Chapter 2

Rural Migration to the Costa Rican Frontier: Understanding Migrant Motivations for Migration and Migrant Quality of Life

Abstract

Frontiers are unstable; both spatially and economically they are situated at the margins of national and world economies. The nature of these places makes frontier migration a risky endeavor for individuals and their families, yet this form of migration remains largely ignored in migration research. This article utilizes a household ethno-survey to track and describe migration dynamics in the northern frontier of Costa Rica and the subsequent improvements or decreases in migrant quality of life. Data reveal that both international and internal migrants came in two major flows to the Costa Rican frontier. Migrants to Costa Rica were initially motivated by land availability, and then by growing labor opportunities, cheaper housing and lower costs of living. The most recent migrants came seeking the various environmental amenities found in the Costa Rican frontier. Generally, young and maturing households experience higher quality of life as measured by income, demographic variables and education when established on the frontier, as compared to mature households, who despite their extended duration on the frontier, later life stage and land resources experience a lower quality of life. Understanding how different types of families fare and persist in these frontiers is a critical step toward exploring how rural development evolves on a human and household level and toward understanding how to mitigate frontier migration’s negative human and ecological outcomes.
Introduction

The frontier is a peripheral region that is in a process of increasing integration into the national and global capitalist economy (Barbier 2012). This integration includes a process of social, economic, and ecological change, where human lives and landscapes are reconstructed (Marquette 2006). Migrating to the frontier is a risky household decision; most socio-economic conditions are likely to decline given the limited infrastructure, lack of governance, and low educational and employment opportunities (Carr 2009). Frontier migrants seek to improve their life despite considerable risk and often their resultant quality of life and experiences are heterogeneous and geographically uneven (Marquette 2006).

Previous research in Costa Rica and other Central American and Amazonian countries demonstrates that frontier migration is most commonly driven by governmental programs to settle these frontiers. Such programs can both improve or inhibit migrant quality of life and mobility (Schelhas and Sanchez-Azofeifa 2006, Butterfield 1994, Marquette 2006). After colonization, migrant quality of life and mobility on the frontier are more often dictated by micro level household characteristics and the lifecycle stage of the household, such as, asset endowments, economic diversification into off farm sectors, health, and the number of dependents in a household (Caviglia-Harris et al. 2013, Browder 2008, Barbier 2012).

Patterns of frontier migration encompass highly selective migration pathways, which are associated with the poorest, largest, and least educated families throughout Central America (Jepson 2006, Barbier 2012). Frontier migration can be characterized as rural to rural migration or urban to rural migration, or more generally as migration to “an area not yet
developed or integrated into the national economic system, but where those systems are nascent and taking root” (quoted in Marquette 2006). Populations migrating to the frontier can be both internal migrants and international migrants, primarily, south-south migrants. Rural migration is an understudied but integral part of the set of contemporary issues regarding rural development, agricultural production and biodiversity conservation in tropical forest frontiers (Carr 2009). Our research in this paper provides rich descriptions of migrant motivations and outlines migrant household characteristics and fundamental indicators of quality of life to contribute to our understanding of the political, economic and social drivers of rural migration and migrant quality of life on the frontier.

Since frontier migrants migrate to regions at forest boundaries and tend to seek land for agricultural production, they are the key drivers of deforestation and tropical landscape change (Carr 2009). Frontier migration, as a human driver of landscape change, has been extensively studied to understand tropical deforestation in much of the literature focusing upon land use change (Lambin et al. 2003). However, researching frontier migrants’ experiences beyond their land use change impacts is often neglected (as argued by Marquette 2006). In contrast to the majority of these studies, our research is a people centered inquiry that focuses on human quality of life on the frontier and contributes to rural sociology.

In rural sociology, the focus of inquiry is on understanding human experience in peripheral regions in relation to world systems and the process of capitalist incorporation (Labao 1996). In this line of inquiry, the frontier is a socio-spatial territorial unit where the process of capitalist incorporation of household economies and the regional economy is particularly clear
and observable (Hall 2000, Labao 1996). Furthermore, the process of capitalist incorporation of the frontier into the national and global economy is seen as a critical structural factor that initiates and perpetuates migration to and from the frontier (Hamilton and Chinchilla 1991).

The study region of this paper’s research is located within the north-central frontier of Costa Rica and borderland with Nicaragua (Figure 1). This region is growing in population and is undergoing dramatic demographic and socioeconomic change as it is being increasingly integrated into the national and international economy (INEC 2011, Rodríguez and Avendaño 2005). As the majority of residents are migrants, we need to examine who migrated to the frontier and why, and how migrants are faring socio-economically on the frontier. This article presents a cross-sectional analysis of frontier migrants, when and why they came to the frontier and then compares households at different lifecycle stages, or age groups, to reveal the factors that shape migrant quality of life.

**Conceptual Framework**

**Frontiers**

The frontier is the most recent peripheral region being incorporated into the national or global economy. The frontier operates as a *spatial fix* for national and global economic growth and accumulation. It is a space that provides a fresh store of resources, such as land, labor and natural resources and integrates them into the larger economy (Harvey 2005). State programs initiate territorial integration of frontiers through agrarian reform, land distribution, and infrastructure investment and transportation networks (Jepson 2006). Historically, in Central America the frontier also operated as a political maneuver. The frontier was used as a safety
valve, to ease the rural poor, to “serve as the employer of the last resort for underemployed, unskilled labor” and to become a refuge for subsistence farmers seeking small plots of land (Barbier 2012, Brockett 1998). Macro-economic conditions, such as commodity booms, economic crises, structural adjustment policies and globalization also effect the frontier. These factors accelerate the migration flows to and from the frontier and dictate the pace of development and process of incorporation on the frontier (Hecht 2005).

Frontiers are characterized by a compressed development process as they are the last to be integrated and often are integrated at a more rapid pace than core regions. Often, the development of frontiers is spatially uneven, characterized by boom and bust cycles (Barbier 2012). Frontier development requires substantial migration of people and capital as well as state investment into infrastructure, public services and transportation (Barbier 2012). For these reasons, frontiers can also be characterized by a high turnover rate of inhabitants, especially of early migrants. Population decline after an initial settlement rush and land abandonment or land consolidation over time is typical (Barbier 2012). These ‘failed frontiers’ are sometimes called “hollow frontiers,” and are areas characterized by out migration, forest recovery and regrowth (Rudel et al. 2005). Frontier development represents a compressed, geographically specific, heterogeneous process of economic incorporation. Studying migration patterns to the frontier and migrant quality of life on the frontier gives insight into how incorporation, as an uneven social and economic process, is expressed in the lives and quality of life of migrant households.
Who Migrates To The Frontier?

After the global debt crisis of 1980, migration in Central America shifted away from urban centers and towards secondary cities and rural frontiers (Carr 2009). One third of all migrants in Latin American countries, where data exists, are migrants to the frontier; they are both internal and international, rural-to-rural migrants, and urban-to-rural migrants. Rural migrants are understudied in migration literature (Carr 2009) and few migration studies integrate analysis of both international and internal migration flows (noted by King and Skeldon 2010). Push and pull factors that encourage migration to the frontier differ by the degree of the frontier’s maturity, time of settlement and the characteristics of each population cohort (Barbier 2012). As the frontier ages, it becomes a landscape of the different population cohorts who arrive at different life stages and who each have distinct household characteristics. Early migrants, especially, are pushed to the frontier by poverty and unequal land distribution in the sending regions and pulled by the cheap and available land and by state sponsored settlement incentives on the frontier. Such migrants often prioritize land ownership over the lower wages and limited employment opportunities on the frontier when compared to other more developed regions (Carr 2009). Later waves of migrants tend to be pulled by social ties or growth in local labor markets although if land is still available, it remains a significant pull factor. These migrants may also value higher security or the rural lifestyle above the typical decrease in wages, employment opportunities and quality of services (Ibid).
International Migrants

International migrants in northern Costa Rica are primarily south-south migrants from Nicaragua. This pattern is consistent with migration patterns observed in other developing countries, where more than one half of the populations migrating do so between different developing countries in the global south rather than to a northern developed country (Gindling 2009). According to neoclassical theory, south-south migrants are pushed from their origins and pulled to receiving regions as a result of economic decision making, moving from a labor surplus, low wage country to a labor scarce, high wage country (Lundquist and Massey 2005). Costa Rica has a per capita income three times that of Nicaragua and a significant demand for low wage, low skilled labor, predominantly in agriculture, construction or domestic work (Lundquist and Massey 2005, Marquette 2006 b.). Though economic reasons may dominate migration initiation, migration research also finds that shared culture, language, and geographic proximity also encourage migration (Castles and Miller 2009). Strong social networks typically facilitate Nicaraguan migration to Costa Rica (Marquette 2006 b.), however Lee (2010) found that most Nicaraguan migrants working in export agriculture in the study region migrated there both internationally and internally with mostly weak social ties.

