

# **Non-timber Forest Products, Gender, and Households in Nicaragua: A Commodity Chain Analysis**

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## **(ABSTRACT)**

This thesis focuses on the intersection of gender, households, and the non-timber forest product market. Based around the concept of commodity chain analysis, this research examines each stage in two non-timber forest products', straw brooms and coco baskets, life cycles from extraction to final sale. The first objective of this research is to contribute to the literature on NTFPs, and in general gender roles in Latin America, by examining the gendered division of labor within and among the stages of two specific NTFP commodity chains, and the ways in which this division influences how important these products are to household income and conservation. The second objective is look at how commodity chain analysis can be used to examine the above issues, thereby contributing to both NTFP and commodity chain analysis literature. The research shows that the construction of gender in Nicaragua underlies the different roles that men and women perform throughout the two non-timber forest product chains. The two chains represent varying degrees of participation by women and men, and this difference is explained by the prevalence of certain tasks. In the basket commodity chain there were more tasks that are labeled feminine, and in the broom commodity chain there are more tasks labeled male. In addition, the varying participation of men and women influence how income from these products are viewed within the households as well as where men and women stand as conservation stakeholders. Commodity chain analysis served as a useful tool to examine more closely the relationship of gender and households in non-timber forest products, and could be of great assistance to the various development projects using these products as a tool for sustainable development.

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## Dedication

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This thesis is dedicated to my parents, **Joan and Richard Shillington**, who are always supportive, encouraging, and essentially wonderful parents without whom I would never have been able to accomplish what I have.

I am also dedicating this to my sisters and brother:

**Stacey, Julie, Heather, and David.**

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## Glossary of Spanish Terms

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**Ama de casa** – housewife.

**Ambulante(s)** – traveling salesperson.

**Artesanía** – artisan.

**Ayudante** – assistant, helper.

**Colón** – currency of Costa Rica.

**Córdoba** – currency of Nicaragua.

**Cuidadores** – caretaker (of property).

**Docena** – one dozen (however, in some cases the term *docena* is also used to signify a bunch or bundle of something, such as straw).

**Domestica** – hired household labor (such as for cleaning, cooking, childcare)

**En cargo** – special order; request for a certain type and/or amount of a good.

**Ferías** – fair (such as a craft fair).

**Floristería(s)** – flower shop (florist).

**Frutera** – a style of basket designed to hold/store fruit or vegetables.

**Fundo** – base or bottom (of a basket).

**Huerta(s)** – irrigated agricultural field.

**Juntado(s)** – joined (used to signify consensual union between partners).

**Mestizo/a** – in general, a person of mixed racial ancestry. In Nicaragua, *mestizo* is a person whose ancestry is part indigenous and part Spanish (Iberian).

**Mozo (de campo)** – agricultural wage-worker (hired field hand).

**Pastes de baños** – bath sponges (made from sea sponge or synthetic sponge and cloth)

**Patio** – yard (land surrounding a house).

**Pulpería(s)** – front room variety store (small store that sells an assortment of food and non-food goods located in the front of a house).

**Rollo(s)** – roll (*e.g.* a roll of rope or tape).

**Tramo(s)** – stand, usually permanent (*tramo artesanía* – artists stand; *tramo de calle* – street stand). Also called *puesto*.

**Trigo** – straw (many different varieties).

**Vendedor/a(s)** – vendor (seller).

**Zapatero/a** – shoemaker (and repair).

**Zapatería** – shoe repair/production workshop.

# 1 Introduction

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During the past few decades, interest has increased significantly in non-timber forest products (NTFPs) – those biological products (and services) apart from timber derived from forest ecosystems. Throughout history, rural households have used and continue to use NTFPs as both sources of income and basic necessities, such as food, medicine, and energy. Three basic assumptions emerge from NTFP research and literature: NTFPs are good for the environment; they are good for development; and they promote gender equity (Ghatak 1995; Godoy *et al.* 1995; Neumann and Hirsch 2000). Based on these assumptions many international development agendas promote NTFPs as tools for sustainable development.<sup>1</sup> That is, NTFPs are viewed as a potential means to better the livelihood strategies of rural populations while simultaneously sustaining the biodiversity of forested areas. The promotion of gender equity materializes through NTFPs' ability to improve the economic situation of households by incorporating women as key actors, since they recognized as the main extractors, processors, and marketers (Ghatak 1995; Arnold 1996; Neumann and Hirsh 2000). Thus, NTFPs encompass many socio-political, economic, and ecological issues and cannot be viewed as simple tools for development. For NTFPs to be used for sustainable development, particularly in terms of a gender and development (GAD) agenda, it is necessary to understand how gender roles and relations shape the way that NTFP activities are organized. My research is concerned with understanding and making visible issues of the different gender roles in relation to NTFPs.

Both men and women engage in NTFP activities, which consist of several stages including the extraction of raw material (*e.g.* the collection of vines), the processing and production (*e.g.* cleaning the vines and the weaving of baskets), and the marketing. Findings show that there is typically a distinct sexual division of labor, which varies by region, product, level of technology, and “by the type of task in the chain of activities from harvesting to marketing” (Neumann and Hirsh 2000, 28). This division of labor represents the specific gender roles that are rooted in “the conditions of production and reproduction and reinforced by the cultural, religious and ideological systems prevailing

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<sup>1</sup> The concept of “sustainable development” is a very subjective term and has various definitions. It will be discussed briefly in Chapter 2.

in a society” (Østergaard 1992, 6). For example, it may be considered a man’s role to collect raw materials from the forest and a woman’s role to process those materials into a marketable product based on historical, cultural, and religious beliefs. Consequently, different activities involved in the life cycle of an NTFP, or each “stage” of an NTFP commodity chain, encompass a distinct gendered division of labor because each stage consists of different gendered tasks.

Studies show that within households, men and women carry out different NTFP activities (Ghatak 1995; Belsky and Siebert 1998). Like the example above, men may extract while women process the NTFP. However, it cannot be assumed that a single household carries out all stages - the extraction, production, distribution, and marketing – nor can it be assumed that the only one person in the household carries out these activities. An NTFP commodity chain involves many actors and is located in several different geographic locations. For example, households located in forest areas may extract the raw materials, but a household located in a village surrounding the forested area the or in a community farther away processes the product.<sup>2</sup> If all NTFP activity stages are examined together, there is also an overall gendered division of labor. Many NTFP studies recognize the importance of women’s involvement, however few closely examine the gendered division of labor within and between the different stages (Hecht *et al.* 1988; Bishops and Scoones 1994; Ghatak 1995; Belsky and Siebert 1998). If NTFPs are assumed to promote a gender and development agenda, that is gender equity, then it is important to closely examine the gendered division of labor.

At each of the different stages, NTFP income represents varying degrees of importance to household economies. If women produce and control NTFP income it may be considered supplementary to the men’s income (Falconer 1992; Bishop and Scoones 1994). In contrast, if men produce and control NTFP income it may be considered the main source of household income (Neumann and Hirsch 2000). Thus NTFP income may be considered gendered in terms of its importance and status in the household. However, whether income from NTFPs is considered supplementary or not does not correspond to how this income is spent. Many studies find that when women control income, this

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<sup>2</sup> One key issue in NTFP research is the access to forested lands and land/resource tenure. This will not be discussed in this study. See for example: Nepstad and Schwartzmann (1992); Agarwal (1994); Dugelby (1998); Doornbos *et al.* (2000).

income benefits the entire household (Benería and Roldán 1987; Deere 1990). If women control NTFP income, even though it may be considered supplementary, it may be more important to the household economy as a whole. By examining the gendered division of labor we can identify the importance of and the ways in which NTFP income contributes to household economies.

Moreover, the examination of the gendered division of labor also enables us to identify key conservation stakeholders - both men and women. Given that NTFPs are utilized as tools of sustainable development, conservation is a central aspect. Development organizations and donor agencies consider NTFPs as a way to achieve forest conservation and economic development, thus responding to global concerns of deforestation and unequal distribution of wealth. To facilitate forest conservation, key stakeholders (those people who have an invested interest in the forest) need to be identified and incorporated into conservation initiatives such as forest management plans.

Thus, my research seeks to examine the gendered division of labor of NTFP activities. Nicaragua provides an ideal case study for this research because little NTFP research has been done there, particularly in the Central Pacific region. In addition, statistics for Nicaragua show that NTFPs may play important roles in many Nicaraguan households, both indigenous and *mestizo*. Households who engage in NTFP activities are rural and tend to be among the poorest in the world (Neumann and Hirsch 2000). Nicaragua is among the three poorest countries in Latin America, with nearly fifty percent of its population living below the poverty line and nineteen percent in extreme poverty (World Bank 2000a; UNDP 2001). In addition, almost fifty percent of the population in Nicaragua lives in rural areas, twice as high as the average for Latin America (World Bank 2000a; CIA 2000). Although the rural population density is reported to be roughly eighty-six people per square kilometer, more than half live in the Central Pacific region.

Many of Nicaragua's poor rural households depend on NTFPs as a source of livelihood survival, firewood being one the most visible NTFPs in Nicaragua (INTA 1994).<sup>3</sup> Over ninety-five percent of Nicaraguan households use firewood for cooking,

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<sup>3</sup> There is debate as to whether firewood should be defined as an NTFP. If the firewood is derived from dead wood or in a manner that does not require the harvesting of an entire tree, then firewood is considered

even in urban areas (Renzi and Agürto 1996). This firewood comes from the small remnant areas of dry tropical forest in the Central Pacific region as well as from the northern and Caribbean regions. However, little is known of other NTFPs used and marketed by these rural households, particularly those located near larger forested areas. A study by McCrary *et al.* (2001) examined the extraction of timber and NTFPs, including firewood from Reserva Natural Laguna de Apoyo (RNLA) in Central Pacific Nicaragua.<sup>4</sup> They found that approximately two tones of firewood are removed daily and that almost all is green wood (not dead, dry wood). In addition to firewood extraction, almost 100 pounds of other NTFPs are extracted daily such as broomsticks, bamboo, fruits, vines, and small edible animals (McCrary *et al.* 2001) They concluded that the several communities in and surrounding RNLA use these products for both household consumption and sale in local markets.

