150.

[66] Sesión ordinaria, August 15, 1944, LCMA Tomo 14, page number not visible in photocopy.

[67] Sesión ordinaria, October 16, 1944, LCMA Tomo 14, page number missing.

[68] Sesión ordinaria, March 15, 1941, Acta 9, LCMA Tomo 12, ff. 46–48.

[69] Trans. author, from field notes.

Chapter 4

[1] Sesión ordinaria, November 1963, Acta 1, La Campa Municipal Archives, LCMA Tomo 24, f. 113; sesión ordinaria, November 14, 1964, Acta (no number), LCMA Tomo 25, f. 81; sesión ordinaria, November 13, 1965, Acta (no number), LCMA Tomo 26, ff. 66–67; sesión ordinaria, November 12, 1966, Acta 30, LCMA Tomo 27, f. 56.

[2] Sesión ordinaria, March 15, 1972, Acta 8, LCMA Tomo 30, f. 142.

[3] On October 2, 1972, the council requested 9,000 lempiras from the national government to conduct a study for the water project, 3,000 lempiras to continue work on the telegraph office, and 6,000 lempiras for road improvement on the segment connecting La Campa to Gracias (sesión ordinaria, October 2, 1972, Acta 21, LCMA Tomo 31, ff. 23–24). A month later, the people from the village of Santa Catarina requested 6,000 lempiras to build a potable water system, and Guanajulque's Patronato Pro-Mejoramiento Comunal (Community Pro-Improvement Society) asked for municipal assistance to obtain potable water for its village (sesión ordinaria, November 1, 1972, Acta 23, LCMA Tomo 31, f. 30).

[4] The fact that negotiations began in January was noted on September 8, 1973 (sesión ordinaria, September 8, 1973, Acta 25, LCMA Tomo 31, f. 78). On June 15, the governor of Lempira and a timber company representative visited the alcalde and formally proposed a timber purchase from La Campa and Caiquín (sesión ordinaria, June 2, 1973, Addendum to Acta 18, LCMA Tomo 31, f. 65).

[5] Sesión ordinaria, July 30, 1973, Acta 20, LCMA Tomo 31, f. 67.

[6] Sesión ordinaria, August 1, 1973, Acta 21, LCMA Tomo 31, f. 70.

[7] Sesión ordinaria, August 8, 1973, Acta 22, LCMA Tomo 31, f. 73.

[8] "… el Señor Mayor no tomó en cuenta al pueblo y por ello es que se oponen a la venta de madera" (sesión ordinaria, August 8, 1973, Acta 22, LCMA Tomo 31, f. 72).

[9] "Don R … está de acuerdo con la venta de madera, toda vez que quedará una obra como esta haciendo San Manuel, que con el producto de la venta de madera comprará la propiedad de Doña Elena Castro y que la venta la haga otra municipalidad" (sesión ordinaria, August 8, 1973, Acta 22, LCMA Tomo 31, ff. 72–73).

[10] "Don G … dijo que … el sentimiento que tienen es que el Mayor Municipal no les participó nada de la venta y que está de acuerdo que se venda pero que lo haga otra municipalidad" (sesión ordinaria, August 8, 1973, Acta 22, LCMA Tomo 31, f. 72).

[11] Equivalent to 20 lempiras ($10) per 1,000 board feet.

[12] Sesión ordinaria, September 8, 1973, Acta 25, LCMA Tomo 31, ff. 77–78.

[13] "a) La Compañía se compromete a conservar el mantenimiento de la carretera de Gracias a este pueblo, y durante dure el periodo de operaciones de la misma.

b) La Compañía se compromete a construir un puente sobre el río Oromilaca en el mismo trayecto de carretera, sobre bases de cemento armado y madera tratada.

c) Reconstrucción o reparación de las calles de este pueblo.

d) Así mismo preparar el predio donde se construirá el edificio para el centro de salud de este pueblo y suministrar la madera necesaria para dicha construcción.

e) Cinco rollos de alambre y una arroba de grapas para una zona agrícola.

f) Ayuda con el cincuenta por ciento en el transporte de materiales para el agua potable de este pueblo

g) Suministrar la tabla machimbrada a precio de costo para el cielo razo de la oficina del telégrafo y el Palacio Municipal.

h) Suministrar la madera para la construcción y reconstrucción de las escuelas en esta jurisdicción (sesión ordinaria, September 16, 1973, Acta 26, LCMA Tomo 31, ff. 80–81).

[14] Sesión ordinaria, September 20, 1973, Acta 27, LCMA Tomo 31, f. 82.

[15] Sesión ordinaria, October 11, 1973, Acta 29, LCMA Tomo 31, f. 84; sesión ordinaria, October 15, 1973, Acta 30, LCMA Tomo 31, f. 86.