Conflict and violence are also major push factors associated with south-south migrant initiation across Central America (Lundquist and Massey 2005). From 1980-1990, many Nicaraguans became refugees in Costa Rica in response to the Contra War. This was in part due to proximity, as Nicaragua borders Costa Rica, but was also facilitated by the political and economic stability of Costa Rica, which has been counter to the prevailing trend of political instability and poverty in other Central American countries and is attractive to
migrants seeking asylum (Lundquist and Massey 2005, Hamilton and Chinchilla 1991). However, economic hardship and political persecution are hard to differentiate as separate factors that initiate migration and often occur simultaneously (Lundquist and Massey 2005). For this reason, older Nicaraguans within Costa Rica are often both political and economic migrants. These migrants also exhibit a two-step migration process (King and Skeldon 2010), first entering Costa Rica as international migrants for political reasons and then proceeding as internal migrants within Costa Rica for economic reasons.

Nicaraguan populations are spatially concentrated in Costa Rica in the central urban area of San Jose (40%), and in the northern frontier, or the Huetar Norte region (30%) where the study region is located (Figure 1) (Marquette 2006 b.). Nicaraguan households in Costa Rica have different characteristics than Costa Rican households. They are concentrated in lower paid economic sectors, principally agriculture in rural regions. Nicaraguan migrants account for 10% of the national labor force in agriculture (Marquette 2006 b.). Most of the Nicaraguan population in Costa Rica is economically active, with 70% of the population being comprised of working age adults from 20-39 (Marquette 2006 b.). They tend to have bigger families, lower education and experience poverty more severely than Costa Rican households (Marquette 2006 b.). Border regions, like the study region along the northern frontier are centers of poverty for Nicaraguan households.

Internal Migrants

Literature tracking internal migration to frontiers is sparse for Costa Rica (for example, Golley et al. 1971, Sewastynowicz 1986, Cruz et al. 1992, Butterfield 1994, Schelhas and
Sanchez-Azofeifa 2006, Kull et al. 2007, Lee 2010). Historically, Costa Rica is characterized by significant concentration of settlement in the central valley-- the capital city center and suburbs of San Jose. It was not until well into the 1960s that settlement radiated out into the peripheral regions of the country (Augelli 1987). In part due to this pattern of settlement, spatial inequalities have been particularly pronounced in Costa Rica when compared to other Central American countries (Hall 1984). In Costa Rica, there are major discrepancies between regions regarding infrastructure, transportation, governance, population, and quality of life (Hall 1984, Seligson 1979).

Internal migrants in Costa Rica were initially motivated to migrate due to land inequality, population growth and urban and rural poverty - especially during the debt crisis in 1980 when major settlement of the study region began and migration pathways shifted from urban destinations to the frontier (Cruz et al. 1992). Land consolidation, degradation and the low labor demand in rural cattle regions, which grew substantially with the ‘hamburger connection’ between the United States and Costa Rica for beef exports from 1950-1980, also pushed landless farmers towards the frontier (Augelli 1987). The government-sponsored settlement of migrants, through low interest mortgages, land titling and intervention in squatter land disputes functioned as a pull to the frontier. The government was also charged with providing transportation networks and critical infrastructure (i.e. potable water, communications, electricity), which was accomplished slowly and unevenly, due to limited state resources but nonetheless attracted migrants to the frontier (Seligson 1979, Schelhas and Sanchez-Azofeifa 2006). As the frontier develops, labor demand increases and draws labor-seeking migrants into the rapidly developing industries such as export agriculture or tourism.
As road access and the quality of life improve on the frontier, ‘rural restructuring’ occurs whereby, through the process of capitalist incorporation, traditional agriculture, economic activities and social relations transition to those associated with post productivist or multifunctional landscapes (Gosnell and Abrams 2011). In these environments, amenity migration becomes more prominent, drawing migrants to rural regions for security, aesthetic, quality of life, or lifestyle reasons (Gosnell and Abrams 2011). In Costa Rica amenity migrants tend to be wealthier urban to rural migrants who engage in agriculture or ranching for a hobby, or are absentee landowners who weekend in the countryside and have locals take care of their farms (Schelhas and Sanchez-Azofeifa 2006).

**Migrant Quality Of Life**

Social reproduction, demographic characteristics and social wellbeing are key conceptual elements to understand differences between populations in the periphery in comparison to the core, or to understand differences among frontier populations (Lobao 1996). This section of the research informs our fundamental understanding of these dynamics on the Costa Rican frontier.

In this paper, as in other frontier studies (see de Sherbinin et al. 2008, Marquette 2006) social wellbeing or migrant quality of life is defined primarily in economic terms indicated by assets, education and income variables, which are then conditioned by household demographic characteristics, such as fertility and the number of dependents present. Life cycle stages are central to developing a fundamental understanding of quality of life and are used in studies of populations, their land use decision-making and livelihood strategies in
frontier regions (Walker et al. 2002). Life cycle stages are defined by the household head’s age (i.e. young, maturing, mature) and serve as a heuristic category to discuss demographic and economic constraints and opportunities that frame wealth and quality of life over the life span of a household (Walker et al. 2002). Life cycle theory recognizes that households are the principal unit of production and reproduction and decision-making (de Sherbinin et al. 2008). It emphasizes that the capabilities of the rural poor are based on their access to and ownership of natural capital, social capital, human capital, physical capital, and financial capital (Scoones 2009). Wealth is comprised of a combination of these assets, and wealth at any moment is a function of past accumulation and investment that are always shaped by historical and current structural opportunities and constraints (de Sherbinin et al. 2008).

For this reason, quality of life on the frontier is conditioned by historical periods or events, structural factors (political, organizational, institutional and socio-economic), and household characteristics (Marquette 2006). Early migrants to the frontier will mature on the frontier as the frontier itself matures. They are often the most resilient class of migrants, primarily a function of their durability on the frontier and ability to adapt to changing conditions. Sometimes they can accumulate significant resources due to early land acquisition and demographic maturity (Marquette 2006). However, if they arrive on the frontier in marginal economic condition and encounter low quality land, limited infrastructure and marginal agricultural markets, they either abandon the frontier and out-migrate or persist in a marginal state (Caviglia-Harris et al. 2013). This persistence in a marginal state is called negative path dependency, where the intersection of social, economic and ecological marginality constrains mobility. The concept of negative path dependency is a major part of understanding early land
migrants in this paper’s study region and, generally speaking, of understanding the incompleteness of capitalist incorporation of populations at the margins of the global economy (Bush 2005).