Broomsticks are among the main items extracted from the reserve because several of the communities surrounding RNLA are recognized for the broom production. These broom enterprises are home-based, single household operations usually involving only one or two workers. Several households in this community also produce baskets from plants such as bamboo and fern vines. Aside from the location (the home) and materials (branches and vines) of these two products, very little information is known about the extraction, production and marketing of NTFPs in Nicaragua, their contribution to household income or the gendered division of labor.

In using these two NTFPs, brooms and baskets, as case studies, my research objectives are twofold: First, my research contributes to the literature on NTFPs, and in general gender roles in Latin America, by examining the gendered division of labor within and among the stages of two specific NTFP commodity chains, and the ways in which this division influences how important these products are to household income and conservation. To achieve this, I employ the concept of commodity chain analysis. Thus, my second objective is look at how commodity chain analysis can be used to examine the above issues, thereby contributing to both NTFP and commodity chain analysis literature.

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an NTFP. In Nicaragua, firewood fits into both categories, NTFP and forest product (i.e. involves the removal of a whole tree).

<sup>4</sup> Reserva Natural Laguna de Apoyo – Laguna de Apoyo Nature Reserve

My thesis is organized into six chapters. Chapter 2 provides the framework in which this research is situated. First, I discuss different aspects of NTFPs, such as the role that NTFPs play in conservation and community development, in household economies, and the participation of women. Following this, I examine literature and previous studies on household economies and home-based work in Latin America. Here I discuss the various productive roles of men and women in households in Latin America, the role of home-based work in these households, and finally the allocation and management of household income. Next, I outline the socio-economic issues facing Nicaragua today and the role of women, as well as the construction of gender, within the current environment. Chapter 3 outlines my methodologies, beginning with an overview of commodity chain analysis. I then describe the snowballing technique I applied and the stages of the field research, my research questions and hypotheses. In Chapter 4 and 5, the results are presented. Chapter 4 focuses on results from the broom commodity chain and Chapter 5 on the basket commodity chain. Both of these chapters describe the results of the data gathered for each stage in the two commodity chains (extraction, production, distribution, and marketing) and discuss these results in relation to the research questions. I conclude in Chapter 6 by addressing my results within the broader issues in which this research is situated.

## 2 NTFPs, Gender and Work in Latin America

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My research is based within a conceptual framework of several inter-related issues. First, my research as a whole is centered on non-timber forest products (NTFPs). By using NTFPs as the focal point, it is possible to examine several concepts surrounding these products. This chapter examines literature and previous studies on NTFPs, gender roles, and household economies, concentrating primarily on Latin America. In the first section of this chapter, I discuss several aspects of NTFPs based on the three assumptions mentioned in the introduction: environmental conservation, economic development, and gender. Next, I examine gender and work in Latin America and how the construction of gender defines the different work performed by men and women and how these gender roles play out in household economics and gender relations. The last section concentrates on issues of gender and households specific to Nicaragua.

### **A. Non-timber Forest Products**

Non-timber forest products (NTFPs) are among the oldest traded commodities in the world (Panayotou and Ashton 1992; Iqbal 1993). NTFPs are defined as biological goods excluding timber derived from forest ecosystems, which provide materials for housing, food, medicine, and cash income.<sup>5</sup> Harvesting, processing, consumption and trade of NTFPs have traditionally and still are carried out by people living in and around forested areas (Panayotou and Ashton 1992; Iqbal 1993; Tewari 1994; FAO 1995). Many households in rural and forested areas around the world depend heavily on NTFPs for survival. In fact, the World Bank (2000b) estimates that one of out four of the world's poor depend directly or indirectly on forests for their livelihood. During the last decade, there has been a dramatic increase in interest and research of NTFPs. As Tewari (1994, 151) notes:

Awareness is now growing of the greater significance of forest values and services other than revenue, of forestry products other than timber, ... and of local needs for these products and services.

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<sup>5</sup> Firewood can be included in the definition of non-timber forest products if it does not involve the removal of standing trees from the forest (see next note on timber). Timber is defined as industrial round-wood and derived sawn timber, wood chips, wood-based panel, and pulp. The extraction of timber implies the harvesting of an entire tree.

Many development agencies and donors consider the promotion of NTFP activities as an opportunity to achieve sustainable development. As I outlined in the introduction, three general assumptions motivate the use of NTFPs for sustainable development initiatives. First, several studies have shown that certain NTFPs produce greater income than timber harvesting and have both commercial value as well as subsistence and cultural value (Peters *et al.* 1989; Balick and Mendelsohn 1992). Thus, NTFPs are viewed as means to increase the economic situation of rural peasant households. Secondly, while NTFPs provide income and necessities for households, they also have the potential to maintain the biodiversity of the forest when well managed (Butler 1992; Nepstad and Schwartzmann 1992; Tewari 1994). From here emerges the assumption that NTFPs are good for the environment. Finally, because both men *and* women engage in NTFP activities, and in many regions women are the main actors, there is motivation to include both in development projects. Consequently, the recognition of gender as an important element assists in promoting women in development (WID) and gender and development (GAD) agendas.

### ***NTFPs in conservation and economic development***

The enthusiasm for NTFPs in economic development and conservation grew primarily from reports of their high economic value. Such reports include research by Peters *et al.* (1989) on fruit and latex extraction in the Amazon, where they report that the net present value of fruit and latex was more than twice that of timber. They argue that even though an individual timber harvest can have a greater value than that of an NTFP, when measured over a longer period of time the net present value of NTFPs can exceed that of timber (Peters *et al.* 1989). Balick and Mendelsohn's (1992) study on medicinal plants in Belize also concluded that income generated by timber was less than certain plant species. Many NTFPs, such as medicines, latexes, resins, and oils contain unique chemical properties and have high value when collected in the wild (Panayotou and Ashton 1992). Ginseng is a good example of this; when collected from the wild, ginseng brings in almost ten times more profit than the cultivated variety (Hankins 2000). Certain species, such as ginseng are only found in specific locations, and therefore have a greater potential value. As Panayotou and Ashton (1992, 87) point out, "many NTFPs derive their value neither from industrial applications nor from direct consumption as food, but

because they are unique or special.” As such, some NTFPs have great importance both in religion and culture.

NTFPs are also important in manufacturing and provide local industries, particularly small home-based enterprises, with raw materials for the processing of value-added commodities, thus providing numerous households with both primary and supplementary income (Arnold 1996, 131). Many households obtain a significant portion of cash income from NTFPs, but as Browder (1992) points out in his discussion on Latin America, very few households depend exclusively on the extraction of forest products. Godoy and Bawa (1993) also argue that there is an assumption that incomes from NTFP extraction go directly to the extractors and that this income is important to those households, which they point out, is not always the case. Some studies reveal that extractors and producers tend to be exploited by middlemen, who buy NTFPs for very little and sell them at a highly inflated price (Padoch 1992; Peluso 1992). However, the perception of NTFPs as economically important has assisted in initiating theories that the harvesting of these products provides potentially improved incomes at the same time as it decreases the rate of deforestation and environmentally degrading activities.

This link between conserving biodiversity (environmental conservation) and supporting human communities is based on the idea of sustainable development.<sup>6</sup> In terms of NTFPs, sustainable development refers to the economic development of communities (*e.g.* the income generating activities) that simultaneously conserve and protect biodiversity. Neumann and Hirsch (2000: vi) state that the underlying belief of sustainable development is that a “community and its members will conserve and protect forest resources if it receives the economic benefits from sustainable forest use.” Thus, for NTFPs to be tools of sustainable development they must be harvested in such a way as to not ‘harm’ the forest ecosystems so that there is a continuous supply of resources to adequately support economically the human communities and ecologically the forestry community. This issue, therefore, is based on the idea of sustainable harvest, which has created much debate in NTFP literature. Delineating sustainable harvest entails many variables, including: the type of harvest (*e.g.* the root, leaf, fruit, etc.); amount harvested;

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<sup>6</sup> “Sustainable development” is a very subjective term and has various definitions. It has become the keyword for development planners and environmental activists; however, it is not within the scope of this paper to conceptualise this term entirely or to explore the plethora of viewpoints on this concept.

process of harvesting; attributes of the species harvested; and the type of forest ecosystem from which that product is harvested (Boot and Gullison 1995; Neumann and Hirsch 2000). Godoy and Bawa (1993: 216) argue that the ‘sustainability’ of extraction can be determined only by “directly measuring the rate of extraction and comparing it to the rate of natural replacement.” Moreover, this definition varies significantly by location and product, making it difficult to establish one single definition.

In any case, the view that harvesting NTFPs is less damaging than timber harvesting emerges in many studies (Nepstad and Schwartzmann 1992; Panayotou and Ashton 1992; Plotkin and Famolare 1992). The collection of NTFPs from forests, when carried out in a non-destructive manner (that is, disturbing as little as possible the many natural processes and the development, growth and overall health of plant and animal life) results in minimal disturbances and threats to forest species. Thus, as Godoy and Bawa (1993) allude to, we need to define how much disturbance is non-destructive. This issue has been raised by many studies, such as Boot and Gullison (1995) who evaluate and discuss approaches for assessing the sustainability of forest product extraction and the impact of extraction of the forest ecosystem. Even though they do not fully address this question, they conclude that because the development process of forests is not sequential but “interactive,” assessment measurements for sustainability require continuous modification and that there is not a universally ideal extraction system. Numerous studies address the issue of sustainability and harvesting of NTFPs and will not be discussed in depth in this thesis (see for example Nepstad and Schwartzmann 1992; Panayotou and Ashton 1992; Plotkin and Famolare 1992; Neumann and Hirsch 2000).

