

ARTICLES

Migration, Labor Scarcity, and Deforestation in Honduran Cattle Country



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ABSTRACT

Large scale labor migration from Olancho, Honduras to the United States accelerated after 1998, when Hurricane Mitch devastated the region and resulted in the United States offering Temporary Protective Status (TPS) to affected Hondurans. As growing numbers left for the United States, the loss of productive youth to migration and the development of new local economic opportunities combined to create shortages of labor available for traditional uses of local natural resources in rural communities. Remittances from abroad and sentimental factors also contributed to the erosion of local labor supplies, leading some rural producers to phase back on mixed crop-and-livestock strategies and focus more exclusively on cattle production for milk, other dairy products, breeding stock, and meat. This transition has, in turn, had repercussions for local land use, contributing to deforestation for pasturelands at the same time new demands for wood for carpentry workshops has emerged.

INTRODUCTION

Cattlemen in Olancho, Honduras typically carry a cell phone in one pocket and a pistol in the other—the former a link to national and international livestock markets and family members living abroad and the latter reflecting the threat of cattle theft in a region on the southern fringe of a dangerous frontier. Catacamas, the second largest city in Olancho, is at the end of the road to the Honduran capital of Tegucigalpa, beyond which stretches a forest often used for drug and arms traffic between inland regions and the country's Caribbean coast. It is a region historically dependent on mixed crop-and-livestock production. Until recently,

most rural inhabitants in small peasant communities near Catacamas raised cattle for milk, cheese, butter, and meat and produced corn, beans, and sorghum—rounding out diets with melons, squash, poultry, eggs, and a variety of other foods (PNUD 2014).

Honduras is one of the poorest countries in the Western hemisphere—the fourth most poor, behind Haiti, Nicaragua, and Guyana. Incomes are low and people engage in multiple livelihoods to survive. Approximately 57% of rural families in Olancho are either landless or have access to less than one hectare of land, which is inadequate for household subsistence needs (PNUD 2014:8-9).

Dire economic circumstances have resulted in the development of a number of minor but important economic alternatives to the peasant agriculture, including experimenting with commercial crops, expanding aquaculture and poultry production, and opening retail stores. The most important, however, have been carpentry workshops to meet migrants' demands for house and furniture construction, which has grown in importance since the turn of the 21st century as labor migration to the United States has been integrated into local survival strategies (Endo, et al. 2010; Reichman 2011).

Profiling how local production systems have changed with increasing emigration, we argue here that migration, the development of carpentry workshops, and increasing negative sentiments toward farming among youth have contributed to a labor scarcity in agriculture. This, in turn, has encouraged local farmers to shift from mixed crop-and-livestock farms to less labor intensive cattle ranching. Further, this shift has led to an expansion of pastureland at the expense of local forests and former multi-cropped fields, exacerbating an already chronic problem with deforestation in Olancho, the Honduran state with not only the most forested land but with the most poorly managed forests and also the most susceptible to loss from illegal logging, expansion of croplands and pastures, and other sources (McSweeney 2015; Murillo 2011; PNUD 2014; Tucker 2008).

METHODS

Beginning in the fall of 2008, we conducted fieldwork over a period of twenty months in four communities near one another in central Olancho, Honduras, spending more than a month per community in direct fieldwork that was supplemented by a longer-term (>5 years) presence in each of the communities by the Red de Desarrollo Sostenible (RDS - Network for Sustainable Development), the non-governmental organization who partnered with us and provided us local research assistance. In all communities, we utilized local research assistants, who were a great assistance in the sampling process. We randomly

sampled a total of 60 migrant households—or households that had sent one or more migrants to the United States—and 60 non-migrant households (N=120), taking care that all households came from similar class backgrounds. Our sampling universe was based on previous survey and ethnographic work conducted by the Red de Desarrollo Sostenible following Hurricane Mitch; the Red de Desarrollo Sostenible continues to work in the region today and provided feedback on this paper to assure its relevance to contemporary developments.

Focusing on local production systems, we asked household heads to describe their contemporary livelihoods and tell us how they had changed over the course of their lives, taking every opportunity to accompany family members as they tended livestock, worked in their fields, sawed boards for tables and chairs, and performed other economic activities. From these interviews and observations, we developed cultural biographies of those livelihoods that have been most important to the past and present community economic health. At the heart of cultural biography is placing things—commodities, possessions, livelihoods, etc.—in broader social and cultural contexts, paying particular attention to how those things express social relationships, interact with other things, and engage human communities (Appadurai 1989; Kopytoff 1989; Griffith, García Quijano, and Valdes Pizzini 2013).