Although quality of life on the frontier is influenced by many of the same factors as it is in other regions, the frontier also provides its own unique combination of problems and opportunities for wellbeing. Frontier specific factors that can detract from a good quality of life on the frontier include the following and are summarized by Marquette (2006): younger household life stage (i.e. high number of dependents, unstable economic situation), poor land, land insecurity, limited public services or infrastructure, high transportation costs, or limited time on the frontier. Likewise, because of the low levels of infrastructure on the frontier and the selectivity of frontier migrants with low socio-economic status, issues such as low levels of education and low initial resource endowments tend to be prevalent on the frontier. Some of the common factors that improve quality of life which are particularly salient on the frontier include the following: longer duration living on the frontier, mature household (i.e. fewer dependents, accumulated resources), strong markets (i.e. deeply integrated into national and global economy), early migration to the frontier when land was cheap and abundant, initial wealth, availability of adult male labor in the household, higher levels of education, commodity booms or favorable government policy towards the frontier (Marquette 2006). As families move through different life cycle stages they will experience different levels of labor availability, economic resources, and the number of dependents in the household will decrease as they age (Browder et al. 2008, Marquette 2006). Migrant quality of life is thus
always evolving on the level of the household, in step with changes in life cycle stages, and intersecting with external conditions on the frontier.

**Study Region**

This research focuses on the northern Costa Rica frontier of the Huetar Norte region. This frontier is currently designated as closed meaning it has reached an advanced stage of frontier development and deforestation has stabilized along with population growth (Marquette 2006, Schelhas and Sanchez-Azofeifa 2006). However, due to the rapid and continual population growth, that claim should be re-evaluated as a terminal process. Conservation policy, namely the Forest Law of 1996, has prohibited land use change on private and public land effectively retaining remaining forest and making continued deforestation illegal (Morse et al. 2009). This has essentially closed the forest frontier in regions where the conversion of forest to agriculture occurs but the frontier as a socio-demographic process has not ended.

Currently, Sarapiquí County, the principal receiving county in the study region (Figure 1), has the fourth largest population of Nicaraguan immigrants of all counties in Costa Rica (INEC 2011). Furthermore, Sarapiquí County continues to be a major internal migration destination for Costa Ricans. It is the only rural county in Costa Rica experiencing net population increase and is the second fastest growing of all Costa Rican counties (INEC 2011). However, this region has not always been a migration destination. Migration to this region - in concert with rural migration trends across Central America - was initiated as a solution to the global economic crisis of 1980, with the region serving as a refuge for the urban and rural poor (Cruz et al. 1992). Sarapiquí also became a key region for the establishment of non-traditional
export agriculture, which was a key component of economic recovery and was predicated on the global incorporation of the agricultural economy as defined in the economic reforms that precipitated after the debt crisis (Edelman 1999).

Figure 1. Map of Study Region, Focal Villages and Selected Counties

In Costa Rica, during the debt crisis, real wages dropped by 30 percent and unemployment doubled (Edelman 1999). Widespread poverty shifted migration trends away from urban centers and established rural villages and towards the forested frontier (Cruz et al. 1992).
Costa Rica was the only Central American country characterized from the late 1970’s to early 80’s by positive net urban to rural migration and the frontier emerged as a major receiving region for both urban and rural migrants (Cruz et al. 1992). This trend was especially important for the settlement of the Sarapiquí region.

The Institute of Agrarian Development (IDA formerly ITCO) initiated the opening of the northern frontier in the Huetar Norte Region to accommodate new migrants and calm existing rural unrest caused by unequal land distribution from cattle production, rising urban and rural unemployment and the relocation of banana companies from the south to the northern Atlantic and Sarapiquí regions (Schelhas and Sanchez-Azofeifa 2006). During this time, the study region was one of the most active squatter zones in the country (Butterfield 1994) and IDA struggled to purchase land and reclaim abandoned land in order to repartition it into 6-20 hectare plots. IDA then sold these plots at a discounted price with a low interest 15-year mortgage to families that met the qualifications based on low socio-economic status and need (Schelhas and Sanchez-Azofeifa 2006). Over 50% of the government-sponsored land acquisition and settlement during this time was in forested areas with poor to good agricultural soils. During this period, 4% of Costa Rican forest was being lost a year, one of the highest deforestation rates in Central America at this time (Cruz et al. 1992, Augelli 1987). Marginal ecological conditions for agricultural production undermined smallholder success in some places, especially where transport networks were also lacking (Cruz et al. 1992). In 1986, the road was built from San Jose to Limon, which facilitated infrastructural development, permanent settlement and export crop expansion in the Sarapiquí region (Morse et al. 2009). By 2000, IDA settlements totaled more than 200,000 hectares, and had benefited
about 14,000 families in 186 colonies in the Huetar Norte region (Faure and Samper 2004), which encompasses the study region (see Figure 1).

Land acquisition laws and titling practices facilitated speculative land investment, sale and turnover as deforesting or ‘improving’ land for immediate sale became a business of its own (Cruz et al. 1992). Many IDA plots were resold to people who did not qualify as low socio-economic status by people who did not yet have title to the land, which is only attained after 15 years of residence on the plot (Cruz et al. 1992, Schelhas and Sanchez-Azofeifa 2006). Speculative land investment by larger landholders, poor agricultural conditions and the lack of basic infrastructure and transportation networks undermined the long-term success of many of these government colonies and eventually led to early migrant abandonment, land consolidation and a high prevalence of absentee ownership, especially in geographically remote regions (Schelhas and Sanchez-Azofeifa 2006, Morse et al. 2009). Transportation networks still remain a major barrier for many of the more remote colonies and in several cases the few remaining residents caretake large tracts of absentee owned land. However, and despite early out migration, migration to the frontier is increasing with local labor market expansion into pineapple and tourism industries and the continued development of rural centers like Puerto Viejo and La Virgen. The study region has experienced an accelerated and compressed development process in the past 30 years and is continuing to undergo dramatic demographic change. For this reason, this region presents an ideal setting to research migration dynamics and migrant quality of life outcomes on the frontier.
Methods

Field research was conducted from 2011-2013 over a period of 12 months, and utilized a sequential mixed method design (Creswell 2009) including, participant observation and ethnographic field methods, community workshops, a household survey and semi structured in-depth interviews (Table 1, see Appendices). Here, each method is used to inform the following method, capture missing or inadequately detailed data in previously employed methods, to maximize the strengths of each method in a complementary fashion and finally, to gather data at multiple scales from the household, community and larger regional and national scales. For example, ethnographic fieldwork and community workshops were fundamental to designing the interview guide, identifying key informants, and developing the survey language, questions, responses and scales.

Table 1. Diagram of Sequential Mixed Methods

Community Workshops

Workshops were conducted in 2 villages, Pangola and El Roble, within the study region to understand the settlement history, evolution of the villages and context for rural community
development. Village leaders were invited for a 4-hour workshop to discuss the history of their village, challenges and successes they have had and to collectively envision and establish goals for the future. These workshops were video recorded, and fully transcribed.

Survey Design

The survey was further developed using questions and scales adapted for this context from López-Carr’s survey in the Mayan Biosphere Reserve (2008), and from insights from Lee’s (2010) interview guides and findings with Nicaraguan migrants in a neighboring district. The face-to-face survey interview typically lasted one hour and utilized the ethno-survey method developed by Massey and Zentero (2000). Between my field assistant and me, one person administered the survey and recorded the responses on a code sheet while the other recorded direct quotes, responses to open ended questions, and made informal observations to give context and strengthen interpretation of the survey responses. This process allowed both qualitative and quantitative data to be collected during the interviews and each survey is complemented with qualitative description and quotes. The survey included 4 major thematic sections addressing the following: 1) socio-economic/demographic 2) land 3) migration histories and motivations and 4) environmental perceptions.