[16] Sesión ordinaria, November 1, 1973, Acta 31, LCMA Tomo 31, f. 88; sesión ordinaria, December 15, 1973, Acta 35, LCMA Tomo 31, f. 98.

[17] Sesión ordinaria, December 15, 1973, Acta 35, LCMA Tomo 31, f. 98. The property contained 7.5 caballerías, or about 315 ha. A caballería is approximately equal to 42 ha.

[18] Sesión ordinaria, January 15, 1974, Acta 2, LCMA Tomo 31, f. 103; sesión ordinaria, February 1, 1974, Acta 4, LCMA Tomo 31, f. 107; sesión ordinaria, March 15, 1974, Acta 8, LCMA Tomo 31, f. 116; sesión ordinaria, April 26, 1974, Acta 12, LCMA Tomo 31, f. 126.

[19] Sesión ordinaria, April 1, 1974, Acta 10, LCMA Tomo 31, f. 122.

[20] Sesión ordinaria, January 15, 1974, Acta 2, LCMA Tomo 31, f. 103; sesión ordinaria, February 1, 1974, Acta 4, LCMA Tomo 31, f. 107; sesión ordinaria, March 15, 1974, Acta 8, LCMA Tomo 31, f. 117; sesión ordinaria, April 26, 1974, Acta 12, LCMA Tomo 31, f. 126.

[21] Sesión ordinaria, April 15, 1974, Acta 11, LCMA Tomo 31, f. 123.

[22] Sesión ordinaria, February 1, 1974, Acta 4, LCMA Tomo 31, f. 107; sesión ordinaria, February 9, 1974, Acta 5, LCMA Tomo 31, ff. 110–111.

[23] Sesión ordinaria, April 1, 1974, Acta 10, LCMA Tomo 31, f. 122.

[24] COHDEFOR initially divided the nation into seven forestry districts, and later created further divisions. Each forestry district was divided into subdistricts and management units (FAO 1981;

SECPLAN/DESFIL/USAID 1989). La Campa fell within the Copán Forestry District under the Gracias Management Unit, which included most of the municipios in Lempira.

[25] Sesión ordinaria, May 15, 1974, Acta 14, LCMA Tomo 31, f. 130.

[26] Interview with Enrique López, Gracias Management Unit, COHDEFOR, June 29, 1994.

[27] Sesión ordinaria, April 15, 1974, Acta 11, LCMA Tomo 31, f. 123.

[28] Sesión ordinaria, July 15, 1974, Acta 19, LCMA Tomo 31, f. 141.

[29] Sesión ordinaria, August 15, 1974, Acta 21, LCMA Tomo 31, ff. 143–144.

[30] Five hundred lempiras in April (sesión ordinaria, June 1, 1974, Acta 15, LCMA Tomo 31, f. 133); 450 lempiras in August (sesión ordinaria, November 1, 1974, Acta 26, LCMA Tomo 32, f. 156); 362.50 lempiras in December (sesión ordinaria, December 28, 1974, Acta 32, LCMA Tomo 32, f. 167).

[31] Sesión ordinaria, April 26, 1974, Acta 12, LCMA Tomo 31, ff. 125–126.

[32] The process is described in sesión ordinaria, August 15, 1975, Acta 18, LCMA Tomo 32, f. 2.

[33] Sesión ordinaria, May 1, 1976, Acta 10, LCMA Tomo 32, f. 35; sesión ordinaria, October 1, 1976, Acta 20, LCMA Tomo 32, f. 49.

[34] Sesión ordinaria, August 2, 1982, Acta 15, LCMA Tomo 34, f. 23.

[35] Sesión ordinaria, March 15, 1978, Acta 7, LCMA Tomo 32, f. 122.

[36] Sesión ordinaria, November 1, 1978, Acta 23, L CMA Tomo 32, f. 151.

[37] At the same time that COHDEFOR regulations restricted municipal rights to manage forests, the National Agrarian Institute limited municipal rights to grant land for agriculture, pasture, and cooperative groups. La Campa's council had previously granted land as residents made requests, but under the new laws, residents who desired more than 1 manzana of municipal land had to make requests to INA. The council apparently respected the rules, but in several cases residents were granted land exceeding 1 manzana, and the meeting minutes do not indicate whether these cases reflect exceptions in or violations of national laws.

[38] Sesión ordinaria, November 1, 1974, Acta 31, LCMA Tomo 31, f. 89.

[39] During the December 16, 1974, council meeting, the secretary noted: "The burns will be effected by zones in the presence of the COHDEFOR representative, [who] has indicated the morning hours, a case which requires special attention due to the dangers and the results for planting …" (sesión ordinaria, December 16, 1974, Acta 31, LCMA Tomo 31, ff. 165–166).