From a smaller group of informants (19 migrants and 19 non-migrants; N=38), we also collected perceptual data in the form of responses to cultural consensus statements. Briefly, cultural consensus statements are read to informants in an agree-disagree format and are drawn directly (or with limited modification) from quotes from prior open-ended interviewing. For this research, we elicited responses to 70 questions in 8 different categories (4 on migration, 3 on markets, 12 on federal government institutions & cooperatives, 9 on workers & work, 8 on carpentry workshops, 12 on livestock, 15 on agriculture, and 7 on common beliefs). Cultural consensus testing (Romney, Weller, and Bachelder

1986) is generally used to determine whether or not specific groups share views of a particular domain, such as cattle production, and here we use it to get a sense of how much Olancho residents share views of the seven domains mentioned above. In this work, we considered a statement to reflect consensus if 80% or more of the respondents agreed with it. Except where otherwise noted, these data provide the basis for the following discussion.

LABOR MIGRATION FROM OLANCHO

Like most of Honduras, Olancho did not have a long tradition of migration prior to the 1990s. As Daniel Reichman (2011) points out, both the end of the Cold War and the increasing penetration of Honduran markets under free trade agreements and neoliberal policies—providing ideological and financial justification for the withdrawal of public services from rural towns—resulted in rising rates of migration from Honduras to the United States. Endo et al. (2010) document that dependence on remittances in Honduras was not high prior to 1995. From 1995 to 2008, however, remittances from Hondurans living in the United States rose from \$94,000,000 to \$2.6 billion; the number of Hondurans living in the United States doubled through the 1990s, from 108,923 to 217,569 and then grew to between 700,000 and 800,000 by 2007.

There is broad consensus that the impacts of Hurricane Mitch, the economic downturn that followed, and the United States offering Hondurans temporary protected status after Hurricane Mitch together stimulated the most recent wave of Honduran-U.S. migration (Endo, et al. 2010; Caritas 2003; Reichman 2011). While temporary protected status applied to under ten percent of Honduran immigrants, these immigrants early on were instrumental in facilitating the development of both a migration industry of couriers and coyotes (labor smugglers) and social networks among people living at home and migrants living abroad. “Strong social networks between migrants and their relatives seem to support and facilitate Honduran migration

to the United States. Thirty percent of Honduran households have a parent or close friend living abroad who is willing to help a household member to migrate” (Endo, et al. 2010:3).

In addition to being the most forested Honduran state, Olancho was also among those states that early developed an effective migrant industry, connecting Honduran communities to towns across the United States—most notably, early on, in Florida and California, but later in new destinations like North Carolina (Endo, et al 2010; RDS 2011). In our work, we discovered trailer parks in North Carolina called by diminutive forms of names of Honduran communities—Salamita after Salamá (these are pseudonyms, as are local place names and individuals’ names in this article), for example—and convenience stores and restaurants named after Honduran towns. In the four communities where we conducted fieldwork, the percentage of emigrants ranged from 16 percent to 29 percent, although the number of households with emigrants was considerably higher, ranging from 51 percent to 70 percent. Thus at least half the households in each community have been affected by migration.

Through the first decade of the 21st century, and initially viewed as a short-term solution to families of migrants and by locals who remained behind, international labor migration began assuming a central position among desirable economic alternatives, particularly among young people. According to Hondurans we interviewed, as emigration took hold of locals’ imaginations, its consequences were, more and more, viewed as social problems for the local population by households with *and* without migrants—a finding that others have documented as well (Cáritas 2003; Endo, et al. 2010; PNUD 2014; RDS 2007, 2006a, 2006b, 2006c; Reichman 2011). Residents of rural communities, who long used work in the local fields and on ranches as methods to stimulate youth interest in agriculture, perceived a steady erosion of work ethic among young people who had friends and relatives working abroad. Again, similar attitudes have been

documented in the literature elsewhere (Eakin 2006; Fitting 2011).

In 2009, a two-person theater troupe came to Santa Rosa, a small town near Catacamas, to perform a play that criticized the growing attraction of migration. Among the characters they portrayed were an unscrupulous coyote, a man who had lost his legs attempting to board a train across the border, and a lonely woman left behind by her migrant husband. The play drew between 50 and 70 people from surrounding communities and received two pages of coverage in the local newspaper. Despite the actors' generally negative characterization of migration, in the discussion that followed, by contrast, several members of the audience volunteered that migration remained a viable way of addressing a family's economic hardship. These portrayals of migration—the negative one from the actors and the mixed, if largely positive one from the audience—reflect contradictions about migration one finds in the social science literature (e.g., Reichman 2011).