Survey Sampling

Three focal villages were selected. The villages represent a gradient of economic development, a gradient of forest cover and a gradient of extension of pineapple cultivation,

---

I completed this disciplinary research as a member of an interdisciplinary team. For these reason villages were selected based on an interdisciplinary criterion that was concerned with questions of agricultural land use effects on biodiversity conservation. Villages were selected across a gradient of forest cover and were representative of dominant agricultural land uses but also represented social variation.
which was used as a proxy for agricultural modernization or indicator of capitalist penetration. El Roble, the most populated village, has the lowest forest cover (38%) and the largest amount of hectares in pineapple cultivation. Pangola, has moderate levels of each factor, and Boca Tapada, is very close to the Nicaraguan border, very rural, has largely intact forest cover (67%) and pineapple cultivation has just started to expand. Households were identified with aerial photos and handmade maps, were assigned random numbers and randomly sampled. I sampled 6% of the El Roble region, 23% of Boca Tapada and 22% of Pangola. Almost 10% of the households within the three focal villages were sampled.

*Interviews*

In addition to the randomly selected households that participated in the survey, I conducted thirty-five semi-structured interviews. Participants in our sample were purposively selected to include a wide range of individuals: representatives of agricultural producers’ organizations, large landholders, and regional and national agricultural government officials. Interviews lasted between 1-2 hours and were conducted in both Spanish and English. The interviews were digitally voice-recorded and fully transcribed. Workshop and interview transcripts were coded in ATLAS Ti 7 into thematic categories. Each transcript underwent two rounds of coding, the first being preliminary and raw coding, based on sensitizing concepts (migration, agrarian reform, and the community development process, socio-economic mobility etc.). Preliminary coding also captured in situ (not predetermined) codes that arise directly from the participant’s speech. This first round is done quickly and bins quotes into large themes. The second round of coding was more focused and conducted line by line to unpack the sensitizing concepts into sub categories and capture a more in depth interpretation of the
range and variability within each theme (for a full discussion of this method see Charmaz 2014). Demonstrative quotes were selected to illustrate major themes and the range of perspectives within each theme.

Statistical Analysis

Dependent continuous variables (i.e. age, duration, income, land holdings, assets, dependents, education of female, number of people living in house, urban/rural migrant) were tested with standard one-way ANOVA and Welch’s robust ANOVA test. These tests were used to test differences among migrant types and life cycle stages targeted at the following questions: 1) Are there differences in household characteristics among migrant types? and 2) Are there differences in social wellbeing indicators among life cycle stages? Tukey multiple comparison tests were used to examine group differences only when both the parametric and robust tests were significant for the continuous variables. To measure levels of association between categorical variables (i.e. dominant economic activity that generates income, literate/illiterate, family structure) Pearson chi squared tests were conducted. If expected cell counts were low, exact tests were performed. The significance value used was alpha = .05.

Results

Migrant Flows And Types

ANOVA analysis revealed that migrants to this region have come in waves defined by year of arrival to the region and their principal purpose for migrating. The first wave of migrants came between 20-35 years ago or between the years of 1980-1995, and the second wave came in the past 10-15 years or since the year 2000. The first wave is comprised of Nicaraguan
refugees seeking political asylum and migrants seeking land. The second wave is comprised of migrants seeking employment, cheaper housing, or environmental amenities. Important differences exist between each migrant type related to their principal motivation for coming here, their age, duration, or length of time living in the region, and how they earn their living. First, we describe general characteristics of migrants and examine differences between migrant types. Second, we will describe how the two main migrant waves coincide with major historic events in the frontier; migrants motivated by land were tied to state sponsored settlement of the frontier and the establishment of colonies, while migrants motivated by labor were tied to the expansion of non-traditional export agriculture, predominantly of pineapple. Finally, we will examine characteristics of the Nicaraguan migrant population to demonstrate the differences between undocumented and documented migrants, and the unique opportunities and constraints they face in comparison to Costa Rican migrants.

Migrant Origins

Of the 138 households sampled, 83%, or 115 households, were not born in this region and are therefore classified as not native to this region. The majority of these migrants, with the exception of Nicaraguan households, have never migrated before or since migrating to the frontier. This limited migration experience is common for Costa Ricans and has been found in other studies (Sana and Massey 2005). In general, internal and international migrants have lived in the study region for an average of 12 years.
Forty three percent of all migrants (both internal and international) are from rural regions and 57% are from urban regions. Heredia, San Carlos and Grecia counties are the principal sending regions for internal migrants (Figure 1). Heredia is the most urban, with 1 percent of the population involved in the primary sector, or agricultural sector (Estado de la Nación 2012). Grecia is also a predominantly urban county with 16 percent of the population engaged in the primary sector (Estado de la Nación 2012). San Carlos is both a sending and receiving
region where most migrants came from the more urban parts of that county and migrated North. Significant proportions of the populations in Sarapiquí and San Carlos participate in the primary sector (26% and 48% respectively) (Estado de la Nación 2012). These receiving counties are predominantly rural and have a higher number of households that cannot meet their basic needs when compared to Grecia and Hereida (Estado de la Nación 2012). Urbanization and the proportion of participation in the primary sector of the economy are often good indicators of peripheral economies, as evidenced in Sarapiquí and San Carlos counties (Estado de la Nación and INEC 2012). The differences between sending and receiving counties in regards to degrees of incorporation (as indicated by urbanization and percentage of participation in the primary sector) likely motivates migrants to move between them depending on their objectives (Hamilton and Chinchilla 1991). This same difference exists, but in reverse for international migrants from Nicaragua who seek the frontier because it is better economically than Nicaragua (Lundquist and Massey 2005) but also more accessible in regards to housing and low skilled employment than other regions of Costa Rica (Estado de la Nación and INEC 2012).

*Differences Among Migrant Types*

Table 2 presents characteristics of migrants within each migrant type and highlights the distribution across migrant types of several of the dependent variables tested in Table 3. Table 3 presents the results of the ANOVA analysis where the means of each dependent variable were compared across migrant types and displays both parametric and robust p values. The only statistically significant variable differences in the ANOVA tests among migrant types, where both parametric and robust tests agree, are the differences in the duration of residence


on the frontier and current age (Table 3). Urban migrant, rural migrant and the square root of landholdings are significant in just the robust test but not the parametric test.

Cross-tabular analyses show that migrant types also differ by the economic activity that produces their principal income (i.e. farm or livestock, transfers (i.e. welfare, pension), non-farm labor and farm wage labor) \( (p = .01) \). Migrants motivated by work opportunities account for 50% of the sample who earn their income from farm wage labor, indicating that the majority of them are migrating for and securing jobs in that sector consistent with regional growth in the export agriculture sector. Land migrants account for 67% of the sample that earn their income from farming or livestock.

Cross tabular analysis of migrant types by household life cycle stage \( (p = .04) \), demonstrates that half of work migrants are young households and that two-thirds of both amenity and land migrants are mature households.

Land is a principal pull to the frontier and social ties appear to not be a differentiating characteristic among migrants. Although 25 percent of migrants had land in their origin and became landowners again in Sarapiqui, 40 percent of all migrants became first time landowners upon moving to the frontier (Table 2). Although median landholdings differ among migrant types, these differences do not test significant across migrant types. Just under half of the migrants, or 53 households, migrated here with social ties (Table 2). There is no significant difference (Table 3) among migrants based on whether or not they had social ties to the region, indicating that migration flows are not selective by social ties. Furthermore,
two-thirds of migrants with social ties had weak social ties, defined as non-nuclear or extended family members, friends or acquaintances.