[40] The National Institute of Professional Preparation provided training on how to collect resin, and the Office for Cooperative Formation instructed groups on how to organize a cooperative and manage financial records.

[41] Rigoberto Alvarado L., Informe, November 26, 1979, CA File 1979.

[42] Sesión ordinaria, July 1, 1975, Acta 14, LCMA Tomo 32, f. 188.

[43] Sesión ordinaria, October 1, 1982, Acta 19, LCMA Tomo 34, f. 34.

[44] Sesión ordinaria, October 15, 1982, Acta 20, LCMA Tomo 34, f. 38.

[45] B. F. Guillermo Mazier, Memorandum to Atilio Ortiz, April 23, 1985, CA File 1985.

[46] Guillermo Mazier, Informe Mensual, January 20, 1979, CA Plan Anual de Trabajo 1979.

[47] Rigoberto Alvarado López, Informe Mensual, February 1979, and Rigoberto Alvarado López, Informe Mensual, March 20, 1979, CA File 1979.

[48] "… asegurarles un mercado a su producción … ya que la gente del campo si lucha, lo hace con el fin de resolver parte de sus múltiples problemas" (Rigoberto Alvarado L., Informe Mensual, May 21–June 20, 1979, CA File 1979).

[49] "Como una inquietud a manera de sugerencia, pedimos a los señores Jefe del Distrito el próximo año 1980 se nos brinde un poco más de apoyo en la ejecución de las actividades de nuestro programa previéndonos de los medios indispensables para llevar a cabo una labor más completa ya que durante mi estadía en el mismo, lo poco que se ha realizado ha sido el esfuerzo propio del personal práctico[,] mi persona y el apoyo de algunos inmediatos que han dado lo que han podido.

Espero y considero que si para el próximo año se nos da el apoyo tantas veces solicitado les daremos mayores y mejores realizaciones en pro de nuestra institución" [*sic*] (Rigoberto Alvarado L., Informe Mensual, November 21–December 20, 1979, CA File 1979).

[50] Alvarado's name does not appear in COHDEFOR records after 1979. Two specialists in resin production took over the responsibilities with the agroforestry groups.

[51] Personal communication of Enrique López, former COHDEFOR technician and then-director of the Gracias COHDEFOR office, June 28, 1994.

[52] Engineer Edas Muñoz G., Chief of the Copán Forestry District, Memorandum No. JDFC-009-81, January 13, 1981, CA File 1981.

[53] José Humberto Calderón, Reportes de Actividades Diarias de Campo Realizadas, November 30, 1980, CA File 1980; Julio Cesar Agurcia, Reportes de Actividades Diarias, December 30, 1980, CA File 1980.

[54] Edas Muñoz G., Memorandum No. JDFC-009-81, January 13, 1981, CA File 1981.

[55] Sesión ordinaria, December 20, 1977, Acta 27, LCMA Tomo 32, f. 110.

[56] Sesión ordinaria, December 15, 1978, Acta 29, LCMA Tomo 32, f. 162; sesión ordinaria, April 16, 1979, Acta 11, LCMA Tomo 32, f. 189; sesión ordinaria, March 15, 1980, Acta 6, LCMA Tomo 33, ff. 79–80.

[57] Sesión ordinaria, August 2, 1982, Acta 15, LCMA Tomo 34, f. 23.

[58] Sesión ordinaria, December 15, 1978, Acta 29, LCMA Tomo 32, ff. 161–162.

[59] COHDEFOR, *Situación Actual de los Aserraderos Ubicados en la Unidad de Manejo de Gracias*, June 20, 1984, CA File 1984.

[60] Sesión ordinaria, August 16, 1982, Acta 16, LCMA Tomo 34, f. 27.

[61] B. F. Guillermo Mazier, Notification to Sr. Luís A. Bardales, August 26, 1983, CA File 1983; B. F. Guillermo Mazier, Memorandum to Edas Muñoz G., Jefe del Distrito Forestal de Copán, October 11, 1983, CA File 1983; Enrique López and B. F. Guillermo Mazier, Notification to Sr. Luís Amilcar Bardales, May 31, 1984, CA File 1984.

[62] Enrique López, Denuncia Forestal against Luís Amilcar Bardales, June 28, 1983, CA File 1983; Modesto Antonio Portillo, Letter to Luís A. Bardales, July 4, 1983, CA File 1983; Modesto Antonio Portillo, Letter to Luís Amilcar Bardales, February 14, 1984, CA File 1984.

[63] Sesión ordinaria, November 15, 1983, Acta 24, LCMA Tomo 34, f. 104.

[64] "La irregularidad en la producción cronológica del aserradero ha estribado mayormente en la irresponsabilidad de su propietario y en la mala administración que ha llevado el mismo" (COHDEFOR, *Situación Actual de los Aserraderos Ubicados en la Unidad de Manejo de Gracias*, June 20, 1984, CA File 1984).