MIGRATION, LABOR SCARCITY, AND ENVIRONMENTAL CHANGE

In communities that send migrants abroad, usually emigration has overt and subtle consequences for local economic alternatives, production systems, institutions, natural resources, and the households of both migrants and those who remain. Anthropologists and others who have studied the impacts of migration on sending communities have shown such problems as inflated land prices, redundant businesses, occasional investment in small business, and, overwhelmingly, the earmarking of migrants' earnings for house construction (Grasmuck and Pessar 1991; Griffith 1986; Levitt 2001; Mestries 2006). Here we focus on specific and inter-related consequences of labor migration: the withdrawal of youth from local labor markets, labor scarcity in agriculture, and the land-use changes that followed.

More glacial changes resulting from emigration may include changing attitudes toward local economy and

society, with some youth rejecting much that they have to offer and instead considering emigration as preferable to traditional livelihoods, social obligations, gender relations, and other phenomena they may consider constraining (Eakin 2006; Fitting 2011; Reichman 2011; Griffith 2014). The development of such sentiments can lead to widespread rural to urban migration and industrial restructuring to take advantage of rural youth who prefer factory to farm work, as Golding (2005) found in Guatemala. Such developments can disrupt families by undermining local production at the same time they facilitate more interdependent relations between formal, capitalist labor markets and peasant economies, put positive pressures on working conditions and rewards for production, and increase access to a wider range of goods and services. Jeffrey Cohen's (2001) work in Oaxaca clearly demonstrates that migration can have a number of positive and negative outcomes based on such factors as the life cycle of the household, the evolution of a migration tradition, household decisions to contribute to or withhold from community funds, and other factors. Similarly, Leliveld (1994) isolated five phases of a homestead's (i.e. a household's) development cycle—establishment, expansion, consolidation, fission, and decline—in rural Swaziland, finding that the role of migration varied across the different phases, with expanding and consolidating households more likely to benefit from migration than households recently established, fissioning, or in decline. These examples suggest that relationships between migration and household dynamics are complex and widespread, spanning many social, cultural, and ecological contexts.

More directly related to this work, Reichman (2011) found that, in the Honduran community where he worked, migration was socially disruptive in the sense that it coincided with a decline in coffee incomes, raising the socioeconomic status of migrants at the very time formerly wealthy coffee families' incomes were falling. Some community members viewed the migrants as greedy and attempted to construct new moral arguments to repair the damage they perceived, in the process blaming migrants for seeking better

lives and for abandoning their communities. This was particularly troubling in light of their mistreatment in the U.S. labor market, and Reichman quite rightly points out that, while migration has helped individual households, it has broken the village as a whole.

This distinction between individual gains for migrants and generally negative consequences for the community is seen also in the unintended deleterious impacts of migration on natural environments. Meyerson, Merino, and Durand (2007) list seven ways that migration can compromise environments or conservation efforts: 1) urban sprawl; 2) deforestation; 3) rural depopulation; 4) unsustainable agriculture, fisheries, and forestry; 5) contributions to global warming; 6) contributions to the inability of developing countries to achieve sustainability; and 7) weakening ties between migrants and their home communities. Drawing on material from across the Americas, their work points to the complexity of relationships among migration, ecosystem goods and services (i.e., benefits that derive from ecosystems), and conservation efforts, and they discuss impacts on both migrant-receiving regions and migrant-sending regions. Two impacts they discuss in sending regions are rural depopulation and weakening ties between migrants and their home communities, similar to what we witnessed in Olancho. Work in this vein also considers relationships between ecological change and migration, including work that focuses on migration as a response to climate change and the probability that climate change is responsible for increased frequency and severity of storms like Hurricane Mitch (e.g., Meyerson, Merino, and Durand 2007; Renard, et al. 2010; Schmook and Radel 2008). Relationships between ecological change and human population movements, however, vary across regions due to local, regional, and national developments; many victims of natural disasters, instead of migrating, assert their rights to stay in place (Ensor et al. 2009)—the continued occupation of flooded neighborhoods in New Orleans in the wake of Hurricane Katrina that occurred in 2005 is evidence of this.

Further, recent research on coupled natural and human systems has emphasized their potential to yield

unintentional consequences for ecosystem goods and services that benefit communities. Comparing six different coupled systems around the world, Lui et al. (2007) have identified several impacts of changing forest cover, determining that they are nonlinear: in some cases, that is, similar political economic processes can result in increasing, decreasing, or altering the quality of forest cover (McSweeney et al. 2015; Schmook and Radel 2008). Again, this is relevant to Honduras (Tucker 2008; PNUD; Murillo 2004). Evidence presented below documents that migration has influenced forest cover by stimulating deforestation for both pasturelands and to meet the demand for wood by carpentry workshops.