Table 2: Migrant Types Categorized By Household Characteristics

<table>
<thead>
<tr>
<th>Migrant Type</th>
<th>Land Acquisition (First Wave)</th>
<th>Refugee (First Wave)</th>
<th>Work (Second Wave)</th>
<th>Housing (Second Wave)</th>
<th>Amenity (Second Wave)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 115</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>30</td>
<td>8</td>
<td>37</td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td>Age (Mean)</td>
<td>53</td>
<td>44</td>
<td>43</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>Age Range</td>
<td>24-74</td>
<td>34-55</td>
<td>18-69</td>
<td>20-76</td>
<td>33-102</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Mean years)</td>
<td>20.2</td>
<td>26.12</td>
<td>10.8</td>
<td>12.2</td>
<td>12.7</td>
</tr>
<tr>
<td>Duration Range</td>
<td>2-52</td>
<td>8-37</td>
<td>2-34</td>
<td>2-41</td>
<td>2-44</td>
</tr>
<tr>
<td>Percentage of migrant type that is Nicaraguan</td>
<td>17</td>
<td>100</td>
<td>46</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Median Monthly Income (USD)</td>
<td>244</td>
<td>311</td>
<td>325</td>
<td>212</td>
<td>469</td>
</tr>
<tr>
<td>Income Range</td>
<td>0-797.00</td>
<td>93.00-445</td>
<td>46-1,854</td>
<td>37-2,002.00</td>
<td>0-2,781</td>
</tr>
<tr>
<td>Land Holdings (Median)</td>
<td>6</td>
<td>.02</td>
<td>.06</td>
<td>.06</td>
<td>.46</td>
</tr>
<tr>
<td>Urban Migrant (out of 1)</td>
<td>.56</td>
<td>.12</td>
<td>.59</td>
<td>.60</td>
<td>.67</td>
</tr>
<tr>
<td>Rural Migrant</td>
<td>.44</td>
<td>.88</td>
<td>.41</td>
<td>.40</td>
<td>.33</td>
</tr>
<tr>
<td>Assets (Median)</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 3: Statistical Differences Between First Wave and Second Wave Migrants

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Parametric</th>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of residence**</td>
<td>.000</td>
<td>.001</td>
</tr>
<tr>
<td>Age**</td>
<td>.002</td>
<td>.004</td>
</tr>
<tr>
<td>Assets</td>
<td>.476</td>
<td>.525</td>
</tr>
<tr>
<td>Land Ownership in origin</td>
<td>.353</td>
<td>.448</td>
</tr>
<tr>
<td>Social Ties (Yes/No)</td>
<td>.402</td>
<td>.422</td>
</tr>
<tr>
<td>Urban immigrant *</td>
<td>.130</td>
<td>.031</td>
</tr>
<tr>
<td>Rural immigrant*</td>
<td>.130</td>
<td>.031</td>
</tr>
<tr>
<td>Square root of Land holdings*</td>
<td>.247</td>
<td>.000</td>
</tr>
<tr>
<td>Square root of Income</td>
<td>.171</td>
<td>.255</td>
</tr>
</tbody>
</table>

* p value <.05 for either parametric and robust tests
** p value <.05 for both parametric and robust tests

The fact that migrant type differ significantly by duration and age supports the notion that as frontiers develop they become amalgamations of different population cohorts that are motivated to migrate for different reasons and likely exhibit different demographic and socioeconomic characteristics (Barbier 2012). Given that there are clear delineations in the population based on age group, duration and migrant type, this finding supports the analysis of quality of life as a function of life cycle stage, as described in the quality of life section.

Characterization of Migrant Groups

First Wave Migrants: The Land Seekers

Tables 4 and 5 summarize selected surveyed migrants and purposively sampled interviewees whose quotes and stories are told in the following sections.

Table 4: Selected Migrant Profiles

<table>
<thead>
<tr>
<th>Name</th>
<th>Job</th>
<th>Age</th>
<th>Motivation for migration</th>
<th>Year of arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diego</td>
<td>Pineapple field hand</td>
<td>43</td>
<td>Refugee</td>
<td>1996</td>
</tr>
<tr>
<td>Sergio</td>
<td>Pineapple field hand</td>
<td>51</td>
<td>Refugee</td>
<td>1985</td>
</tr>
<tr>
<td>Luis</td>
<td>Caretaker</td>
<td>23</td>
<td>Work</td>
<td>2011</td>
</tr>
</tbody>
</table>
Table 5: Purposively Sampled Interviewees

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Migrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isa</td>
<td>Vice president of Association of Development (IDA colony)</td>
<td>Yes</td>
</tr>
<tr>
<td>Brian</td>
<td>Scientist, Community Organizer for Conservation</td>
<td>No</td>
</tr>
<tr>
<td>Maria</td>
<td>Community leader (IDA colony)</td>
<td>Yes</td>
</tr>
<tr>
<td>Carlos</td>
<td>IDA representative</td>
<td>No</td>
</tr>
<tr>
<td>Arturo</td>
<td>President of the Association of Development (IDA colony)</td>
<td>Yes</td>
</tr>
<tr>
<td>Martis</td>
<td>Community Leader (Pineapple Town)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Land migrants were typically poor upon arrival to the frontier and have not seen increases in income. Although they acquired land and gained symbolic status by transitioning from agricultural laborers to landowners, they remain in the lower median income level for migrants (Table 3). The following quote from Isa, the vice president of the Rural Development Association in one of the focal villages, and an early land migrant who was involved in organizing squatters to establish her village, demonstrates how she experienced this type of mobility.

The change that we wanted, we did ourselves, to no longer be manual laborers, to have a piece of land where we can grow something, at least, what one eats and to leave it [the land] for the children too, so that they don’t have to become manual laborers.
Isa continues to describe how they came here in two steps, with the men coming first, and what this region looked like to these early migrants in the following quote:

It was completely forested. There was not one resource, not water, not electricity, no doctors, no church, no school. It was completely forested. We were uprooted. We were squatters. We were out on the streets with the kids. We came from San Carlos to here. When we arrived at this time, my husband migrated first because it was all forest, and there was nothing, so the men came first.

These quotes demonstrate a repeated perception in the qualitative data that describes how remote this region was and how basic services were lacking for early migrants. This situation, together with the pitfalls of the national agrarian reform program, led to outmigration of many of these early migrants who could not cope with the lack of resources, poor agricultural land, and risk on the frontier (as described in Seligson 1979). Some villages were markedly different from others, as there had been obvious turnover of early frontier migrants. These villages reveal early migrant failure; speculative land investment and migrant turnover were common trends especially in the more remote IDA villages and resulted in severe land concentration among a small number of individuals. The following quote demonstrates this trend in the northernmost part of the study region that is the most forested and remote. A regional conservation expert commissioned a land tenure study to test the viability of purchasing the northern portion of the study region, called Maquenque, for conservation. In the following quote, he explains how study findings show that land in that region had
originally been redistributed to small landholders and now is almost entirely owned by a few large landholders, the majority of whom do not live in this region.

There are more or less than 850 landowners in Maquenque so the majority of the farms are more than 120 hectares and go up to 300, 400, or 500 hectares. About 95% of those landholders today are people who live away from here. But all of this land was IDA colonies, that was [used] to foment colonization in the 1970s and 1980s. [They were established] for people to come to this region, to cut some forest and to grow something but it didn’t work, so they left and when the mortgage expired, they sold. Some migrants bought up all their neighbors, so that now there are four or five property owners who have these big farms that legally is impossible because IDA gave land to small farmers for agricultural activities, not for forestry or to sell or for profit.

Median landholdings among sampled migrants are 7.3 hectares and typical IDA plots typically range from 6-20 hectares. The size of the landholdings described in the above quote demonstrates how extreme land consolidation has been in this area. This scenario is common in many of the most remote IDA settlements and has significant social implications. In the following quote, Maria, a community leader in one of the more remote IDA settlements, describes that this same trend has occurred in her community,

My little community is twenty two years old, it began in 1990, when [that] ranch was bought by the government to help low income families and give them a piece of land, in order for each person to succeed and have a place to live. But when the government provided these lands, all of this land was covered by forest, and pasture. There were
lots of trees. [The government] gave everyone a piece of private land and they had to delineate it and clear it. There was no electricity and no potable water. There were only a few houses. My house was made of sugarcane and bamboo and had a dirt floor. There were no roads either. We walked through the pasture with the grass as high up to our knees. The government provided these lands, to have the people exploit it, and grow crops. But now, the original owners are not here anymore because the help that the government gave us was not beneficial, there were no [agricultural] earnings, everyone began to sell and they left. There are very few remaining; those who stayed, stayed because they chose to work harder, and they said I’m going to make it with this.