[65] "… en todas las supervisiones realizadas desde Enero de 1982 hasta la fecha, nunca se ha dejado de encontrar uno u otro problema. De continuar esta situación nos veremos obligados a no extenderle Licencia Anual de Operaciones para 1984" (Modesto Antonio Portillo, letter to Luís Amilcar Bardales, February 14, 1984, CA File 1984).

[66] Edas Muñoz G., *Transcripción—Situación de Multas al 30 de Abril*, May 29, 1984, CA File 1984.

[67] Opinions vary as to whether parent stock was conserved: former COHDEFOR employees claimed that loggers and resin tappers never touched the parent stock; Campeños reported that all the good trees were extracted by the end of the logging cycle. The reality probably fell somewhere between these opinions.

[68] The National Agricultural Institute had rules protecting established agricultural areas from expropriation. Once fields were planted, the area was no longer considered "apt for forests" and COHDEFOR lost jurisdiction.

[69] Sesión ordinaria, November 1, 1978, Acta 23, LCMA Tomo 32, f. 151.

[70] Care International eventually constructed a new school in Mataras (sesión ordinaria, March 15, 1976, Acta 6, LCMA Tomo 32, f. 30) and in the Centro (sesión ordinaria, April 15, 1978, Acta 19, LCMA Tomo 32, ff. 125–126).

[71] The president presented the grant when he made a visit to Santa Rosa de Copán. The municipio needed 7,000 lempiras ($3,500) to repair two critical bridges, and 3,000 lempiras ($1,500) for the municipal town hall (sesión ordinaria, March 16, 1981, Acta 8, LCMA Tomo 33, ff. 190–191).

[72] Sesión ordinaria, August 16, 1982, Acta 16, LCMA Tomo 34, f. 27.

[73] Sesión ordinaria, January 15, 1983, Acta 2, LCMA Tomo 34, f. 59.

[74] "… sería una incomprehensión negarles a los vecinos en lugares planicios no entregarles para que hagan sus casa y predios de terreno para agricultura …" [*sic*] (sesión ordinaria, June 1, 1983, Acta 11, LCMA Tomo 34, f. 75).

[75] B. F. Guillermo Mazier, Memorandum to Edas Muñoz, Jefe del Distrito Forestal de Copán, July 20, 1983, CA File 1983.

[76] "El señor en referencia argumenta que la COHDEFOR está destruyendo los bosques, y que por tal razón no debe prohibir a la demás gente botar árboles. … Finalmente concluyó diciendo que pusiéramos algo de nuestra parte (no sancionar a los infractores) poque el pueblo era pobre y no tenía donde trabajar, ya que de lo contrario él con un fuerte grupo de resentidos con la COHDEFOR no permitirían más el paso de COHDEFOR por ese municipio" [*sic*] (Roy Ovidio Romero, Memorandum to B. F. Guillermo Mazier C., October 13, 1983, CA File 1983).

[77] "… una actitud predispuesta contra la COHDEFOR por no permitir a ciertos asociados de realizar sus actividades agrícolas en zonas boscosas; además de siertos cuestionamientos que se dieron por las actividades desplegadas en la zona Ej. [ejidal] actividad de resinación y corte de madera por una sierra instalada, así mismo cuestionaban algunos procederes de las Autoridades Municipales de La Campa" [*sic*] (Carlos H. Tabora, Memorandum to B. F. Guillermo Mazier C., May 11, 1983, CA File 1983).

[78] Carlos H. Tabora, Memorandum to B.F. Guillermo Mazier, May 11, 1983, CA File 1983.

[79] By July, all work in the group had been suspended (Ayax Antonio Cruz, Memorandum to Carlos H. Tabora, July 22, 1983, CA File 1983).

[80] Convenio, October 14, 1983, CA File 1983.

[81] Sesión ordinaria, November 1, 1983, Acta 23, LCMA Tomo 34, ff. 100–101.

[82] B. F. Guillermo Mazier, Memorandum to Edas Muñoz G., Jefe del Distrito Forestal de Copán, November 2, 1983, CA File 1983.

[83] Enrique López A., Reporte de Actividades Diarias, November 1983, CA File 1983.

[84] "… para rogar a las dependencias del estado y del ramo de la Corporación Hondureña de Desarrollo Forestal, no se prohiba los lotes de terrenos de vocación agrícola que se encuentran ubicados en este Municipio, los campesinos puedan ocuparla en sus labores. Ya que constantemente la crisis de granos se está agudizando anualmente y la creación de ciudadanos es invencible" [*sic*] (sesión ordinaria, October 4, 1983, Acta 21, LCMA Tomo 34, ff. 93–94).