Like the work profiled above, a growing literature on migration's impacts on community engages ecology, describing relationships among migration, natural resources, and livelihoods with reference to concepts like sustainability and ecosystem goods and services (Schrieder and Knerr 2000; Wolpert 2010). Such studies often point to the ways that migration and the ecology and economy of natural resources are connected in dynamic but, as Lui, et al. (2007) suggest, nonlinear ways. The evolution of cattle ranching out of more mixed agricultural systems in Olancho provides insight into these relationships. Specifically, we trace the relationships among the changing political economy of agriculture (particularly the reduction of federal government support for crop production), the increasing role of emigration and remittances in the local economy, increasing concentration on livestock production, and deforestation. As such, the case demonstrates how political economic circumstances, over time, can structure individual decisions in ways that have deleterious immediate ecological consequences and potentially long-term, intergenerational changes that alter the options for sustainability.

A CULTURAL BIOGRAPHY OF CATTLE IN OLANCHO, HONDURAS

*“...at heart they are herdsmen, and the only labour
in which they delight is care of cattle.”*

--Evans-Pritchard, The Nuer

Like cattle producers elsewhere (Evans-Pritchard 1940; Bennett 1966; Perramond 2010), ranchers in Olancho shared with us their own lexicon surrounding cattle production, including complex vocabularies for different breeds and varieties of pasture and pasture grass, ideas about relationships among breeds, seasons, grass, and milk production, and folk theories that guide crossing breeds or culling livestock from a herd. Cattlemen in Olancho take great pride in their cattle, readily offering tours of their stock to point out the finer points or flaws of individual animals, discussing the quality of their milk, and speculating on how crossing different breeds might influence their susceptibility to disease. Yet Olancho cattle producing families have not always specialized in cattle. In most cases, they have come to it by way of formerly more complex farming systems common among peasant producers—the mix of crops and livestock oriented more toward feeding the family than toward commercial production of milk, butter, cheese, and meat.

When Don Bonacio was a young boy, for example, growing up in the 1960s, his parents, like others in the community, combined agriculture with raising cattle and each year passed more responsibility for the family farm to their children as one after another of Don Bonacio's five brothers and ten sisters reached an age where they could assume care of a plot of ground or a head of livestock. Don Bonacio's parents were typical of farmers in the area. "Ever since I was born my father dedicated himself to livestock," he said, "and as we grew up every year he gave us a calf and a place to grow [food]. For necessities some sold their calves. My father taught us how to work, and we combined agriculture and livestock, and when we married he gave us 10 *manzana* [1 manzana = 1.68 acres] of land to each of us."

Like most in the region, Don Bonacio's principal crop was maize, which he started with his father's seeds, drawing on his years of helping his father farm. At times he and his brothers missed school to clear pastures, repair fences, milk cows, and tend crops. During the years prior to his father's purchase of a

tractor, they tilled the soil and planted with bullocks, which required the labor of four men—one handling the yoke and three planting. Their mother and sisters brought breakfast and lunch to them in the fields.

In 1980, Don Bonacio married and received his 10 manzanas, but his father continued helping him, his father tilling his son's fields with the former's tractor and saving seed from his crop for his son. Over the next fifteen years Don Bonacio continued farming much as his father had, selecting seed from the most productive plants and feeding by-products such as corn husks to the pigs and chickens. In the mid-1990s, however, Don Bonacio's maize crop began deteriorating. Farmers throughout the region began using more chemical fertilizers, a development that replaced previous crop rotation practices and, according to Don Bonacio and others, "damaged the soil and brought pests." Fully 100 percent of the 38 individuals who responded to the cultural consensus statements agreed with the statement, "Chemicals damaged the soil." Remember, that statement in the consensus interview came from prior interviews, not from one of the investigators.

Another rancher in the region, Don José, added that the increasing cost of producing crops, along with deteriorating market prices, led to his shift from crops-and-livestock production to concentrating on livestock. He traced the origins of this shift to greater market penetration into the region, increased use of mechanization and other technology, and a corresponding replacement of production for subsistence/household use with production for sale. These developments were complemented by a more proactive federal government presence in agriculture. Specifically, the Honduran government established an agricultural university in Catacamas and promoted technological transfers, new methods of handling milk, and other agricultural innovation through an organization called *Guayape* (Red de Desarrollo Sostenible 2008; Loker 2004). Similar to county extension services in the United States, *Guayape* not only provided technical assistance, organizational support, and credit to local agricultural producers,

they also encouraged the use of technologies that local producers eventually questioned. Of this Don José said, “Before it was better because we only used natural things. But when Guayape arrived they convinced us to use backpack sprayers to apply fungicides and insecticides.” Loker (2004) found similar producers’ claims in another region of Honduras. In short, agriculture in the region was becoming increasingly commoditized. In Don Bonacio’s words: “In this [earlier] time we didn’t sell our maize, we fattened pigs with it. But since the arrival of these machines—tractors, mechanical threshers—it changed... Now we sell all the maize and afterward we’re left buying everything.”