It is clear how underdeveloped this region was in regard to roads and basic infrastructure or services in 1990, although fairly recent in modern history. The lack of these critical structural factors contributed to the trend of outmigration after early initial settlement. When Carlos, a government representative for IDA who was involved in the land distribution and establishment of these colonies, described this wave of outmigration from IDA colonies, he attributed it to poor conception and shortfalls in the full implementation of the agrarian reform project. In his words,

This is part of the problem in these communities, and with our small producers, because the criteria for land distribution was not the best, I think, maybe we distributed land that never should have been distributed because it was not [ecologically] apt or because there were not the [financial] conditions for infrastructural development, or organizations for financing it, to strengthen the
distribution of land and ensure that it was profitable, or sustainable.

Maria and Carlos described experiences in remote villages characterized by high smallholder abandonment and outmigration, although some IDA settlements are more populated and prosperous. These experiences in remote villages demonstrate the assumptions posed in the hollow frontier hypothesis. This hypothesis associates declining returns from agriculture to land abandonment and turnover, as well as declines in population, rather than to persistence of populations and agricultural intensification or economic diversification. Arturo, the president of the Rural Development Association for a remote IDA colony, paints a picture of how this hollow frontier looks to people who remain in these remote villages:

More than 50% [of the landowners here] are not the original settlers; they are not the original landowners. The majority does not live here; they live somewhere else, and come here for vacation. They have day laborers that live on the farm take care of their parcels. So, of the settlers that originally came here to get land, there are 15 or so, but no more than that.

These new landowners, who are not the original settlers of these government colonies, are primarily temporary amenity migrants from urban areas and not permanent residents. They are part of the second wave of migrants to this region.

**Second Wave Migrants: Labor Seekers**

Work migrants’ duration in this region (Table 2) parallels the expansion of pineapple, which has increased from a total of 483 ha. to 22139 ha. from 1986 to 2011, with most growth
occurring in the past 15 years (Shaver et al. 2014). Pineapple plantations are a major employer in this region and in some cases were the foundation of the formation of the village. Gerardo, an agronomist and manager of one of the largest and oldest pineapple plantations in the region, described how these companies invest in peripheral regions and provide critical basic infrastructure to these remote towns. In his words,

This type of business always brings development. This was one of those towns that until recently, the road was not paved, and there were big potholes, now, at least we can drive around the village easily. We provide a bus to pick up the kids to study and take them to high school, to the hospital, or to the bank. [We provide] these types of services that people need daily so yeah, it [this business] has brought development. Others might say that it brings poverty, but no, [I don’t think so]. If it had not been for these companies, the people here would have to get around on horses.

This investment and the labor demand pull migrants to these villages. Martis, a community leader from Pangola, which has become a pineapple company town, described how pineapple farms have drawn people seeking employment to this region. In her words,

I remember when we came here; there was Tarena, the first exporter of pineapple in the Northern zone. Before that it was small cattle farms that they united to make 3000-5000 hectares to grow pineapple. Colombians, Americans, and Guatemalans began to come in and buy land to grow pineapple for export. This pineapple farm made Pangola do a 180-degree turn, because it demanded a lot, a lot of labor. Before, Pangola had a specific number of inhabitants and when Tarena began people began to migrate here to work in the pineapple farm.
Gerardo who manages this pineapple farm now for a Guatemalan company, confirms his observation of the increased demand for labor:

The big rancher that was here before had about 400 hectares of pasture with more or less than 300 cows; to manage 300 cows you need about 3 people... Pineapple requires about 1 person for every 2 hectares.

Due to the limited employment options beyond pineapple, most residents feel economic dependency on the big pineapple companies, despite the negative ecological or social consequences. As Martis explained,

These pineapple farms are a necessary evil. They are bad [ecologically] but necessary for people to eat, because it maintains so many families. This is how families get money to maintain themselves.

The demand for low skilled agricultural laborers in pineapple coincides with Nicaraguan migration to this region, as Nicaraguans represent 60% of the labor force in pineapple cultivation, packing and processing and this region accounts for over 50% of the national land area in pineapple (Lee 2010). The influx of Nicaraguans seeking employment is changing the demographic composition of these towns as Martis explained:

Here the majority of people are Nicaraguan, in the pineapple farms, you see Costa Ricans as well but the majority of people that came were Nicaraguans, it is Nicaraguan labor. Before it wasn’t; it was Ticos [the colloquial name for Costa Ricans].
Nicaraguan Migrants

Nicaraguan migrants are represented in the two major waves of migrants described above, but have some distinct differences that are important to highlight. First wave migrants are mostly documented refugees, initially politically motivated international migrants who later internally migrated to the frontier for land and employment. Second wave migrants are motivated by employment opportunities and represent a higher prevalence of migrants with undocumented immigration status. Qualitative and quantitative responses in the surveys indicated that these two groups of migrants are differentiated by their socio-economic mobility related to landholdings and ability to participate in the formal economy. Refugees typically had significant landholdings in Nicaragua that were lost prior to migrating and saw declines in quality of life until coming to the frontier where land acquisition and ownership became a possibility again. While the majority of documented immigrants are refugees and typically employed in pineapple farms, most undocumented immigrants are caretakers of large farms or participate in less regulated agricultural sectors. These findings are congruent with the findings of Lee (2010), where migrants were differentiated in their labor opportunities within the agricultural sector due to their immigration status.

Table 6: Characteristics of Nicaraguan Migrants (N= 35)

<table>
<thead>
<tr>
<th>Duration (Mean Years)</th>
<th>Refugee: 26, Work: 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intend to stay in Costa Rica</td>
<td>75%</td>
</tr>
<tr>
<td>Documented</td>
<td>59%</td>
</tr>
<tr>
<td>Undocumented</td>
<td>41%</td>
</tr>
<tr>
<td>Have family in Nicaragua</td>
<td>31/35 households, 97%</td>
</tr>
<tr>
<td>Send Remittances</td>
<td>10 households ($18.00-180.00 infrequently)</td>
</tr>
<tr>
<td>Major employment sectors</td>
<td>Pineapple: 34%, Caretakers: 20%</td>
</tr>
</tbody>
</table>
Two migrant types, work and refugee, account for 75% percent of all Nicaraguan migrants (Table 2). First wave Nicaraguan migrants, the refugees, initially migrated to other regions in Costa Rica as political migrants or refugees and have since migrated to the frontier as economic migrants, finding higher paid, year round work in export agriculture and opportunities to acquire land. Refugees in particular have seen decreases in material wealth due to the loss of major landholdings when they fled during the Contra War. Ten respondents had land in Nicaragua before migrating, with a median of 18 hectares. These migrants would have preferred to stay in Nicaragua had it not been for the war and experienced a decrease in the quality of life upon migrating to Costa Rica. For example, Diego fled Nicaragua in 1996. He was a farmer in Nicaragua with 40 hectares of land, but now rents a half-hectare with only a house and a small yard. Diego’s first job in Costa Rica was at a meat processing plant near the border, then he worked as a caretaker for a big cattle ranch in San Carlos, and now he works at a pineapple plantation. When asked about his current standard of living, Diego answered:

It’s hard, everything is hard, principally, the fact that we don’t have land. It is worse here. Without land you work every day just to pay for water and electricity. There [in Nicaragua] we grew crops, and we had our own land and our own house.