As Godoy and Bawa (1993) suggest, it is assumed in many studies that households are motivated to exploit the forest in a ‘sustainable’ manner if certain tree and plant species produce more income as an NTFP than as timber. Households are motivated by the availability of constant cash income to conserve species for their NTFPs. For example, tree species that produce valuable fruits, nuts, latexes and resins are not harvested for timber, but are left standing for the continued collection of those products. However, Godoy and Bawa (1993) also argue that in many cases NTFPs are not harvested sustainably. Many other scholars such as Browder (1992) have also criticized the ecological and economic sustainability of NTFPs. The assumption that forest

households carry out extraction of NTFPs in a sustainable manner fails to take into account the variability of this extraction. Households, while depending on forest resources to some extent, also obtain cash income from wage employment and agriculture. The intensity of forest use and extraction may vary with the availability of other income generating activities. In times of economic constraint, households may over-exploit the forest for their survival needs, particularly if there is market demand for a particular product. Apart from over-exploitation of forest use in times of low employment, products that obtain high prices in the markets risk being over harvested, causing resource depletion, or cultivated on plantations in previously forested areas, causing deforestation. Over-harvesting of a species can, in the long run, decrease its economic potential (Browder 1992; Neumann and Hirsch 2000). Furthermore, the production of NTFP species as plantation crops can increase the supply and therefore decrease value. Plantations established specifically for production of NTFP species also tend to displace previous local household production for larger enterprises, leaving households fewer alternatives for income generation. Still most studies conclude that harvesting of NTFPs has the potential to be 'sustainable' both ecologically and economically, and that management plans must be implemented at the community level, where users have direct input and knowledge of conservation issues (Nepstad and Schwartzmann 1992; Browder 1992; Neumann and Hirsch 2000).

### ***NTFPs in Latin America***

There have been far fewer studies of NTFPs and markets in Central American than in Asia and Africa. Neumann and Hirsch (2000) call attention to the fact that the majority of literature on NTFPs has been based in South East Asia and South American (primarily the Amazonian region).<sup>7</sup> Central America and East Asia have the fewest studies (less than ten each). In addition, most of the articles focus on internationally traded NTFPs as opposed to those traded domestically. In Latin America, many studies on NTFPs focus on the Amazonian region of Peru and Brazil and well-known products such as rubber and brazil nuts. For example, in the Peruvian Amazon, Padoch (1992) looked at the local marketing system of NTFPs and found that there is a large, complicated chain of

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<sup>7</sup> See Neumann and Hirsch (2000) pages 10 through 12 for a detailed analysis of the distribution of NTFP studies per region. The literature they evaluated was limited only to English.

“middlemen” who are responsible for purchasing from local producers, transporting to urban center, and then selling to small urban vendors (usually women). Primack *et al.* (1998) contains several case studies on NTFPs in Central America, specifically the Maya forests of Belize, Guatemala and Mexico. The majority of these case studies examine issues of management and commercialization of specific NTFP species, such as chicle (Barborak 1998; Belsky and Siebert 1998; Dugelby 1998; Jorgenson 1998; O’Hara 1998).

One of these case studies examines the use of *Desmoncus schippii* palm in craft production in Belize and its role in household incomes. Belsky and Siebert (1998) discuss the potential of these palm products to assist in community development and in doing so they recognize the importance of women in the collection, processing and marketing of these crafts. Although they recognize women’s involvement, their analysis goes no further than to point out a division of labor by biological sex; gender relations and roles are not considered. Belsky and Siebert (1998) also look at how these palm products contribute to household income and conclude that while they do not play an important role they serve as sources of supplementary income.

Other studies in Latin America also discuss the role of NTFPs in household income, such as Hecht *et al.* (1988) research in Brazil. In contrast to Belsky and Siebert (1998), Hecht *et al.* (1988) find that the proportional importance of products of babassu palm (*Orbignya phalerata*) income exceeds that of wage labor in the majority of households. On the Atlantic Coast of Nicaragua, Godoy *et al.* (1995) examine how the extraction of NTFPs (rate, amount, type) is influenced by the increase or decrease in household income from other sources. They conclude that higher income is associated with a decline in the economic importance of NTFPs to households; however, the poorest households tend to depend less on NTFPs than slightly richer households. This trend has also been shown in other studies (Cavendish 1997 as quoted in Neumann and Hirsch 2000).

The study by Godoy *et al.* (1995) is one of the two key NTFP studies in Nicaragua. Salick *et al.* (1995) examine the potential for integration of NTFPs into forest management plans in the Rio San Juan region of southeastern Nicaragua. They argue that combining sustainable timber harvesting with NTFPs optimizes the economic productivity of forests while minimally affecting the forest. Salick *et al.* (1995) conclude

that there is the potential to simultaneously manage silvicultural treatments (selective logging) and NTFP extraction sustainably to increase the value of forests for local communities.

### ***NTFPs and gender***

Unlike many of the income-generating activities that households engage in, most studies reveal that both men and women labor in NTFP activities. These studies show that women are among the main harvesters, processors, and marketers of NTFPs (Hecht *et al.* 1988; Falconer 1990; Terry and Cunningham 1993; Bishops and Scoones 1994; Ghatak, 1995). NTFPs are in many cases the one of the only method rural women have to produce independent cash income. Since much forest-product processing takes place in the home, women are often able to combine it with household tasks (childcare, cooking, and cleaning). Arnold (1996, 134) argues that the large percentage of women's involvement in NTFP activities "reflects easy access to the resource and low thresholds of skill and capital." Studies from Latin America, Africa, and Asia reveal that income from NTFPs is more important to rural women than to men (Hecht *et al.* 1993; Bishop and Scoones 1994). In addition, the income and household necessities women derive from NTFPs is found to contribute significantly to the household.

However, other studies report that although women may be the principle participants in NTFPs activities, they often do not have control over the income produced. This is evident in a study of NTFPs by Ghatak (1995, 174), which finds that "even though women are the principle gatherers and processors of all important NTFPs in southwest Bengal, marketing is done almost exclusively by men." In other words, any income earned goes directly into the male's control. Many studies in Asia and Africa have found similar results, such as study on shea butter in Africa. Mangle and Puga (n.d. in Neumann and Hirsch 2000) observe that Ugandan women do most of the processing and marketing of shea butter. However men have "full control over the proceeds from nuts they have collected" after the women process and market them (Neumann and Hirsch 2000, 31).

In contrast, women in Latin America are found to have greater control over the NTFPs that they market. Hecht *et al.* (1988) note that in Brazil, women are the primary collectors, processors and marketers of babassu palm (*Orbignya phalerata*) kernel oil, and have direct control over the income produced. This income, Hecht *et al.* (1988)

conclude, is a major source of income for these women and consequently, households. Palm kernel oil “income is primarily received by women and spent on items of immediate and critical importance to the household’s survival” (Hecht *et al.* 1988, 31). Belsky and Siebert (1998) similarly conclude that the income from *Desmoncus schippii* palm baskets in Belize is controlled by women and is an important contribution to households. They find that women are the primary weavers and marketers of these palm products, however, unlike the study in Brazil, women purchase the palm from village men who collect it in nearby forests. The majority of these studies, while recognizing the importance of men and women in NTFP activities do not fully connect with the larger issues of gender roles and relations. The different activities that men and women perform and their control over income are rooted in regional gender identities, which I expand on in the following section on gender and work in Latin America.

## **B. Gender and Work in Latin America**

### ***The construction of gender***

Gender identities are socially constructed (as opposed to biologically determined) temporally and spatially. They are mediated by social, historical, cultural, and religious structures which shape the societal perception of men and women. These identities ascribe to men and women different abilities, attitudes, desires, personality traits, and behavioral patterns, and are revealed in the practices, ideas, and representations between men and women (Agarwal 1994). The Roman Catholic Church has played a pivotal role in the construction of gender identities in Latin America (Guzmán Stein 2001). Because of the Church’s influence, gender identities in Nicaragua are based on ideas of patriarchy and male dominance. Many studies on gender in Latin America use the terms *machismo* and *marianismo* to describe the main symbols of masculinity and femininity. *Machismo* describes masculinity and encourages men to be aggressive and dominant. Men are defined as “irresponsible, undomesticated, and romantic” (Guzmán Stein 2001, 133-4). *Marianismo* defines the ideal woman as patient, docile, motherly, and endeavors to emulate the Virgin Mary, the model of femininity. Women are portrayed as peacemakers and protectors of children (Bayard de Volo 2001). The ideal woman is a good wife and mother, whose life revolves around the household and family (Bayard de Volo 2001; Guzmán Stein 2001). Thus everything she does is to care for and support the family and

household, which are viewed as her domain. Along with these social ideals of masculinity and femininity come ‘natural’ traits which are attributed to women and men help to also define the different activities they perform. For example, men are viewed as physically superior (stronger) and more authoritative (Bustos 1985). Women are considered to have natural dexterity and because they are patient, can tolerate tedious and monotonous tasks (Fernández-Kelly 1983a; Acevedo 1995).

Gender identities in Latin America are also based on social norms from colonial Spanish civil society. This distinction of *casa/calle* is the most prominent of these. In this dual society, the *casa* (house) is defined as the sphere of women, and the *calle* (street) is the sphere of men (Scarpaci and Frazier 1993; Babb 2001). In this separation, the public spaces, such as political and education institutions, are the within the sphere of men. Men are considered the ‘breadwinners’ and financially support the household. The women’s sphere is essentially the home and relegated women to activities that were based around and within the sphere, mainly motherhood and *ama de casa* (housewife). However, in many Latin American countries this spatiality is not so distinct. There is a clear intersection of the private/public spheres in the markets and streets of many Latin American cities. Women are very dominant in Lima’s markets and streets selling a variety of goods. This intersection of the public and private is rooted in the many indigenous cultural traditions, which remain influential today in the construction of gender (Nash 1986). Guzmán Stein (2001: 135) describes this influence well:

In traditional Andean culture, as well as in Central American indigenous cultures, gender roles do not imply separate spheres of action. Women are linking to the domestic but have more mobility in urban spaces as they play a central role in managements, distribution and production in household economy. Women dominate the markets.

Today in Latin America, gender identities are rooted in all three of the above described influences and the shape the gender relations in both the private and public spheres. The ways these gender identities and the defined roles and responsibilities of men and women interact constitute and are constituted by gender relations, that is, relations of power between men and women (Agarwal 1994).