Not all local producers viewed increasing commodification, market penetration, and federal government technical assistance in negative terms, however. With the statement on our survey, “Organizations like Guayape protect the producer,” 83 percent of interviewed migrants agreed compared to only 57 percent of interviewed non-migrants who agreed; the difference may reflect greater dependence on the federal government—and more recognition of its failures—by those who do not have access to remittances or overseas earnings. Most agree, however, that the federal government does have at least some role to play in local production, with broad agreement (92%) elicited from the statement, “The [federal] government can help us by looking for foreign companies to commercialize production.” Similarly, but not necessarily indicating the role of the federal government, 83 percent of non-migrants and 100 percent of migrants agreed with the statement, “The objective of the producer is to learn how to process products for international markets.”

The loss of pigs from households was a critical part of commodification—their disappearance from farms in part was due to the cost of feeding them and in part due to the increased awareness of pig-borne diseases that could be transmitted to humans. Pigs had been important to local household economies for many generations prior to the 1990s, particularly as these household economies were oriented toward

food production for home use. Ninety-five percent of community members who were administered the cultural consensus test agreed with the statement, “In the past, every house had pigs,” and the same proportion disagreed with, “Now, every house has pigs.”

With the increasing emphasis on agricultural production for market, many families in the region replaced mixed livestock production with a concentration on cattle for meat and, more importantly, for dairy products. Along with selling milk and beef in the urban markets of Catacamas and Juticalpa, families began manufacturing cheese, butter, and other dairy products. Until the development of larger processing facilities, dairy products were made and consumed at home and sold locally, using methods that local government and university personnel considered unhygienic, such as wooden cheese molds. Today, smaller processing facilities with mixes of modern and traditional equipment, based in homes and dependent on family labor, continue to buy milk for dairy products.

IN THE FACE OF COMMERCIALIZATION, EXPAND INTO LIVESTOCK OR LEAVE... OR BECOME A CARPENTER

In the Olancho case, it was the decline in prices for basic grains during the 1980s—primarily beans and corn—more than a decade prior to Hurricane Mitch that led to the early migration from the region to the United States, principally Florida and the U.S. Southeast (Endo, et al 2010). With migration, many of the region’s farms began experiencing sporadic labor shortages. Basic grain prices fell primarily due to a withdrawal of federal government protections of local production with the opening up of markets to international competition. According to farmers we interviewed, both falling grain prices and labor scarcity further encouraged the shift from mixed crop and livestock production to a concentration on cattle, which involved replacing grain fields and forested lands with pastures.

What occurred in the study communities was part of a larger process of deforestation due to the expansion of pasturelands and farming in general. From 1999 to 2005, the amount of forest in Olancho fell from 7,385,000 ha to 4,648,000 ha (37%) while pastureland grew from 1,530,000 ha to 1,700,000 ha (11%) (Reyes, Torres, and Isaula 2012:66). The Programa de Naciones Unidas para Desarrollo, Honduras (United Nations Program for Development, Honduras) (2014), working in conjunction with the Nature Conservancy, lists the expansion of lands dedicated to animal husbandry and farming as one of the threats to forests in Olancho, as serious as the exploitation of forests for firewood, which 42% of rural households rely on for fuel. “This conversion [of forests to pastures and farmlands] is due to the high demand for beef and the convenience of livestock as a source of income and capital accumulation, the demand for basic grains for a growing population, and a demand for vegetables, mainly in areas where it is relatively easy to reach the cities” (PNUD 2014:28).

More serious threats, however, come from illegal logging and forest fires, indicating multiple sources of deforestation (PNUD 2014; McSweeney 2014). Unlike the earlier federal government assistance in agriculture, these practices were not supported by either federal government subsidies or policies; in many cases, in fact, they were in contradiction of federal government policy.

For those in our study without the resources necessary to move into livestock production, economic alternatives available to them were either emigration or adopting alternative livelihoods. Carpentry workshops emerged as one such alternative, with those possessing carpentry skills taking advantage of the increased demand for doors and furniture as the early migrants began building and furnishing rooms with their overseas earnings. These workshops adjoin their owners’ homes and typically consist of an open-air pavilion with a corrugated zinc roof, several power tools, work tables and benches, and storage areas for lumber, unfinished products, and finished products.