[85] "… se está gestando un movimiento general tendiente a impedir que la COHDEFOR siga realizando todo tipo de actividades en los bosques de La Campa. … En resúmen, considero que de no tomarse una acción seria inmediata el problema se puede volver grave; ya que existe la tendencia a perderse el respeto a las leyes forestales y disposiciones de La Corporación, a los empleados de esta Unidad se nos verá como enemigos y nuestra autoridad quedaría en precarias condiciones. Por otra parte no queremos arriesgar en ningún momento la integridad física de ningún empleado de nuestra Unidad o del Distrito" (B. F. Guillermo Mazier C., Memorandum to Edas Muñoz G., Jefe del Distrito Forestal de Copán, November 2, 1983, CA File 1983).

[86] B. F. Guillermo Mazier C., Memorandum to Edas Muñoz G., Jefe del Distrito Forestal de Copán, November 2, 1983, CA File 1983.

[87] B. F. Guillermo Mazier, Memorandum to Owners of the Aserradero Bardales and the Palillera Helenita, February 11, 1985, CA File 1985.

[88] Sesión ordinaria, November 15, 1984, Acta 25, LCMA Tomo 34, f. 155–156.

[88] "… así mismo tenga un entendimiento el señor alcalde con el señor Gobernador Político" [*sic*] (sesión ordinaria, July 15, 1985, Acta 14, LCMA Tomo 34, ff. 186–187).

[90] Sesión ordinaria, September 2, 1985, Acta 17, LCMA Tomo 34, f. 191.

[91] B. F. Guillermo Mazier, Letter to Atilio Ortiz, Chief of the Copán Forestry District, June 2, 1985, CA File 1985.

[92] COHDEFOR required communities that sold timber to form a pro-development committee to process payments and heed COHDEFOR regulations.

[93] Sesión ordinaria, April 15, 1986, Acta 7, LCMA Tomo 35, f. 55; sesión ordinaria, May 2, 1986, Acta 8, LCMA Tomo 35, f. 60.

[94] Sesión ordinaria, June 1, 1984, Acta 14, LCMA Tomo 34, f. 133.

[95] Edas Muñoz G., *Transcripción—Situación de Multas al 30 de Abril*, May 29, 1984, CA File 1984.

[96] "El mayor problema, especialmente en las actividades de Protección y control de aprovechamientos ilícitos, es la falta de una verdadera y conciente cooperación de la autoridades locales departamentales, unido al irrespeto del público hacia las leyes forestales. Otro factor que nos impide la aplicación de sanciones efectivas a infractores es el sistema poco eficaz de las multas por medio de denuncias forestales, pues no hay un mecanismo judicial o legal para obligar al infractor a pagar" [*sic*] (B. F. Guillermo Mazier, Memorandum to Atilio Ortiz, Chief of the Copán Forestry District, April 23, 1985, CA File 1985).

[97] B. F. Guillermo Mazier, Memorandum to Atilio Ortiz, Chief of the Copán Forestry District, April 23, 1985, CA File 1985.

[98] "Aparte de los problemas nuestros, los grupos nunca han podido consolidarse y deversificar actividades por las constantes caídas en los precios de la resina y la idiosyncracia de los campesinos de ésta zona (conformistas y antagónicos entre ellos)" [*sic*] (B. F. Guillermo Mazier, Memorandum to Atilio Ortiz, Chief of the Copán Forestry District, April 23, 1985, CA File 1985).

[99] I did not come across any denunciations in COHDEFOR Archives that specifically cited illegal use of pines for pottery tempering, but that may have been the purpose behind a number of pine tree fellings that were denounced.

[100] Field notes, interview with La Campa municipal leader, June 19, 1994.

[101] "… los dueños de los aserraderos ya nos habían hecho muchos estragos, no entraban los ingresos correspondentes a la municipalidad, lo que pagó COHDEFOR tampoco era de mayor cantidad … y no sabemos que hacían con el dinero …" (interview with SLJC, May 29, 1994).

[102] Sesión ordinaria, February 15, 1986, Acta 3, LCMA Tomo 35, f. 45.

[103] B. F. Guillermo Mazier, Notification to Carlos Aguilar, Acting Chief of the Copán Forestry District, March 5, 1986, CA File 1986.

[104] Sesión ordinaria, March 15, 1986, Acta 5, LCMA Tomo 35, f. 49.