### ***Gender Roles***

Households rely on both productive and reproductive work to survive.<sup>8</sup> Productive work, as defined by Moser (1993, 31), comprises of work carried out in exchange for “payment in cash or kind.” This category of work is usually carried out in the public (male) sphere and includes wage and none-wage work in both the formal and informal economies. Reproductive work encompasses domestic duties in the household such as cooking and cleaning, biological reproduction such as childbearing, and childcare. In general, reproductive work involves tasks that support and sustain household members (the current and present workforce). Women generally perform the majority of reproductive roles in addition to having an equally important productive role in the household as men (Moser 1993, 31-2). Both urban and rural women in many areas of Latin America have traditionally participated in household economic activities, including management of income (Hamilton 2000; Babb 2001). Holcomb and Rothenberg (1993) state that rural women are responsible for the production of a significant proportion of the household economic resources, as well as the reproduction (housework - childcare, cooking, cleaning, etc.). In many cases, rural and urban women are the primary providers of food and other necessities for household members (Nash 1986; Bossen 2000; Hamilton 2000). As productive workers, women engage in several different forms of income generating activities. In Latin America, most of these are based on the specific gender roles and identity.

The economic activities that women in Latin America are most likely to engage in and include production and sale of food and crafts, and are carried out in the informal sector (Buechler 1986; Salifios-Rothschild 1988; Holcomb and Rothenberg 1993; Boris and Prügl 1996). In addition, women are also prevalent in formal sector activities such as factory work, particularly textiles and electronics (Fernández-Kelly 1983a, 1983b). Some researchers have pointed out that the reason for the large numbers of women in factory positions is because many factory managers accept the notion that women are more dexterous and tolerate repetitive work (Fernández-Kelly 1983a, 1983b; Bustos 1985; Acevedo 1995; Ríos 1995). This ‘myth’ is common in many of the hiring patterns of

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<sup>8</sup> There are various definitions or models of a ‘household,’ which this paper will not examine but are nonetheless important. For discussions on household structure and organisation see Brydon and Chant 1989; Dwyer and Bruce 1989; Booth 1993; and Agarwal 1994.

*maquilas* (factories) in Mexico. Latin America has one of the highest rates of women engaged in wage-labor and trading in the world (Chant and Brydon 1989). Although women participate in the formal economy as wage laborers, such as in factories, a larger percentage is active in the informal economy or sector. Although there are various interpretations as to what constitutes the informal economy, essentially it “includes a wide variety of unregulated and often temporary or sporadic activities carried out by self-employed individuals, unpaid family members, and in some cases, employees” (Waters 1997). Women’s representation in the informal economy in Latin America is higher than their rate of participation in the economy as a whole and continues to grow (Berger and Buvinic 1989; UN 2000). On a global level, the informal economy represents the primary source of employment for women and this is evident in Latin America (UN 2000). As Prügl (1999, 81) states: “A vast majority of work in the informal sector [takes] place in peoples’ homes, or informal sector workers, such as vendors, [use] their home as a base of operations.”

The productive work that women perform as home-based workers and street vendors is an example of how gender roles define the different activities carried out by men and women. Women’s duties as a mother and wife are viewed as primary and above any other activities (Guzmán Stein 2001; Bayard de Volo 2001). Home-based work does not challenge the “male-female and public/private dichotomies” central to the construction of gender in Latin America. Women’s role as street and market vendors does however break this dichotomy because it takes women out the home (private sphere) and into the street (public sphere). Babb (1989) argues that the role of women as street and market vendors is closely integrated with their domestic activities in the home. She explains that women’s marketing resembles the reproductive work carried out in the home because it still enables women the “flexibility to fulfill domestic responsibilities” (Babb 1989, 53). That women marketers tend to sell products they produce in their homes provides flexibility (Hays-Mitchell 1993; Katz 1995; Espinal and Grosmuck 1997). For example, in her study of *ambulantes* (street vendors) in Peru, Hays-Mitchell (1993) finds that most women sell food and artisanry they produce in their home. Katz (1995) reports similar findings in her study of women in the Central Highlands of Guatemala where women produce textiles in their home and then sell them in the market alongside surplus produce

and herbs from their small gardens. Babb (1989, 197) also notes that “the work of women in [petty] commerce and the services is often likened to housework, and the women themselves are often viewed as housewives whose economic role extends to the marketplace.” The nature of work in these areas is frequently similar or even identical in content to the work women perform in their own homes: housecleaning, laundering, sewing and food preparation. Women also produce goods in their home on contract to middlemen or larger companies. This work includes the production of textiles, electronics, crafts, and other commodities that middlemen usually sell to companies for international export.

These two home-based activities of women, the production of goods for self-marketing or contracts, represent two of the three types of home-based workers as defined by Martha Chen (2001): (i) dependent subcontract workers (also referred to as *homeworkers*), (ii) independent own account producers (self-employed), and (iii) unpaid workers in family businesses. Homeworkers are workers who produce goods for a contractor or employer in their home, without the direct supervision of the contractor/employer. Most of the garment workers are classified as homeworkers, are usually instructed on what to produce by the contractor, and are paid by the piece (as opposed to salary). Much of the work carried out by homeworkers is considered detailed and tedious, once again underscoring the myth that women have a ‘natural’ manual dexterity and are patient. Independent own account workers, on the other hand, do not work for an employer or contractor but for themselves. They decide what they will produce and sell it to consumers or retailers directly or through middlemen. Street vendors and market women are an example of independent own account workers. They manage their actions and this therefore makes them more “flexible,” as Babb (1989) argues. Unpaid workers in family businesses are usually family (or non-family) members of own-account producers who work without pay but share in the benefits of the income generated from the goods produced by way of being in the same household. Martha Chen (2001) states that women account for most of the world’s home-based workers and street vendors. Home-based work, including street vending, represents an important portion of household income throughout Latin America.

The informal sector activities performed by men and women also tend to be different. Women concentrate in “marginal micro-enterprises” or the “survival economy,” that is, these activities are clustered in the lower ranks of the informal economy and require very little capital input (Prügl 1999, 87). Men’s informal sector activities usually require higher capital input than those of women, and may include one or two wage employees. This difference between male and female economic activities is reflected in Margaret Hays-Mitchell (1993, 1088) study on street vendors in Peru. She notes that there are gender differences in the “types of merchandise sold by *ambulantes*<sup>9</sup>” and that these differences are “consistent with the traditional gender roles of men and women” in Latin America. Typically men sell products that require a greater capital investment, such as factory made items. In contrast, women sell products that require less capital input and that are “extensions of their household responsibilities, primarily food items and artisanry” (Hays-Mitchell 1993, 1088-89). Studies of sellers in markets (permanent stall vendors) have also reported differences in what women and men sell. Babb (1989) notes that there are notable patterns in what men and women sell at markets in Lima, Peru. Similar to Hays-Mitchell’s finding, Babb observes that men are engaged in the sale of manufactured (mostly imported) products that require a large capital outlay and at times the need to purchase goods on credit. Women, on the other hand, sell goods produced from the own land (vegetables and fruits) and products manufactured in their homes (artisan goods) as well as these types of products, which they purchase outright or on small credit. The difference with what men and women sell reflects their ability to access credit. In these two studies, men appear to gain more access than women to larger credit and are therefore able to invest in larger capital products to sell.

Access to resources also emerges as an issue in Chant and Brydon’s (1989) study. They point out that women sell surplus goods from subsistence agricultural land in small quantities and in local markets to individual (household) consumers. To supplement income from agriculture, women usually carry out the production of crafts in the home. In contrast, men sell the products of the cash crop agricultural land, such as grains, beans, and non-traditional vegetables. Most of this product is sold in bulk quantities to businesses or larger traders. These findings reflect a common characteristic in Latin

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<sup>9</sup> Street vendors.

America, and throughout the world, that men generally own larger land holdings and have titles (ownership or rental) to this land. Greater access to land and capital is what enables men to obtain larger cash incomes in comparison to women. However, this does not, as many scholars argue, suggest men contribute more to households than women.

### ***Gender and Household Economics***

Men and women contribute in different ways to households through both productive and reproductive work, as I have discussed above. It is common, especially in poor households, for both men and women to contribute cash income to the household. This productive contribution of men and women is in most households used for different purposes. The ways in which men and women allocate their income within the household also tends to differ. Studies in Latin America show that there are several different allocation patterns in households. Pessar (1988) identifies three different allocation patterns of Dominican households: traditional (patriarchal); household allowance; and pooled.<sup>10</sup> The traditional allocation pattern is based on the idea of men as ‘breadwinners’ and is associated with “male ownership over the means of production,” such as land title (Pessar 1988, 208). In this pattern men control and manage all of the household income, even that which women contribute. In the second pattern, household allowance, income is given to women to manage. This pattern allows women greater control over household expenditures and income-making decisions (Pessar 1988; Roldán 1988). The final allocation pattern is income pooling where all income-generating members of the household contribute a specific amount of their income to household expenditures such as food and rent. Rothstein (1995) also terms this allocation pattern as a multiple income strategies, where households depend on the income for a variety of different income sources. Roldán (1988) found that over sixty percent of households in her study of domestic workers in Mexico City employed a pool allocation pattern. She also noted that this allocation pattern is found more among lower income households, where both men and women share the cost of basic household expenditures.

Although men and women may share basic household expenses, many studies have reported that the percentage of individual income provided by each partner is not equal.

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<sup>10</sup> There are numerous studies on the allocation patterns of household income. See for example Dwyer and Bruce (1988).

For example, Both Roldán (1988) and Benería (1992) show that women use all their earnings to cover household expenses while men only give a portion of their total income. Overall, many studies in Latin America illustrate that women are more likely to pool their income to benefit the household (Benería and Roldán 1987; Deere 1990). In many cases, as soon as women receive cash income, it is spent immediately on household needs. This pattern is found in Salifios-Rothschild's (1988) study on rural households in Honduras. She finds that as soon as women earn an income, usually by selling home-produced products, they spend that income on food and other necessities for the household/family. Bruce and Dwyer (1988, 5) claim that a "central impetus to women's earnings – attain a better life for their children, which many may view as an extension of good mothering – may explain the allocation priorities they apply to their own income and other income that they control." In Latin America this claim is very much true as many women still hold to the ideals of *marianismo*.