Most hire from one to three workers—many of whom move on to establish their own workshops or work as carpenters building homes—and most of the founders of workshops and their apprentices formerly worked in agriculture.

Don Manuel Rivera, for example, established his carpentry workshop because, in his words, “I began to learn [carpentry] when I saw that my economic situation [in agriculture] was very bad, that it would no longer sustain me.” His parents, who had always been farmers, helped him attend trade school for basic training in carpentry, but he said that he had to work in a neighbor’s workshop and other job sites to gain the experience he needed to establish his own workshop. This he accomplished in 1986, with a bank loan of 5,000 Lempira (around \$300) along with 16,000 Lempira (around \$950) of his own money. In 2006, due to the increase in business from migrants, he modernized and expanded his workshop with a second bank loan of 21,000 Lempira (around \$1,200). The growth of carpentry workshops created a demand for wood, particularly cedar (*Cedrela odorata*) and pine (*Pinus oocarpa*), thus adding to pressures on local forests. While there are multiple sources of deforestation far more threatening than the demand for wood for carpentry, in just the four communities where we worked we encountered over 25 workshops, each with multiple clients wanting products made from pine, cedar, and other woods. Multiplied across the region, these workshops constitute another stress on local forests.

Both the shift from mixed agriculture to livestock and the proliferation of carpentry workshops occurred primarily during the 1990s and were established livelihoods just prior to 1998, when Hurricane Mitch swept across Central America (Oliver-Smith 2009). As noted earlier, in Olancho and across Honduras, one of the principal responses to the devastation was to migrate to the United States. According to Ensor, et al. (2009:193):

“An increasingly common feature of post-Mitch Honduras is for households with the means to

support migration to send their members with the highest wage-earning potential to the United States in hopes they will be able to send surplus earnings home. The granting of Temporary Protective Status (TPS) to migrant Honduran workers in the United States has played an important role in the increasing number of Hondurans migrating north.”

Emigration exacerbated local labor scarcity in three ways: most obviously, many of those “with the highest wage-earning potential” left to seek work abroad. Second, many young people who received remittances refused to work on surrounding farms under wages and working conditions common prior to labor scarcities, considering the wages too low especially compared to U.S. wages and the working conditions on farms often involving authoritarian forms of supervision. As one of our local research assistants said after listening for over an hour of a farmer’s complaints about labor scarcity, “He treats his workers like dogs and then expects them to come simpering back [even] when they have other opportunities.” Many youth believed that they would one day leave for the United States as well, regardless of temporary protected status, given the development of a well-documented migration infrastructure (Endo, et al. 2010; RDS 2008; Reichman 2011). Finally, the expanding carpentry sector, also benefiting from remittances and other overseas earnings, began to absorb community labor that might have otherwise been available for agricultural production.

The 2014 massive emigration of young Central Americans to the Mexican-U.S. border (Donato and Sisk 2015) highlighted the desire of youth to emigrate, and has been well-documented in focus groups conducted in the study communities (RDS 2006a, 2006b, 2006c). Like the theater performance mentioned earlier, the problem of youth setting their sights on migration as the best economic alternative available to them has stimulated the development and performance of radio novellas that portray the difficulties facing migrants as they make their way from Honduras through Guatemala and Mexico to

the United States, emphasizing debts that migrants incur to pay coyotes (RDS 2008).

A second development to result from Hurricane Mitch was funding from the United States to expand the region’s dairy sector. In Olancho, Nicaragua, and other locations, technical personnel from the United States worked with local non-governmental organizations and local cattle producers to establish modern milk buying and processing centers for making butter, cheese, and other dairy products with modern, sanitized equipment. This created additional demand for milk in the region and furthered the process of households concentrating on cattle production and the clearing of croplands and forests for pastures. In the study communities, as in other parts of Olancho (PNUD 2014), returning migrants who have invested in agriculture, for the most part, have concentrated on cattle, considering migration a critical part of their economic history.

Don Pedro Vargas, for example, used his earnings from fifteen years of working in the United States to establish a large cattle ranch and farm on which he grows sorghum and maize; his crop production is mechanized and therefore not subject to labor scarcity problems other farmers in the region experience. Yet cattle are the centerpiece of his operation. In addition, from working on construction crews across the U.S. South, much of the time as a supervisor, Don Pedro learned a great deal about labor management, particularly about the practice of using subcontracted crews to expand and shrink labor forces in line with the amount of work available—and he considers that training central to the successful management of his ranch and farm.