Even though Diego said he would like to return to Nicaragua, he said he would have to give up his pension he accumulated from all the years he has worked in Costa Rica. Plus, the government seized his land in Nicaragua and he doesn’t have enough money to buy land again.
For some, migration to the frontier has allowed them to earn surplus income, helping them purchase land in Costa Rica or Nicaragua, an option that had previously been out of reach since migrating to Costa Rica. Fifty percent of sampled Nicaraguan households own land in Costa Rica and fifty percent pay rent or work as caretakers for land. Sixteen percent of Nicaraguan households that had land in their country of origin have land in this region and 32% are first time landholders. This region has become one place where Nicaraguans can acquire land for the first time, as Carlos, a representative of IDA explains the flow of land seeking Nicaraguans to this region:

It was in 1990 onwards, after the war in Nicaragua, when the exodus began, and there were a ton of Nicaraguans with legal residency. So they came [to IDA] and asked for land. Because these people didn’t have this opportunity in their country, and they come here and they found it [land].

Sergio, has been in Costa Rica for 30 years, and claims he would have stayed in Nicaragua, if not for the war. He had 50 hectares there and used to grow cassava, beans, and corn. He and his family migrated in 2006 from Juan Viñas and Turrialba, both sugarcane and coffee-producing regions in central Costa Rica, to the study region. There he worked, cosechas (the harvests) or trabajo de temporada (seasonal work) and rented a house. He recommended residing in this region of Costa Rica compared to the coffee and sugarcane regions because “there is secure employment and you can maintain your family.” Due to his status as a legal resident, he was able to take out a loan to purchase a piece of land and has been able to pay off all but $542 from combining his earnings as a field hand at a big pineapple farm with contributions from his daughter’s salary totaling $325 per month.
Except for some of the above cases when an individual owned a farm in Nicaragua, all Nicaraguan migrants have generally seen improvements in wages and job security since settling in Costa Rica. Wages have increased even for those who owned farms in Nicaragua, but their autonomy and material assets have decreased overall since migrating from Nicaragua. Typically, Nicaraguan migrants start with temporary or seasonal work in Costa Rica as manual laborers in lower paid, often informal, off-the-books opportunities in agricultural sectors like coffee or sugar cane. However, jobs on the frontier, principally in pineapple, present higher paid but still low skilled employment and provide a space for upward economic mobility of documented Nicaraguan migrants. However, undocumented migrants often experience less mobility and are constrained to informal sectors of the economy even on the frontier. The best example of this dynamic is caretaking of absentee owned farms for large Costa Rican landholders.

Caretaking is a profession that is particularly productive for younger, undocumented immigrants and established Nicaraguans in more isolated regions. For example, Luis a 23-year-old single male caretaker manages an 85 hectares cassava plantation for wealthy Costa Ricans who own a packing and processing plant in a nearby city. They pay him a monthly salary of $361 to maintain the farm, provide him with housing and pay for his utilities. He says this is three times more than he could make in Nicaragua. He first migrated to Costa Rica when he was eleven years old with his mom, who now lives in Costa Rica, and his father remains in Nicaragua. Since adolescence he has frequently migrated to Costa Rica for work, but he remains undocumented and has to continually return to Nicaragua. He is a recent
migrant and has been in this region since 2011. He would recommend this area because, “There is work and it’s away from everything, without problems”. Caretaking, as an employment sector, is related to the land turnover in many of the more remote regions and the partial failure of agrarian reform where there has been a concentration of land and high prevalence of absentee ownership (Morse et al. 2009, Schelhas and Sanchez-Azofeifa 2006). However, these cases demonstrate that this failure has provided a livelihood for some undocumented migrants who would otherwise be excluded from the major employment sector on the frontier --export agriculture.

Lifecycle Stages and Migrant Quality of Life on the Frontier

Migrants were asked to evaluate if their life had improved upon settling here. Ninety-four respondents (or 82% of the sample) affirmed that their lives had improved. Half of the migrants in the survey sample felt their life had tangibly improved, most often attributed to land acquisition, employment, or improvements in the quality of life (i.e., rural lifestyle, security, health, natural environment). Another 32% felt their lives have been stable, with ups and downs, but with no real obvious gains in quality of life. The remaining 18% felt their quality of life had declined due to decreases in income, loss of land, unemployment or family issues. Self-evaluation of quality of life and mobility post-migration are highly variable across households, as migrant quality of life is a dynamic process that changes over time. At the same time, it is possible to trace patterns in migrant quality of life that are related to the current lifecycle stage of households.
The life cycle stage of households is used in this analysis because it is a significant umbrella factor in describing differences in the quality of life and economic decision making of populations in other frontier regions across Latin America (Walker et al. 2002, Marquette 2006, de Sherbinin et al. 2008). Since migrating to the frontier is such a risky household decision, and is generally selective for lower income populations, assessment of the quality of life is a critical component of understanding whether migration has led to upward mobility of these populations or if they remain on the margins socio-economically. It is also important in determining whether the social, economic and ecological context frontier is able to provide a minimum quality of life, and how migrant wellbeing could be improved. Key dependent variables analyzed to identify differences among life cycle stages are displayed in Table 7.

Table 7. Migrant Household Characteristics by Life Cycle Stage

<table>
<thead>
<tr>
<th>Life Cycle Stage (age of household head in years)</th>
<th>Young &gt;30</th>
<th>Maturing 31-50</th>
<th>Mature 50+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (N=115)</td>
<td>15</td>
<td>53</td>
<td>47</td>
</tr>
<tr>
<td>Age (mean)</td>
<td>25</td>
<td>42</td>
<td>63</td>
</tr>
<tr>
<td>Duration Here (Mean Years)</td>
<td>6</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Duration Range</td>
<td>2-20</td>
<td>2-42</td>
<td>2-52</td>
</tr>
<tr>
<td>Assets (Median)</td>
<td>9</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>(Range 0-14)</td>
<td>(6-13)</td>
<td>(4-12)</td>
<td>(3-12)</td>
</tr>
<tr>
<td>Monthly Median Income (USD)</td>
<td>354</td>
<td>334</td>
<td>217</td>
</tr>
<tr>
<td>Income Range</td>
<td>93-1,854</td>
<td>0-2,781</td>
<td>0-2,039</td>
</tr>
<tr>
<td>Education of Female</td>
<td>1.7</td>
<td>1.1</td>
<td>.91</td>
</tr>
<tr>
<td>(Range 0-4, 1:no education, 2: primary, 3: secondary, 4: post secondary)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people currently living in house (Mean)</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Range of people living in house</td>
<td>1-5</td>
<td>1-9</td>
<td>1-11</td>
</tr>
<tr>
<td>Number of dependents (Mean)</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total number of children</td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Range of Children</td>
<td>0-3</td>
<td>0-8</td>
<td>0-13</td>
</tr>
<tr>
<td>Total Land Holdings (Median ha.)</td>
<td>0.015</td>
<td>0.06</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 8: Differences in Quality of Life Variables Among Young and Mature Households**

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Parametric</th>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of residence**</td>
<td>.002</td>
<td>.000</td>
</tr>
<tr>
<td>Total Number of Kids**</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Total Number of Dependents*</td>
<td>.097</td>
<td>.017</td>
</tr>
<tr>
<td>Number of people currently living in the house**</td>
<td>.008</td>
<td>.000</td>
</tr>
<tr>
<td>Education of Female**</td>
<td>.020</td>
<td>.026</td>
</tr>
<tr>
<td>Education of Male</td>
<td>.095</td>
<td>.109</td>
</tr>
<tr>
<td>Assets**</td>
<td>.006</td>
<td>.009</td>
</tr>
<tr>
<td>Land holdings (square root transformed)</td>
<td>.120</td>
<td>.156</td>
</tr>
<tr>
<td>Income**(square root transformed)</td>
<td>.040</td>
<td>.043</td>
</tr>
</tbody>
</table>

* p value >.05 for either parametric or robust tests  
** p value >.05 for both parametric and robust tests

Table 8 shows if there were significant differences among dependent variables between young and mature life cycle stage categories using ANOVA parametric and robust tests and displays the p value for each test. The mean and median values of the dependent variables that were tested across the life cycle stages are presented in Table 7. In the ANOVA tests, young households and mature households are the most different and the following variables were...
significantly different between those two life cycle stages: duration, total number of kids, number of people living in the house, education of female, assets, and square root of income (Table 8). Cross-tabular analysis demonstrated that differences in literacy measured as a binary variable literate or not (p value = .01) and family structure (i.e. single, married, divorced, widowed) (p value = .01) were also significant across life cycle stages.