### **C. Gender and Households Nicaragua**

*La tierra de lagos y volcanes:*<sup>11</sup> Nicaragua is the largest, least densely populated and poorest country in Central America and is among the three poorest in Latin America-Caribbean (LAC) (CIA 2000; UNDP 2001). Approximately fifty percent of Nicaragua's population lives below the poverty line, and nineteen percent of those live in extreme poverty (World Bank 2000a). The rural population is on the whole poorer than the urban – seventy-six percent of the rural population is below the poverty line (Corral and Reardon 2001). About forty-five percent of Nicaragua's population lives in rural areas and fifty-five percent live in urban areas (World Bank 2000a). Compared to the overall percentage of population in Latin America living in urban areas (seventy-five percent), Nicaragua is largely a rurally populated country.

Nicaragua has been plagued with political and economic instability. Through 1979, Nicaragua was under a forty-three year dictatorship imposed by the Somoza family, who were wealthy and corrupt and did little to assist the Nicaraguan people. Led by the *Frente Sandinista Liberación Nacional* (Sandinista Liberation National Front – FSLN), female and male, rural and urban, and rich and poor Nicaraguans together overthrew the dictatorship in 1979 and established a revolutionary government. During the 1980's,

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<sup>11</sup> The land of lakes and volcanoes.

Nicaragua saw major changes in social security and the revolutionary government established programs of agrarian reform, food subsidies, housing, universal health care and education. However, the revolutionary government also had to struggle with the US supported Contra war. This war made it difficult for the revolutionary government to continue many social programs. Under war conditions and economic instability, Nicaraguans voted in a liberal government in 1990, who had the support of the United States. The implementation of decreased social programs and the development of the market economy brought even more insecurity to most Nicaraguans. Today, Nicaraguans are still struggling to survive and have very few support options available to them. It is a nation of high unemployment and underemployment, poor health standards and declining levels of education. The unemployment rate is twenty percent, which does not include the large underemployment experienced by most people in the country, while the literacy rate is around sixty percent. In addition to the low per capita income (US\$2,279), the country faces a debt of close to six and a half billion dollars (UNDP 2001).<sup>12</sup>

In Nicaragua, as with other Latin American countries, Spanish culture, the Catholic Church as well as the indigenous cultures have shaped gender identities. This can be seen in some of the traditional roles assigned to women and men both inside and outside the household. Van der Borg (1994) describes the general gender roles in present-day rural Nicaragua. Men in households tend to hold the titles to the land (*el título de reforma agraria*). This includes agricultural land and house lot, which are usually not located on the same area of land. Land title could be land which is owned or rented. Because men hold the land titles, they decide how it is used (Flora and Santos 1985; van der Borg 1994). Although under the Sandinista agrarian reform programs during the 1980's it was stipulated that "neither gender nor kinship status would hinder someone from becoming a beneficiary of the reform," only ten percent of the almost 60,000 beneficiaries<sup>13</sup> were given to women (Deere and León 2001: 96). The majority of these women benefited from land reforms were heads of their households. Women who do have titles to land decide directly how these should be managed, or leave the management to older sons. Van der

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<sup>12</sup> In comparison, Haïti, the poorest country in Latin American and the Caribbean has a GDP per capita of US\$1474. With its neighbors, Costa Rica (\$8860), Honduras (\$2340); El Salvador (\$4344), and Guatemala (\$3674).

<sup>13</sup> Land titles

Borg (1994) found in her study that forty percent of the women held the land titles and that most of these women were widowed, divorced or single – female heads of households. A recent FAO (1998) study reports that approximately thirty-one percent of rural households in Nicaragua are female-headed.

In households where both female and males partners are present, the land is divided into *huerta* and patio. Males, generally manage the *huerta*, or irrigated agricultural land. In the *huertas* cash crops such as beans, corn, yucca and straw are cultivated. These crops are for both subsistence and cash income. The patio, or yard surrounding the house, is managed by females and comprises a small vegetable garden (*hortaliza*), flowers, and fruit trees as well as small animals such as chickens, pigs, and ducks. Products from the *patio* are used for both subsistence and cash income. Although males and females manage different areas of land, in most cases the work is not limited to these areas. Women work and control the patio but also work in the *huertas* when additional labor is needed or when males and children are unable, and as such are considered only occasional assistants (van der Borg 1994; Sachs 1996). In addition, women carry out the domestic work in the household. Men generally do not work in the *patios* unless necessary, but carry out other forms of productive work outside the home (e.g. wage labor). However, van der Borg (1994) notes that in most cases males and females mutually assist one another in the productive activities of the household.

In general, men consider themselves responsible for the family because they have the land title. When women receive the land title, many times men feel that their one family ‘duty’ has been lost. For example, following a serious earthquake in July 2000, the government redistributed land titles to affected households, and the majority of these titles were placed in the women’s names. This action caused many men to protest. However, the men’s greater access to wage-income is another means through which they consider themselves responsible for the family (Babb 2001; van der Borg 1994). Men in general have access to the majority of the income (*huertas* and salaried income) and maintain control over this (van der Borg 1994). But, in dominant Nicaragua culture, women are responsible for the management of the household income (Poncela 1996). Men in rural areas are also responsible for the collection of firewood, and in some cases collect and sell extra firewood for cash income. Women also collect firewood in small

quantities but only for immediate household consumption. Women in most households also bring in cash income, which comes from the sale of patio surpluses and goods produced in the home (*e.g.* crafts). In addition, women also sell any surplus from *huertas* that men do not sell.

Urban households in Nicaragua have a slightly different composition of gender roles. In urban Nicaragua, the formal sector employment has been decreasing over the past decade and work within the informal sector dramatically increasing (Babb 1997; UN 2000). In a study of households in Managua, Babb (1997) finds that small-scale production and commerce, often based in the home, are the most common forms of informal sector employment for urban households. She states that over half of Managua's economically active population is in informal activities and that this rate continues to grow. During the Sandinista government in the 1980s, many informal sector activities "formalized" through the formation of cooperative and state enterprises. But since the early 1990's, these cooperatives and state enterprises have been disintegrated in "the interest of streamlining the economy" (Babb 1997, 41). Because of this many households are turning once again to independent and informal activities.

In her survey of a barrio in Managua, Babb (2001) notes that many homes also serve as small commercial establishments. These include barbershops, restaurants, tailors, and carpenters. She states that less obvious are that the majority of houses engage in selling small quantities of fruit, vegetables, soft drinks, baked goods, and dairy products in the front rooms - *pulperías*. The majority of these *pulperías* are owned and operated by women. These women "literally occupy places at the threshold" of the domestic and public spheres - "in the doorways of their own homes" (Babb 1997, 45). The household livelihoods in urban areas of Nicaragua are more varied than that of their rural counterparts. (Babb 2001). Formal wage labor is more prominent (police, security guard, administrative), yet the persistence of informal sector activities is even more evident. In addition to the numerous informal activities Babb (2001) reports that some households still maintained farmland in rural areas that they either rented or worked.

Rural and urban households in Nicaragua both depend greatly on informal sector activities and home-based work. Both Babb (1997; 2001) and van der Borg (1994) note that the home is a main location for income-generating activities of households. The

decline of formal sector employment in Nicaragua has created the need for households to depend on self-employment as their main source of livelihood survival. Using the methodologies outlined in the following chapter, this research will explore how Nicaraguan households use NTFPs for home-base production of goods as a source of income.

### 3 Methodology

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This chapter outlines the methodology used in data collection as well as the framework on which the research methodology is based – commodity chains analysis. In addition, this chapter describes the research location and the research questions and hypotheses.

#### **A. Conceptual Framework: Commodity Chain Analysis**

I utilize the concept of commodity chain analysis as the framework for my research methodology. Commodity chain analysis has been developed out of world-system theory (Vellenga 1985; Hopkins and Wallerstein 1986; Gereffi *et al.* 1994; Dunaway 2000). Based in dependency theory (*dependencia*) and Marxism, world-system theory seeks to explain the dynamics of the capitalist world economy by viewing it as one social system - a ‘world system’ (Pearson and Payaslian 1999; Cohn 2000). Both dependency and world-system theory are based on the concepts of core and periphery regions, in which the powerful and wealthy core regions dominate and exploit weak and poor peripheral regions. These regions are interdependent and form an unequal relationship. Dependency theory, developed in Latin America, focuses on understanding peripheral regions by examining its unequal relations with the core regions. World-system theory builds on this idea of core-periphery relations by looking not only at the relationship between core-periphery but also with the relationships among core states and the shifting of hegemonic power between those states as well as the elite relationships within the core-periphery (Cohn 2000). Studies in world-system theory examine the capital accumulation of wealth on a global scale and the unequal exchange of surplus. Commodity chain analysis developed as a method to examine this unequal exchange by looking at the international production of commodities because these chains represent the “key mechanisms of unequal exchange” (Dunaway 2001, 9).

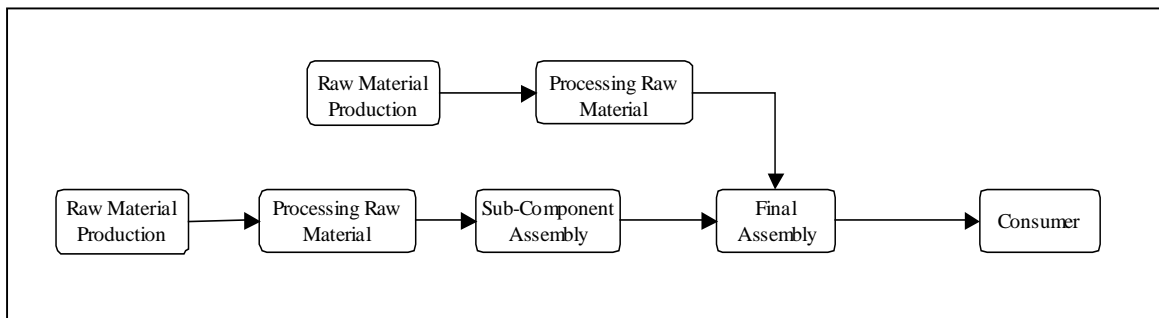
The concept of commodity chain, as defined by Hopkins and Wallerstein (1986, 159), “refers to a network of labor and production processes whose end result is a finished commodity” - something that can be bought and sold. Hopkins and Wallerstein (1986, 160) envisioned commodity chain analysis as a means of examining the whole network of flows and exchanges that “reveal the real division ...of labor in complex production

processes.” This examination involves following a particular commodity from its various production processes and by examining at each of these points of process division of labor (Hopkins and Wallerstein 1986, 160). This concept focuses on international commodities, and was first used by Hopkins and Wallerstein (1986) to test the claim of a world-scale division of labor prior to the nineteenth century by examining ships and wheat flour.