Another successful local rancher, Don Carlos Geño Beltrán, spent eight years in New York and Houston, accumulating 100 manzanas of land back in Honduras before returning there to raise cattle for milk production. Much of his land is close to town and therefore more secure and more expensive, with some manzanas priced at around 70,000 Lempira (US \$3,000)—the prices inflated in part from an

influx of overseas earnings. He and his wife have four children, only one of whom, a 9-year old daughter, lives with them. Two of his four children were born in the United States and his two eldest sons also raise livestock; his youngest son, at twelve, lives with an aunt in Texas in order to take advantage of Houston's schools. Don Carlos refers to this son as extremely intelligent and believes he will eventually attend college and, afterwards, contribute to the family livestock operations—if not directly, as a rancher, then indirectly, through remittances. He explained that when a father leaves his children and wife and remits earnings to his children, or when a brother leaves and remits money to a brother or sister, the youth lose their motivation *and their desire* to work or to learn about local production systems. When a son remits earnings to his parents, however, there is more likelihood that the money will be invested in a family business, including ranching and farming. Such observations support both Cohen's (2001) and Leliveld's (1994) findings, discussed above, about household life cycles, yet also support critiques that suggest that it is inevitable that all youth will leave agriculture (e.g., Eakin 2006; Fitting 2011).

Despite success stories and local defensiveness against critiques, consistent with Reichman's (2011) work, local attitudes toward migration are not generally positive. As discussed in more detail below, even when we compare the beliefs of individuals from migrant with non-migrant households, members of both groups agree that migration is a disincentive to participating in the local economy. It indicates that the material and other benefits that derive from migration may benefit individual households while undermining the community's ability to create sustainable livelihoods.

PERCEPTIONS OF MIGRATION, LABOR, AND CARPENTRY

Along with open-ended interviews and observations with community members, we collected perceptual data with agree-disagree statements of the kind developed for cultural consensus tests (Romney,

Weller, and Batchelder 1986), administering them specifically to compare migrant and non-migrant perceptions toward local and regional livelihoods. The statements were taken more or less verbatim from opened-ended interviews with members of the communities. The results of this work, presented below, demonstrate that few perceptual differences exist between the migrant and non-migrant groups; instead, they share views along a number of lines. Particularly relevant here are their attitudes toward migration, local labor and labor scarcity, and the growing alternative livelihood of carpentry (see tables 1-3).

Regarding migration, for example, while migrants are somewhat less likely than non-migrants to consider migration as a short-term solution, members of both groups agree that migration seems to undermine work ethic among youth and does not generally result in benefits to the local economy (see table 1). Specifically, members of both groups agree that: 1) the youth are less likely to want to work, particularly in agriculture, if they are receiving remittances; 2) migrants are not likely to return to work in agriculture; and 3) that migrant investments in the local economy are rare. What is remarkable here is not that people complain about the work ethic of youth, which is common worldwide, but that their complaints specifically target migration as the cause of the deteriorating work ethic. These comments also support our argument that migration and labor scarcity in agriculture are closely related, encouraging increased dependence on livestock.

High levels of agreement with statements that reflect labor scarcity and labor quality reinforce the idea the more and more people are rejecting traditional work (or levels of work) in the communities, and that this has had negative consequences for agriculture (e.g., that more chemicals are necessary—see Table 2).

Table 3 presents statements about carpentry. The statements suggest a generally positive view toward the craft itself, even if it may contribute to problems in the supply of wood and, in the

aggregate, deforestation. They also acknowledge the changes in the trade that have come about due to migration, with changes in door designs and more demand for American and European models. However, most agree that carpenters

love to pass their knowledge onto their children, that they have improved tools and higher quality products, and that their knowledge is grand—all features of carpentry workshops that suggest they are a growing, rather than declining, industry.

TABLE 1. Migrant and Nonmigrant Responses to Agree-Disagree Statements about Migration

Migration	Percent Agreeing	Migrant Percent	Nonmigrant Percent
"Emigración es una solución a corto plazo." (Emigration is a short term solution)	42	37	50
"Hay los emigrantes que han invertido y regresan a trabajar, pero son muy pocos." (There are migrants who have invested and return to work, but they are few)	94	94	94
"Hay los emigrantes que regresan con la mentalidad de andar bien catrines, sin trabajar." (Migrants return with a cocky attitude, without working)	100	100	100
"La gente no quiera trabajar porque les envían remesas." (People don't want to work because they [migrants] send them remittances).	94	90	100
"Con la migración se provocaron cambios en los tipos de muebles que pedían las personas." (Migration has changed the types of furnishings people ask for).	97	97	97
"Unos jóvenes no quieren trabajar por que se han ido a los estados unidos." (Some youth don't want to work because they have been to the United States).	100	100	100