[105] "… desde años posteriores y anteriores, no había la necesidad de organizar comités de defensa forestal para combatir los incendios, sino que el pueblo era el que combatía los incendios y se cuidaban los árboles de pino, porque es un material utilizable para los vecinos del pueblo, y no habían grandes desastres en los bosques, y [a hoy?] que se declaró la oficina de COHDEFOR cuidadosa, mas bien es un un agotamiento de árboles de pino, ya los bosques aparecen un desierto, se obserba grandes abres de brechas para extraer la madera de pino, grandes incendios, grandes derroches de madera de toda clase de árboles como ser pinitos, roble, malsinca y otros que los vecinos lo utilizan para cocinar los alimientos, a causa de los miembros de COHDEFOR, por lo que se considera un agotamiento para el pueblo …" [*sic*] (sesión ordinaria, March 15, 1986, Acta 5, LCMA Tomo 35, f. 50).

[106] Sesión ordinaria, March 15, 1986, Acta 5, LCMA Tomo 35, f. 50.

[107] "En primer lugar, le manifiesto que hay una actitud negativa en contra de La Corporación y de las tareas que realizamos en aquel sector, por parte de varias personas particulares y de empleados municipales de las anteriores corporaciones (y creo que de la actual) motivadas por el localismo;

o sea que mucha gente no quiere aceptar las leyes forestales y las disposiciones de la Administración Forestal del Estado porque aún tienen la mentalidad de que en su municipio 'solo mandan ellos.'

"En relación al supuesto incendio denunciado por el ex-juez de Paz, no es más que una quema prescrita que se realizó en una zona previamente chapeada, clareada y preparada para tal fin. En el terreno que denuncia que se le quemaron 'dos tareas' de cerco, el mismo sitio esta Unidad le permitió trabajarlo en agricultura por ser plano, pero aún así el citado Juez de aquel entonces abusó al derribar varios árboles de pino con materiales de resinación, cosa por la cual ni siquiera se le amonestó.

"Los daños y perjuicios que se mencionan el la denuncia del Juez de Paz son a) los tratamientos Silviculturales, b) las quemas prescritas, c) cortes realizados por el aserradero alvarado y Palillera Helenita ….

"En síntesis, creo que éstos Señores, más que todo actúan en forma caprichosa y insidiosa, pues nada hacen ni dicen por los descombros que los vecinos realizan para fines agrícolas migratorios; pues es mucha la destrucción de áreas de vocación forestal que la misma autoridad municipal concede para agricultura y puestos de casa" (B. F. Guillermo Mazier, Letter to Hugo Duron, Chief of the Copán Forestry District, April 7, 1986, CA File 1986).

[108] Interview with Enrique López, June 29, 1994, Gracias, Lempira.

[109] Field notes, interview with La Campa municipal leader, June 19, 1994.

[110] "(a) The lands that the campesino needs for agricultural and livestock production are being left completely dry due to timber extraction, the passage of machinery, and [subsequent] rains that erode the soil, and COHDEFOR doesn't care at all. (b) The forest exploitation has been inappropriate because it has ruined sources of water, rivers and streams and domestic and wild animals of all species cannot survive because it's becoming a complete desert; even trees with only a 4-inch diameter are cut. (c) When COHDEFOR's policies began in 1975 [*sic*], according to authorities it was going to improve life in the pueblos and give moral, cultural and economic education to developing pueblos and it's all been useless. In this municipio, two bridges over the Chiquito and Oromilaca rivers have been almost completely destroyed by the passage of heavy machinery, and the road constructed by the central government through great international institutions like USAID and others, is being destroyed, and of the hundreds of millions of lempiras that [timber companies] have acquired they have not constructed or reconstructed [anything] to be able to say proudly that they have helped us. (d) When a campesino wants to have a house, COHDEFOR denies him the land. (e) All the forest on the land entitled Junquillo or Trapichito is being exploited by outsiders for firewood and other uses, and the people need it because it is the only accessible site. (f) The increase of inhabitants in this municipio is enormous and if all our land is declared a forest zone, our present and future children will have nowhere for shelter. (g) One hundred percent [*sic*] of both sexes in the whole municipio are dedicated to pottery production as a patrimony and they lack firewood to temper their work. (h) The flora and fauna are disappearing because the loss of vegetation is enormous, springs and rainfall are scant even in the rainy season, and civilized man has recognized [himself] to be the factor in the situation. … (i) Currently we have major construction and reconstruction [projects], of schools, churches, and other community centers, and this institution [COHDEFOR] has not left [anything] for our benefit, not even what it said in the beginning it would leave us for public woodlots in San Matías and El Rancho Viejo, and they've just finished exploiting them. (j) Currently this institution has not exploited Cañadas, Santa Catarina, and part of Junquillo, but we know that soon they will be exploited; and that is why all the campesinos of this municipio, legally associated and unassociated of both sexes, are ready to defend these little plots that give life to this humble but sincere pueblo, at the cost of sacrifice and increasing our efforts, [we are] determined [to continue] despite the possibility of facing the ultimate consequences, until what is legally ours is acknowledged. (k) We have legally valid property titles granted to us, that by the will of our ancestors remain in a form of deposit and under care of the municipality, but never to be at its disposition, and that is expressed in the respective titles denominated 'Otolaca,' 'Quesuncelca,' 'Tontolo,' and 'Junquillo or Trapichito.' That is why, by means of this resolution, it is suggested to the current municipio presided over by Don [name deleted], not