It is clear that population cohorts that arrived on the frontier at different times have a different suite of characteristics related to differences in quality of life (Table 7). Mature households have generally been in the Sarapiquí region longer, have the lowest income and asset endowments, were the most fertile, and still have a high number of dependents and people living in their home. A higher proportion of this cohort is illiterate, and often are in less secure family structures (i.e., divorced, or widowed). They also have the most land holdings, and although this can be an indicator of wealth, in this case it is not if you look at their lower median income in comparison to the other life cycle stages.

Instead, young households whom are the most recent migrants are faring better. They have higher incomes and the fewest dependents, children, and people living in their households indicating that they have less mouths to feed (Table 7). Young households also have the highest level of female education.

Maturing households have the highest number of dependents and people in the home. Their income level is between young and mature households, however, due to the greater number of dependents, their economic situation may be less stable. No variables tested produced a
significant difference when comparing the means of maturing households to mature or to young households hence just the p values for the comparison of mature and young households in Table 8.

Despite variation among the different life cycle stages all of these households economically are within the low range compared to national income levels. The median monthly income is $290 for all migrant households which when compared to national standards, is in the third lowest decile of monthly household income in 2012 and is equivalent to the average monthly salary for people in the agricultural sector, or primary sector, which is the lowest paid sector of the economy (Estado de la Nación and INEC 2012). This low median income speaks to the marginal socioeconomic status of the majority of frontier migrants. We have highlighted economic and demographic variables that are related to quality of life and have shown that the youngest households are doing the best based on that criteria. However, most migrants said their life had improved and often cited non-economic factors that had improved such as health, the quality of the environment, or landownership.

Discussion

The purpose of this study was to describe migration dynamics on the Costa Rican frontier and explore differences among migrants in their quality of life and mobility post migration. My findings demonstrate there have been distinct migrant flows of different migrant types to the frontier differentiated by the purpose of migration, duration on the frontier, and the migrant’s current age. Major migration waves coincide with historical events—the contra war, agrarian reform and the pineapple boom.
Within each young, maturing and mature lifecycle stages there are examples of households that have higher measures of quality of life and ones that are challenged due to structural (i.e. geographic remoteness, local economic or employment opportunities) and more personal factors within households (i.e. health related issues, limited male labor). Research in other frontiers typically finds young households, experience the most precarious situations on the frontier since they are supporting young dependents and they are in the process of building economic resources in the context of the limited employment opportunities in the frontier (Marquette 2006). Younger households, in our study site, however, are faring better than maturing or mature households. Young households, who are recent migrants, show higher mean average values for quality of life variables than mature households that are more land rich and have been on the frontier longer. However, 50 percent of work migrants are young households which links them to the pineapple boom and likely links their quality of life, at least economically to the success of that industry. As Barbier warns, the frontier is characterized by boom and bust cycles and sustained commodity booms are often difficult to accomplish (Barbier 2012) which makes the future uncertain for pineapple and young households whose economic security is tied to that industry.

Longer duration on the frontier is usually correlated with a higher quality of life because it is assumed that time is an important factor in accumulating resources, becoming established and stabilizing on the frontier (Marquette 2006). However in this sample, the households that have been here the longest, mature households, are also among the poorest (Table 6). This situation indicates the effects of negative path dependency on migrant households’ quality of life (Caviglia-Harris et al. 2013), as early land migrants were typically poor and appear to
remain poor despite land acquisition. Land is one of the most prominent resources on the frontier and in this case was made even more accessible to low income populations through government sponsored settlement; this early accessibility and selectivity for households with low socioeconomic status maybe minimizes the potential wealth creating benefits of early arrival on the frontier and early land acquisition in this region. Furthermore, the uneven development of viable agricultural production and infrastructure in these settlements explains the stagnating and challenged status for the majority of mature households with land (Schelhas and Sanchez-Azofeifa 2006).

This frontier is unique in that it has undergone a forest transition, where a trend of deforestation has slowed and forest cover is increasing, despite consistent population growth due to the 1996 Forestry Law of Costa Rica (Morse et al. 2009). The high prevalence of absentee land ownership, declining rural population of some of these IDA colonies and land consolidation, I argue, resembles what Schelhas and Sanchez-Azofeifa (2006) call a hollow frontier. Absentee ownership is substantial (Morse et al. 2009) and land consolidation has been a continuous trend in this region beginning with speculative land investing and high turnover of early migrants especially in IDA settlements (Butterfield 1994, Schelhas and Sanchez-Azofeifa 2006) and then continuing with the land grabbing associated with the expansion of pineapple in the past ten years (Shaver et al. 2014). Moreover, the range of non-land reasons to migrate to this region and prevalence of amenity attributes in why migrants would recommend this region also indicate recent migrants are motivated more by economic opportunities and quality of life reasons which is consistent with several other studies looking at older frontiers (Jepson 2006, Barbier 2012) or frontiers that have undergone rural
restructuring, spelling the end of an agrarian based economy (Gosnell and Abrams 2011). However, continued overall population growth and the increasing trend of agricultural intensification in pineapple with its associated labor demand challenge the characterization of a hollow frontier.

Instead, this frontier is aging; shifting from smallholder to commercial agriculture but still is dominated by the primary sector as it is becoming more and more incorporated into the national and global economy. Since political economic restructuring of the agricultural sector in the 1980s and as pineapple production has grown substantially in this region, now accounting for just over half of the area cultivated in pineapple nationally, farm wage and off farm labor has increased, and small farm ownership has decreased (Rodriquez and Avnedano 2005). Our data indicate that the majority of families (92%) receive their principal income from off farm or farm wage labor activities. This validates the trajectory of frontiers is to become increasingly incorporated into the capitalist economy, leading to land consolidation predicated on the loss of smallholder properties and farm based livelihoods and land use conversion of subsistence crops to non-traditional export agricultural crops, like pineapple (Browder et al. 2008). However, the high prevalence of lower socio-economic measures of migrant quality of life compared to the rest of Costa Rica or neighboring counties and the heavy proportion of residents participating in the primary sector indicate that the degree of penetration of and integration into the capitalist economy is uneven and thus quality of life outcomes are uneven among frontier migrants. And clearly, some lifecycle population cohorts and migrant types, notably mature households and land migrants, still remain on the periphery.
Conclusion

This research illustrates the uniqueness of frontier migrant pathways and motivations and outlines the differences among migrant households on the frontier. Through the descriptions of the convergences between historical events and migration waves to the frontier, it is clear that the process of incorporation of the periphery is uneven and cyclical and not a terminal process but rather is one that provides both opportunities and barriers for different types of households across time. This situation has resulted in uneven development across the frontier landscape that is represented in the differences among migrant households and internal and international migrants, and helps explain the abandoned IDA settlements, and land consolidation trends. This frontier is aging but continued migration indicates the frontier, as a social, ecological and political process, continues and that its future development trajectory is still uncertain.

This research was exploratory and was intended to provide a fundamental description of who migrates to the frontier, why they migrate and how they are doing. Future frontier migration research would be vastly improved with longitudinal studies of the dynamic process of migrant quality of life and livelihood formation on the frontier.
References