Table 2. Migrant and Nonmigrant Responses to Agree-Disagree Statements about Labor

Labor Statements	Percent Agreeing	Migrant Percent	Nonmigrant Percent
"Hay un escasez de mano de obra en la comunidad ahora." (There is a scarcity of labor in the community now)	94	100	89
"La juventude no les gusta trabajar." (The youth don't like to work)	92	95	89
"Algunos jóvenes no quieren trabajar porque no se les enseña en el campo desde pequeños." (Some young people don't want to work because they didn't learn in the fields when they were little.)	84	90	78
"La gente ahora trabaja menos que antes." (The people work less now than before.)	97	100	94
"Antes nuestros padres no ponían a trabajar desde temprano y ahora los jóvenes ya no tienen ese espíritu de trabajo." (Before our parents didn't mind working early and now the youth have no work ethic.)	100	100	100
"Hay que usar más productos químicos porque no hay suficiente mano de obra." (One must use more chemical products because there aren't sufficient workers.)	100	100	100

CONCLUSION

Shifting patterns of land use are ecological processes that inevitably alter local environments in ways that may not be immediately apparent to those making decisions—based on external developments like eroding markets or labor

scarcities—to change their production practices and their consequent interactions with natural resources. These changes can lay the foundation for further problems when new adaptations, such as migration, capture a community members' attention as a solution to economic and ecological crises. The cultural biographical and perceptual

Table 3. Migrant and Nonmigrant Responses to Agree-Disagree Statements about Carpentry

Carpentry Statements	Percent Agreeing	Percent Migrant	Percent Nonmigrant
"Dueños de talleres se llenan de satisfacción enseñarles la cultura de trabajo a sus hijos." (Owners of workshops fill with satisfaction to teach the culture of work to their children.)	97	100	94
"Los diseños de las puertas en la comunidad han cambiado en años recientes." (The designs of doors in the community have changed in recent years).	100	100	100
"Ahora los que los carpinteros tienen mas demanda son los modelos americanos y europeos." (Now that which the carpenters have the most demand are American and European models).	100	100	100
"Aun en un taller pequeño de carpintería, el conocimiento del carpintero puede ser grande." (Even in a small carpentry workshop, the carpenter's knowledge can be grand).	100	100	100
"La calidad de los muebles ha mejorado porque con nuevas herramientas no se daña la madera." (The quality of furniture has improved because with new tools you don't damage the wood).	100	100	100
"La madera esta escasa y por eso ha elevado el costo." (Wood is scarce and that's why its price is high).	97	95	100
"En el futuro va a ser difícil trabajar con madera." (In the future it will be difficult to work with wood).	97	95	100

data presented above suggest that the scarcity of labor available for agriculture had direct and indirect roots in migration, which was itself a response to a combination of material, cultural, and ecological changes taking place in Olancho and in destination regions. These changes included the initial commoditization of agriculture with the assistance of the federal government, the perceived damage to natural resources brought about by agricultural chemicals, and the subsequent withdrawal of federal government support from agriculture. Hurricane Mitch, United States' immigration policy (the temporary protected status benefit), infrastructure and networks facilitating migration, and international development assistance further reorganized local social relations and economic opportunities. Within migrant households, remittances became central to incomes and tended to undermine the household's ties to local economic activity and to the ranchers and farmers for whom they worked in the past. Remittances and other migrant earnings also fueled carpentry workshops, which proliferated from master-apprentice relationships as apprentices became masters and took on their own apprentices, drawing labor out of agriculture, establishing carpentry as a new viable livelihood,

and increasing local demand for cedar, pine, and other wood.

The pressures on forests that came from increased demand for wood and land clearing for pastures cannot be attributed solely to migration, especially in light of the development of milk processing and its role in encouraging rancher-farmers to concentrate on cattle. Nevertheless, that migration played a part in deforestation demonstrates its unanticipated and unintended consequences. These findings encourage closer correspondence between migration studies and studies that investigate relationships among demographic processes, ecosystem goods and services, and traditional and new livelihoods.

Each of these phenomena, further, depend on and add to local environmental and economic knowledge, including the critical thinking that local residents marshal to weigh and evaluate new and old livelihoods. For haven't the theater troupe and the radio novellas also emerged as unintended—or at least unforeseen—consequences of migration? Haven't these performances, produced and enjoyed locally, come about to comment on a phenomenon that has influenced, greatly, the imaginations of

youth? Of all the consequences of migration, surely among the most ironic are its insidious results producing art.

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