Using these two commodities, Hopkins and Wallerstein outline the basic steps to constructing a commodity chain. The first step begins with the identification of the final production process - the location where the production of commodity is completed. From this point, every preceding point of process and material inputs are identified until the point of raw materials are first extracted and processed. This backward direction is applied as opposed to a forward one (beginning with the raw materials) because the objective is to locate the “sources of value in a finished product and not the multiple uses to which the raw material are put” (Hopkins and Wallerstein 1986, 160). Originally, a commodity chain, as put forth by Hopkins and Wallerstein consisted only of identifying the production process and input stages (see Figure 3.1). They do not follow that chain forward from final production through to marketing and final consumption. Gereffi *et al.* (1994, 2) expand on Hopkins and Wallerstein’s concept, and identify five sequential stages or nodes of they label global commodity chain: input acquisition, manufacturing, distribution, marketing, and consumption. Figure 3.2 illustrates modified schematic of a commodity chain which includes all five stages.

### **Figure 3.1 Schematic of a Hopkins and Wallerstein’s Commodity Chain**

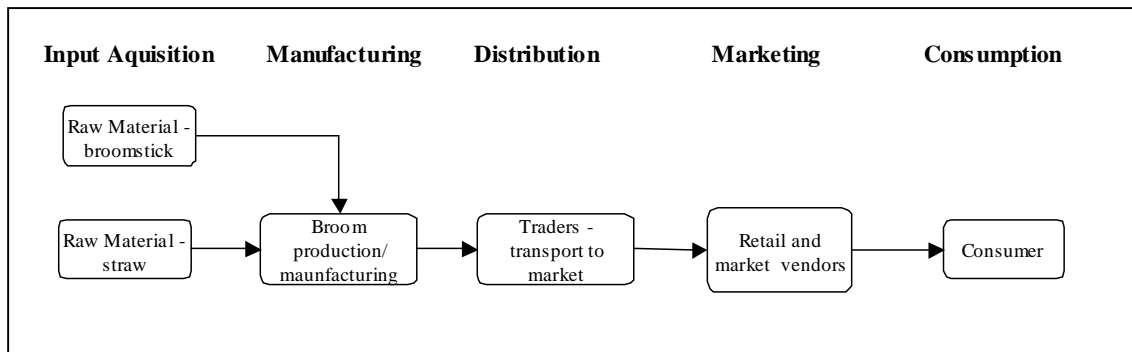
(Source: Adapted from Hopkins and Wallerstein 1986.)



At each of these stages there are four properties and the examination of these represents the second step in commodity chain analysis (Hopkins and Wallerstein 1986,

160,166). These four properties are: (1) the relation of flows between that stage and the stages immediately preceding and following it; (2) the relations of production and labor force characteristics within that stage; (3) the organization of production in that stage; and (4) the geographic location of the stage.

**Figure 3.2 Schematic of the an extended Commodity Chain**



(Based on Gereffi *et al.* (1994))

By examining these four properties at each stage in the chain, it is possible to determine the distribution of surplus value among the stages as each stage in the chain accumulates an unequal portion of the total surplus (Hopkins and Wallerstein 1986; 1994; Korzeniewicz and Martin 1994). In addition, it is also possible to look at how these stages and the chain as a whole are organized through an international division of labor. The main goal of commodity chain analysis is to determine the division of surplus and labor among the different stages.

However, this type of examination does not take into account the unequal distribution of surplus and labor within the individual stages. As Dunaway (2001) critiques, this focus is predominantly macro-level and excludes the unequal distribution of surplus within the individual stages and between participants of those stages. In addition, she argues that that an examination of distribution of surplus among stages excludes the examination of socio-economic aspects within the stages and the contribution of households at the micro-level. Examining the unequal distribution between stages at the macro level fails to acknowledge the questions of “how and by whom that surplus is produced ” and the gendered division of both labor and surplus at each stage (Dunaway 2001,10). Leslie and Reimer (1999, 404) also note that commodity chain analysis rarely examined individual stages and tends to remain at the surface level “focusing on systems and flows.”

Dunaway (2001, 11) suggests that women and households should be examined at every stage and that the commodity chain be viewed as “a network of nodes [stages] at which human laborers and natural resources” are exploited either directly or indirectly. She also points out that commodity chain analysis as outlined by world-system theory fails to take into consideration or recognize the “pivotal role of households or the females in those households” (Dunaway 2001, 10). One early study that actually addresses Dunaway’s concerns is Vellenga’s (1985) application of commodity chain analysis to women, households and food commodity chains in Africa. Vellenga argues that commodity chain analysis is a helpful tool in linking micro and macro levels of analysis and in examining the differential inputs of men and women over time. By using commodity chain analysis, we can examine women as economic actors and not only as “consumers or subsistence producers largely confined to households” (Vellenga 1985, 296). Vellenga also introduces the concept of a “community chain,” or local commodity chains. She examines the involvement of women in local food production commodity chain and how over time women’s role in these local chains has changed the relative position of women, and the position of the region as a whole in relation to the world economy. Thus, Vellenga uses commodity chain analysis as a means of identifying where women are important economic actors and how women have adjusted these usually informal economic activities as the world economy changes and grows.

The concept of a local commodity chain, or community chain, enhances the potential of commodity chain analysis as a tool to examine not only households and gender within a global framework, but also women’s (informal) economic activities which are usually located at the local level and are in many cases linked to larger (formal) international chains. Additionally, women’s involvement in local commodity chains is an integral part of the national and regional economy even if it is not linked to a larger international chain. As discussed earlier, women’s economic activities in Latin America are essential to the maintenance and survival of households. The fact that the majority of these activities occur within the informal sector does not negate their importance within the world economy or the use of commodity chain analysis as a method of investigation.

My research attempts to use the concept commodity chain analysis at local commodities, as opposed to international, and examine each stage individually as well as

the exchanges and links between stages. I look specifically at the gendered division of labor within the stages and among the chain as a whole. In addition, I examine the income (or surplus) from the commodities and its role in the household economy at each individual stage. The commodities examined are straw broom and coconut-fern baskets in Central Pacific Nicaragua.

### **B. Research Locations and Design**

I chose Nicaragua as the location for my research for two main reasons. First, very little NTFP research has been conducted in Nicaragua, particularly in the Central Pacific region. Second, Nicaragua is among the poorest in Latin America and reliance of households on the informal economy is high. In addition, much NTFP literature has suggested that poorer households are more likely to engage in NTFP activities as a form of income-generation than richer ones. As my research is based on the concept of commodity chain analysis it was carried out in several different locations in Nicaragua. *Reserva Natural Laguna de Apoyo* (RNLA) was chosen as the central location of the chain for three main reasons: located near three of the main urban centers in Nicaragua (Masaya, Granada, and Managua), one of the largest intact dry tropical forests of the region and therefore serves as a source of raw materials for thousands of households in the region, and a large craft producing region in Nicaragua.

#### **Photograph 3.1 Reserva Natural Laguna de Apoyo (from main road)**



**Photo:** L.J. Shillington

RNLA is located halfway between the cities of Masaya and Granada and approximately thirty-five kilometers south of Managua. RNLA is situated within three different *departamentos* (Departments or States): Masaya, Catarina, and Granada. See Figure 3.3 for a map of the region.

**Figure 3.3 Map of Nicaragua**



**Source:** Perry-Castañeda Library Map Collection, University of Texas Austin

Three main communities surrounding RNLA include Valle de la Laguna, Catarina, and Diría (Figure 3.4). More than 174,000 individuals live in these and smaller communities, within three kilometers of the reserve's boundary (INTA 1994). Inside the

park, there are approximately seventy families, who work as caretakers of vacation homes along the north shore of the lake. RNLA was established as a nature reserve in 1991 (Sánchez 1999). As a nature reserve, the role of RNLA is to conserve and restore natural ecosystems and wildlife habitats as well as produce sustainable benefits and services to communities (MARENA 1999). However, RNLA does not have a management plan outlining sustainable forest uses or the regulation of illegal activities, such as timber extraction. The forested area of the reserve is about 1700 hectares, mostly steeply graded closed tropical dry forest (Salas 1993), and is among the five largest of this type remaining in Nicaragua. RNLA also represents one of the largest forested areas in the Central Pacific region, making it an important source of raw materials and products for the communities surrounding RNLA.

**Figure 3.4 Map of Reserva Natural Laguna de Apoyo**



Source: Nicaragua Travel Net, CentralAmerica.com

Many households in the surrounding communities collect, produce, and sell products from the reserve, including timber, firewood and non-timber forest products. This study examines two NTFPs: straw brooms and coco baskets. I chose straw brooms because the wood broomsticks represent a large portion of the products extracted from RNLA

(McCrary *et al.* 2001). In contrast, I chose coco-fern baskets because they are produced with fiber from palm leaves and fern vines instead of wood material.

During preliminary testing, I identified all the different stages I would need to examine. I defined different stages for each chain, because they involve different process. Thus, for the broom commodity chain, I identified six stages: extraction, cultivation, production, trading, intermediaries, and retail. The basket commodity chain consists of five stages: extraction, production, trading, intermediaries, and retail. I delineated these stages based not on location, but on the processes involved in each stage. In Hopkins and Wallerstein's (1986) raw material production is considered one stage, so by theory extraction and cultivation should have been one stage. However, I view these as processes as doing different tasks, and therefore should be considered different stages. In many cases, they involve different people, different locations, and different activities. The processing of these raw materials, that is, any alterations participants may make to the raw material before passing it on to the next process, I included as part of this stage because the same person usually carries it out. Another modification I made to the concept was to separate traders and intermediaries. Fundamentally, these two stages perform the same task: selling the product to retail vendors. However, they do this at different points in the chain. The trader brings the product into the market and the intermediary buys it from the trader to further distribute it into more distance markets. A products first point of entry into the market is via the trader, which I view as different than just distribution.