to sign any document that gives opportunity for the free operation of one or another institution … without the personal permission of this pueblo; also the municipalidad is requested to prohibit resin-tapping groups, and suspend their work forever in order to give life and recuperation to the bleeding trees that are the future asset of their own children" [*sic*] (Acta 1, Patronato Pro-Defensa Derechos del Pueblo de La Campa, August 31, 1986; copy, CA, Gracias, Lempira. File 1986).

[111] Sesión ordinaria, September 1, 1986, Acta 17, LCMA Tomo 35, ff. 99–100.

[112] Presidents of the Cruz Alta, La Campa, and San Matías Resin-tapping Groups, Letter to Guillermo Mazier, Chief of the Gracias COHDEFOR Unit, September 1, 1986, CA File 1986.

[113] Sesión ordinaria, August 15, 1986, Acta 15, LCMA Tomo 35, f. 89; Sesión ordinaria, August 28, 1986, Acta 16, LCMA Tomo 35, ff. 93–94.

[114] On September 10, 1986, COHDEFOR notified the municipio that it had approved a payment for a 1983 timber extraction, and another for an August 1986 extraction (Hugo David Duron, Letter to Señores Municipalidad de La Campa, September 10, 1986, CA File 1986).

[115] Sesión ordinaria, October 11, 1986, Acta 20, LCMA Tomo 35, ff. 113–117.

[116] Acta de Reunion, November 13, 1986, CA File 1986.

[117] "… el señor alcalde municipal hace las siguientes recomendaciones al Pueblo[:] tener el mayor orden, respeto y moralidad [para] parar en la presente sesión y todo lo que se habla que se haga lacónicamente y con cordura para poder interpretar lo exprezado por un ciudadano" [*sic*] (sesión ordinaria, February 4, 1987, Acta 4, LCMA Tomo 35, ff. 163–164).

[118] "… seria para tenernos mas marginalizados" (sesión ordinaria, February 4, 1987, Acta 4, LCMA Tomo 35, ff. 163–164).

[119] Enrique López, Constancia, April 7, 1987, CA File 1987.

[120] Sesión ordinaria, April 20, 1987, Acta 9, LCMA Tomo 35, ff. 183–186.

[121] The *auxiliatura* of Caiquín declared itself exempt from the agreement because it had separate land titles, and a group of resin tappers wanted to continue working. The group disbanded a few years later.

[122] June 29, 1994, interview with Enrique López, COHDEFOR forester with experience in La Campa.

[123] July 3, 1994, interview.

[124] Indigenous communities have lost land to interlopers and the government, but legally the lands were recognized. Currently, many are privatized under national programs, which happened after the events discussed in this chapter.

[125] The estimate reflects the total area given in concession to sawmills as recorded in timber contracts in the COHDEFOR archives. Unfortunately, the archives were incomplete; a COHDEFOR office worker explained that a leaky roof had ruined several file boxes in the archives, and the documents had not been salvageable.

Chapter 5

[1] Sesión ordinaria, May 2, 1987, Acta 11, LCMA Tomo 35, f. 193; sesión ordinaria, April 15, 1989, Acta 8, LCMA Tomo 36, f. 15.

[2] For example: sesión ordinaria, April 1, 1989, LCMA Tomo 36, f. 7; sesión ordinaria, April 16, 1990, LCMA Tomo 36, f. 107.

[3] Sesión ordinaria, October 1, 1990, Acta 23, LCMA Tomo 36, f. 192.

[4] Sesión ordinaria, May 2, 1989, LCMA Tomo 36, f. 14.

[5] "No emboletar guamiles para roza ya que el síndico municipal ha entregado bastantes lotes de tierra para agricultura" (sesión ordinaria, October 1, 1990, Acta 23, LCMA Tomo 36, ff. 194–195).

[6] Land for agriculture was granted in council meetings held on November 1, 1990 (sesión ordinaria, Acta 25, LCMA Tomo 36, ff. 202–206), November 15, 1990 (sesión ordinaria, Acta 26, LCMA Tomo 36, f. 211), and December 17, 1990 (sesión ordinaria, Acta 28, LCMA Tomo 36, f. 221).

[7] 1994 Household survey by author.

[8] Cases appear in a number of meeting minutes; examples appear in the following Actas, among others: sesión ordinaria, March 14, 1989, Acta 6, LCMA Tomo 36, f. 6; sesión ordinaria, June 1, 1990, Acta 11, LCMA Tomo 36, f. 123; sesión ordinaria, October 1, 1990, Acta 23, LCMA Tomo 36, f. 185.