The sample population was derived from two sources: key informants and snowball sampling. There are no census population lists for most areas in Nicaragua and, as such, a random sample was impossible to obtain. In addition, lists of broom and basket producers for the area (and for Nicaragua in general) do not exist. Based on commodity chain analysis outlined by Hopkins and Wallerstein (1986), the final production location, those households that produce brooms and baskets, represented the starting point from which to work backwards. A paid field assistant, Mayela José Calero Blas, and myself interviewed women and men at different stages of the two commodity chains. Mayela works for the ecological station located inside RNLA and I asked her to assist on this project because she is familiar with most of the regions where the research was carried out. We were

assisted by two key informants, Martín and Felipe, who provided a list of names and addresses of producers of brooms and baskets.<sup>14</sup> Both key informants are from the region and also work at the ecological station. I met both informants and my assistant during a previous stay in Nicaragua. Using the interviews with producers on this list I employed a snowballing technique, whereby broom- and basket-producing households gave us names and locations of people from which they obtain raw materials and to which they sell their products as well as other producing households.

Snowball sampling involves the use of participants to identify other respondents (Berg 2000; Atkinson and Flint 2001). As Atkinson and Flint (2001) note, snowball sampling is generally employed for two primary reasons. First, it is “an informal method to reach a target population,” particularly if the goal of the research is “explorative, qualitative, and descriptive” through the use of interviews (Atkinson and Flint 2001, 2). Second, snowball sampling is used to locate subjects with certain attributes and difficult to reach populations. However, the use of snowball sampling limits the validity of the sample due to two main reasons: non-random sampling and biasness towards “the inclusion of individuals with inter-relationships” (Atkinson and Flint 2001, 3). The latter concerns the limiting of the sample to participants involved in a social network and may exclude members of the same population who are not part of that particular network. For example, if all the broom producers I interviewed belong to a co-operative and they only give me names of other members, but there are also broom producers in the same region who do not belong to that co-operative, my results would be biased towards the broom producers in that cooperative. This would not be a very representative sample. Larger sample sizes may reduce bias. Due to economics and time constraints, a large sample size was not practical. To address the concern, I also included participants that I came across on the way to other interviews. Usually I saw these participants producing either baskets or brooms, and would gain their entrance by showing interest in what they were producing. The first participant for the basket commodity chain was located while Mayela, my research assistant, and I waited for the bus. A woman with a large quantity of baskets was waiting with us and was very willing to give us information. We discovered that she sells baskets on a weekly basis and she invited us over the following day to see

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<sup>14</sup> All names have been changed to maintain the anonymity of the participants.

the entire process. From this interview we were able to located several other basket-producing households. Our key informants provided us with more names and information on this product.

Following the concept of commodity chain analysis outlined above, I began my interviews with the producers of brooms and baskets, that is, those households that produce the final commodity. These producers then provided me with the names and locations of other producers as well as extractors, traders, and in some cases retailers. Thus, these production stage households were used as the bases from which to identify other stages in the chain - raw material production/extraction, distribution and marketing. These locations differ with each product. The broom- and basket-producing households are located in the communities of el Valle de La Laguna, El Chilamate, and Quebrada Honda in the Department of Masaya, and Pacayita, in the Department of Catarina. Extractors and cultivators are also located in these regions, although the cultivation of straw and other agricultural products tends to be located in larger agricultural areas in the Department of Masaya, such as the area surrounding Tipitapa. The distribution and marketing is done in urban centers, primarily Masaya and Managua. Thus the data collection was completed in all of these locations.

The goal was to interview ten people at each stage of both commodity chains. It was assumed that because the number of stages in each chain were not yet identified as well as the economics and time limitations, that this sample size would be appropriate. The exact population of broom and basket producers is not known. To determine a sample size, I estimated that the approximate percentage of broom and basket producers within the total population of the region (around 174,000) was not that high. Thus, my sample size does not need to be that large. Based on pre-testing, I also determined that each interview could range from thirty minutes to over one hour because the instrument was semi-structured and open-ended. In addition, I had to interview participants at all stages of two chains, which limited the amount of time I had at each stage. As such, ten seemed to be a good representative number for broom-producers. To keep the numbers consistent, I chose this number for each stage in the chain, although once I began interviews at the retail stage I realized that because there seemed to be more I would need to interview more participants. During the pre-testing of the research instrument for the

basket commodity chain, I realized that there were not ten families in the region that produced baskets and was therefore able to interview all households (five). At the retail stage I was again able to interview ten participants.

The interviewing instrument (questionnaire) was a mix of semi-structured and open-ended questions.<sup>15</sup> Questions were developed to correspond to the different stages; as such the research consisted of seven instruments for the broom commodity chain and five for the basket commodity chain. I pre-tested the interviewing instrument for each stage of both chains and revised them several times before finalizing the questionnaire.

Data collection was carried out from August 2001 through to November 2001. To ensure that all pertinent information was collected, the majority of the interviews were tape-recorded. In some interviews, such as in the markets and streets, it was impossible to obtain a clear recording. During the interviews that were not taped, both Mayela and I took notes and then immediately after interviewing we compared notes to ensure that our information corresponded. The straw broom commodity chain was completed before starting the basket chain. We collected information on the broom commodity chain in August and the beginning of September. Then once this was almost complete, we began the basket chain. During the end of October and beginning of November, we returned to some of the participants to confirm information or to obtain more detailed data. We spent November transcribing the tapes of recorded interviews.

The results from these interviews are outlined in Chapter 4 (straw broom commodity chain) and Chapter 5 (basket commodity chain).

### **C. Research Questions and Hypotheses**

In reviewing the literature on NTFPs and gender roles in Latin America, I focus my research on three main research questions, each with a hypothesis. The hypotheses are based on the findings of previous case studies in Latin America and the literature in general. The research questions and hypothesis are outlined below.

1. What are the roles of women and men at the different stages of the NTFP commodity chain and to what extent do these roles adhere to traditional gender roles?

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<sup>15</sup> See Appendix 1 and 2 for the interviewing instrument (of broom and basket commodity chains respectively).

Several studies on gender and productive work in Latin America note that the traditional gender roles of men and women still define to a large extent the type of activity that men and women perform. Although the participation of women in the formal economy is increasing, findings show women are involved to a greater extent in the informal economy performing tasks associated with their role as wife and mother (Salifios-Rothschild 1988; Babb 1989, 1997; Hays-Mitchell 1993; Katz 1995). Is this true of NTFPs along their chain of activities in Nicaragua? And is there a difference between products – for example, is there a difference in where women and men participate between the broom and basket commodity chains?

*Hypothesis:* Women and men participate in all stages of the commodity chain, but certain stages will be primarily female and others primarily male.

2. To what extent do households depend on NTFPs, specifically, are these NTFPs significant sources of household incomes? And how is NTFP income and household income in general managed (i.e. who maintains control over the income)?

I define “significant” in terms of whether participants consider NTFPs as a main source of household income or as a supplementary source. If the NTFP is considered a main source of income, then it is viewed as significant to the household economy. If it is supplementary, then it is viewed as less significant to the household economy. However, “significant” is also denoted by how NTFP income is spent. More importantly if it is spent on goods that benefit the entire household (food, clothing, education). Many NTFP studies find that NTFPs represent supplementary sources of income and are in many cases used as security in times of economic constraint (Padoch 1992; Arnold 1996; Neumann and Hirsch 2000)

Findings in Latin America show that both women and men contribute cash income to the household, and that women contribution to household income is approximately fifty percent (FAO 1998). Other studies illustrate that women and men allocate their income differently and that women are more likely to use their income for the common household good (Benería and Roldán 1987; Deere 1990). A common trend in management and pooling of income is not apparent for household in Latin America or Nicaragua, and different households employ varying methods. Income pooling is found

in some areas (Roldán 1988) while in other areas women and men control and manage their own income (Salifios-Rothschild 1988).

*Hypothesis:* NTFPs are considered more a supplementary source of income, and the management of this income depends on who in the stage is the main participant in that NTFP activity.

3. How does the division of labor in the NTFP chains (and within the individual stages) define men and women as conservation stakeholders? And in what ways do they perform conservation?

Most NTFP studies observe that women play an important role in the extraction, production, distribution, and marketing. Depending on the region, women are the main participants in NTFP activities or minor participants. In any case, both men and women engage in NTFP activities (Neumann and Hirsch 2000). Evidence suggests that recognizing the key conservation stakeholders, those people who are influenced by and influence the conservation of the forest, is essential to successful management (Arnold 1996). However, conservation stakeholders are not only the people who directly use the forest. Pressures on the forest come from market demands by consumers and producers (FAO 1995). In addition, direct forest users such as extractors are not the only participants that depend on NTFPs for income and livelihood strategies. For example, a participant who depends on NTFPs for most or all of the household income may represent a more 'important' conservation stakeholder than one who has many different options available for income generation. The inability of NTFP dependent households to access these resources may lead to more destructive activities, such as timber harvesting (Godoy and Bawa 1993). Depending on what NTFP activities men and women perform, their role as conservation may differ.

*Hypothesis:* Both men and women play an equal part in conservation, but participants in stages further along (*e.g.* retail) have less of a role.

These research questions and hypotheses will be discussed in relation to both the broom and basket commodity chain in Chapters 4 and 5 respectively and then compared in the final concluding chapter.