[9] Sesión ordinaria, October 15, 1990, Acta 24, LCMA Tomo 36, f. 194.

[10] Sesión ordinaria, October 1, 1990, Acta 23, LCMA Tomo 36, f. 187.

[11] Sesión ordinaria October 15, 1990, Acta 24, LCMA Tomo 36, f. 193; sesión ordinaria, January 15, 1991, Acta 2, LCMA Tomo 26, f. 237.

[12] For example: sesión ordinaria, April 1, 1989, LCMA Tomo 36, f. 8.

[13] Interview, July 12, 2006.

[14] Sesión ordinaria, July 2, 1990, Acta 13, LCMA Tomo 36, ff. 133–134; AHPROCAFE-IHCAFE 1990–1991 municipal production records, unpublished.

[15] Sesión ordinaria, November 1, 1993, Acta 21, LCMA Tomo 37, ff. 70–73.

[16] Sesión ordinaria, February 1, 1990, Acta 2, LCMA Tomo 36.

[17] A few La Campa farmers of better means had purchased legal, private titles to their land claims before 1995. The process of converting legal communal land to a private title was evidently labyrinthine and costly, and required council approval and a payment to the municipio as the first step.

[18] For example: sesión ordinaria, date illegible in photocopy, Acta 14, LCMA Tomo 36, f. 141.

[19] 1994 Household survey by author.

[20] In the 1994 and 1997 censuses, farmers were asked to classify their coffee production as "plantation" or "subsistence only." Farmers with 0.5 manzana or more described themselves as plantation owners, and farmers with less than 0.5 manzana typically said their coffee was for subsistence. In 1994, two farmers described their holdings of less than 0.5 manzana as plantations. One of these farmers had doubled his plantation by 1997, the other had set aside 3 manzanas for coffee, so future plans contributed to farmers' characterization of their production.

[21] AHPROCAFE-IHCAFE annual membership records for La Campa, unpublished.

[22] The estimate of 809 households in 1998 was derived from the estimated annual increase in the number of households between the 1988 and 2000 censuses (609 and 857 households, respectively). The estimate of 609 households for 1988 excludes the populations of *aldeas* that became part of the municipio of Caiquín upon its secession from La Campa in 1994.

[23] Household #6, April 16, 1994.

[24] Household #28, May 12, 1994.

[25] Household #54, April 18, 1994.

[26] Household #80, May 3, 1994.

[27] Interview with Enrique López, Director, COHDEFOR Management Unit in Gracias, June 29, 1994.

[28] The maps of La Campa presented here combine information from national maps, coordinates collected with a GPS unit while walking borders with Campeño guides, and interviews with local authorities. These maps differ from those that I have published previously, which showed the borders defined by the ejidos and common lands as shown to me by local authorities.

[29] Forest fires do not usually kill all trees, but they leave a fire scar that appears as nonforest in satellite classifications. Rapid recuperation of forests after fires is common in La Campa because trees that are not killed leaf out in subsequent years, and sapling regeneration tends to occur promptly.

Chapter 6

[1] IHCAFE, unpublished municipal data, 1994–1995 and 2001–2002.

[2] Coffee production in Honduras is usually calculated in *quintales*, which are 46 kg (101 lb) bags. Official records indicate that La Campa produced 1,650.55 *quintales* during the 1994–1995 harvest and 7,484.66 *quintales* during the 1999–2000 harvest. These figures underestimate the total, because some of La Campa's production is exported illegally to Guatemala, and part of the harvest is retained for household consumption.

[3] The statement reflects coffee prices adjusted for inflation over the past 100 years, thus, in real terms, prices reached their lowest point. The unadjusted dollar amount gives the impression that this price drop was not as severe as in previous crises.

[4] Satellite image analysis of forest cover change in the wake of the coffee crisis is pending.

Chapter 7

[1] The Honduran legislature approved the motion to create the "Municipio Verde" prize on October 28, 2003. It was created to stimulate natural resource conservation as well as to recognize municipios that practice forest conservation.

[2] The future of PROHECO schools is uncertain; they are funded through a World Bank project that is scheduled to end in 2008.

[3] In most villages, the water cistern is cleaned and treated with chlorine every 1–3 months. The retention dam in the mountains is usually cleaned two to four times a year, with additional monitoring visits. Several communities also test their water to make sure that it does not carry contaminants.

[4] Campeños did not comprehend the priest's sudden decision, invoked as the *guancasco* was beginning. It is possible that the priest, who was new to the post and unfamiliar with Lenca traditions, found it unseemly for the female and male saints to be paraded as a couple.

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