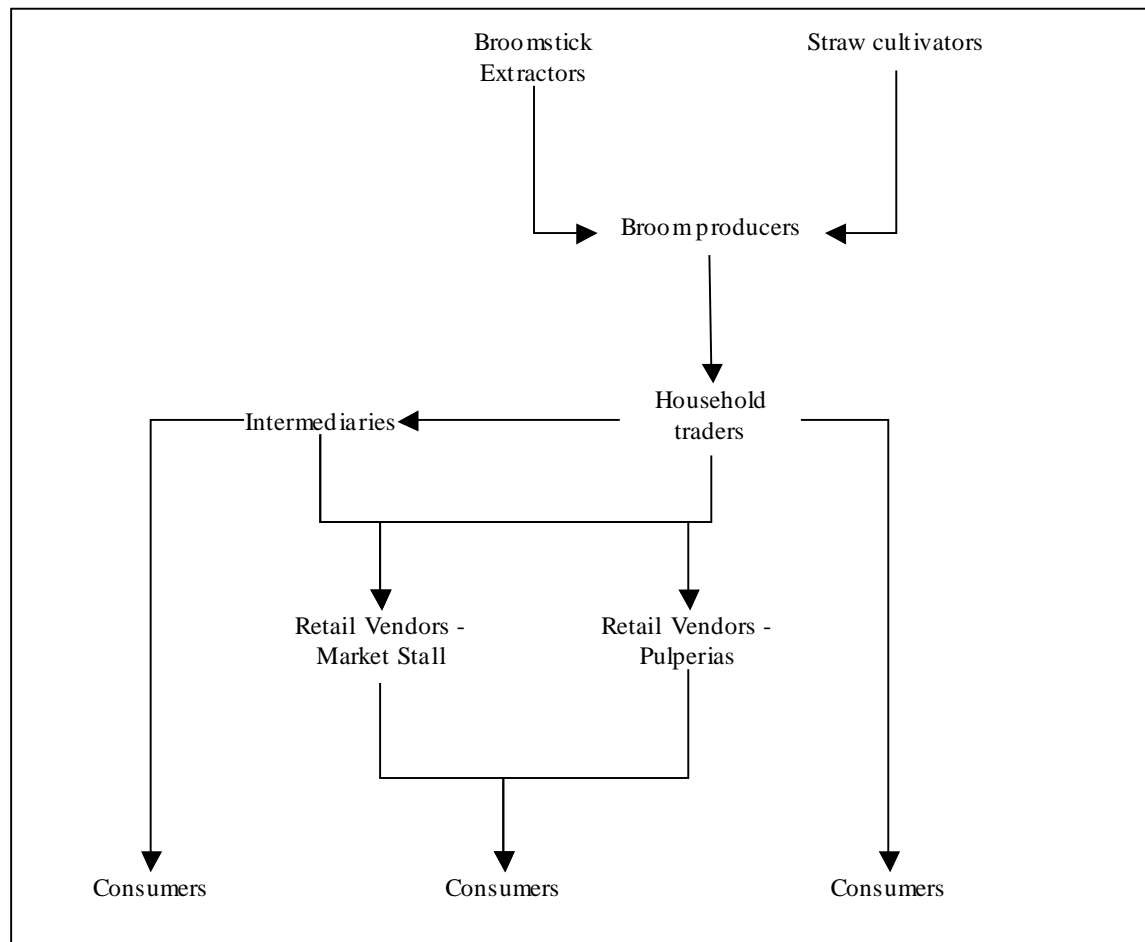
## 4 Straw Broom Commodity Chain

This chapter discusses the results of the straw broom commodity chain. This first section outlines the results and the second analyzes and discusses these results in relation to the literature

### A. Results of the Straw Broom Commodity Chain

This section follows the stages of the brooms commodity chain and summarizes the findings at each stage. I identified six stages consisting of extraction, cultivation, production, household trading, intermediary, and retail vending. Figure 4.1 provides a diagram of the entire chain.

**Figure 4.1 Schematic of the Straw Broom Commodity Chain**



Although extraction and cultivation both involve the procurement of raw materials, I have separated them because they are essentially different methods of acquisition and involve different individuals and actors than extraction. However, I have also categorized cultivation and production separately even though they are in most cases carried out by the same individual and

household. I kept these separate because production and cultivation are different income-generating activities (straw is also used for other purposes aside from broom production).

For this chapter, I have organized the stages under four main headings: raw material acquisition, production, distribution, and retail. Each of these stages involve various participants and the aspects of these stages are organized into four main sections: (a) activities (the specific activities of the stage, location); (b) participation of household members (who in the household participates and the division of labor); (c) household income (the importance of each stage's activities to household income, other income-generating activities and management of income); and (d) other important information relevant to the particular stage. A total of forty-eight participants were interviewed in this commodity chain.

To begin with, I outline the general demographics of the participants<sup>16</sup> of the broom commodity chain. The marital status of participants is summarized in Table 4.1 and the average age in Table 4.2. The majority of participants in this chain are either married or in consensual unions. Both consensual union and marriage are common forms of partnership among the sexes in Nicaragua. The average age of marriage in Nicaragua is twenty (USAID 1996). The average age of participants throughout the broom commodity chain is approximately forty-five years. Extractors on average are younger than cultivators, producers, traders, and retail vendors. Intermediaries are also younger.

**Table 4.1 Marital status of participants in the Broom Commodity Chain**

	Married	Consensual Union	Single	Widowed	Divorced
<b>Broom (N= 48)</b>					
Extractor	3	5	0	0	0
Cultivator	4	1	1	0	0
Producer	6	3	0	0	0
Trader	3	3	0	1	0
Retail Vendor	8	1	2	1	0
Intermediary	3	2	1	0	0
<b>Total</b>	<b>27 (56.3%)</b>	<b>15 (31.3%)</b>	<b>4 (8.3%)</b>	<b>2 (4.2%)</b>	<b>0 (0%)</b>

Note: Due to rounding, does not add to 100%

<sup>16</sup> Participants refers to the men and women that I interviewed in addition to other family/household members who also contribute to the development of the commodity (brooms and baskets).

**Table 4.2 Average age of participants in the Broom Commodity Chain**

	Brooms						
	Extractor	Cultivator	Producer	Trader	Retail Vender	Intermediary	Total
Average Age	37	54	51	50	50	32	45.7

**Raw Material Acquisition**

The production of brooms requires two separate raw materials: broomsticks (derived from the limbs of medium sized trees) and straw (cultivated in agricultural areas outside Reserva Natural Laguna de Apoyo - RNLA). The acquisition of these two raw materials constitutes the first stage the straw broom commodity chain and involves the extraction of broomsticks and the cultivation.

***Stage 1: Extraction*****(a)Activities**

This stage involves the harvesting of branches or limbs from specific trees in the forested areas of RNLA, transportation, and, in some cases, sale of these branches to broom producers. An *extractor*, for the purposes of this research, is defined as a person who harvests or gathers products from the RNLA for household use or resale. Therefore, in this stage, the participants refer to themselves as *extractores de palos de escobas* (broomstick extractor). All of the broomstick extractors identified by our two key informants are male; therefore all of the extractors interviewed are male. The interviews were carried out at the extractors' home in the communities surrounding RNLA or in some cases inside the reserve. At many times children and/or spouses were present, thus representing more of a household interview. Although the extractor responded to the questions, there were some cases where his spouse would elaborate on an answer. A total of seven extractors were interviewed. The extractors interviewed fall into three different categories: (a) those who extract and sell (do not produce brooms); (b) those who extract, sell broomsticks, and produce brooms; and (c) those who extract and produce brooms (do not sell).

The majority of extractors that we interviewed belong to category A (a total of five) – they extracted and sold broomsticks but did not produce brooms themselves. These extractors sell the broomsticks to broom producers and reported that no one else in their households sells

broomsticks. Fewer extractors belonged in category B (two) who extracted broomsticks, sold them as well as produced brooms. None the extractors interviewed belong to category C.

The majority of extractors sell the broomsticks green or freshly cut (see Photograph 4.1). The only “value-added” process they perform is peeling the bark off the entire stick, leaving only approximately two or three inches of bark at the bottom end. This process is carried out inside RNLA right after extraction. The bark is peeled immediately after cutting for three reasons: easy removal of bark while fresh, to remove excess weight, and to prevent any stains from the bark. If the extractor is not able to sell the broomsticks soon after harvesting, then they will set the broomsticks out in the sun to dry and sell later. All extractors interviewed reported that it is usually not a problem selling the broomsticks immediately after harvesting. Broomsticks are sold directly to the producer at an average of eight Córdoba per *docena* (\$0.50).<sup>17</sup> *Docena* refers to a dozen, but very often there are around eight to ten sticks. Extractors only sell the broomsticks by the dozen and not individually.

#### **Photograph 4.1 Broomsticks**



**Photo:** J. McCrary

Extraction of broomsticks occurs throughout the year. Extractors reported an average of three times per week (the responses varied from once a week to six days a week). Each time, approximately nine dozen sticks are extracted in a period of ten hour. In one week, approximately twenty-seven dozen are extracted. Similar to broomsticks, a bundle of brooms is

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<sup>17</sup> At the time of the research, 13.56 Córdoba equalled \$1 US.

considered a dozen, although there may be slightly more or less than twelve broomsticks in the bundle. Each stick is about one meter in length and an average of one inch in diameter. Some extractors stated that sometimes they collect firewood at the same time a broomsticks, although most collect firewood separately. When asked what other products they extract from the reserve besides firewood, the only product mentioned by one household was a small animal (mollusks), sold to local households as a food source.

**(b) Household member participation**

To determine who in the household assists the main extractor, we asked him to identify all members of the family who assisted on a regular basis as well as only occasionally. The results of this question are outline in Table 5.1. As this table illustrates, none of the extractors reported their spouse/partner assisting with the extraction of broomsticks (all were married or in a consensual union). However, spouses/partners were reported to accompany the extractor to collect firewood. Almost all the extractors reported that their sons assisted in extraction. No outside paid help was reported, but one extractor works in partnership with his brother. The responses of the extractors confirmed what several others studies on NTFPs have found, that men tend to carry out extraction (Hecht *et al.* 1988; Neumann and Hirsch 2000). In addition, extraction of broomsticks is considered a ‘male’ activity and involves ‘strength’ to harvest the tree limbs. Women, it is reported, generally do not engage in this activity. However, we did observe the brother team extracting inside the RNLA accompanied by one spouse who was hauling broomsticks. There is no way to confirm whether she had harvested those broomsticks herself or was just accompanying the men to collect firewood, as there was also a young boy carrying a bundle of firewood.

**Table 4.3 Extractors’ response about who in the household assists**

Respondent	Spouse	Son(s)	Daughter(s)	Hired	Other
1	No	Yes	No	No	No
2	No	No	No	No	Yes
3	No	No	No	No	No
4	No	No	No	No	No
5	No	Yes	No	No	No
6	No	Yes	No	No	No
7	No	Yes	No	No	No

(c)Importance to and management of household income

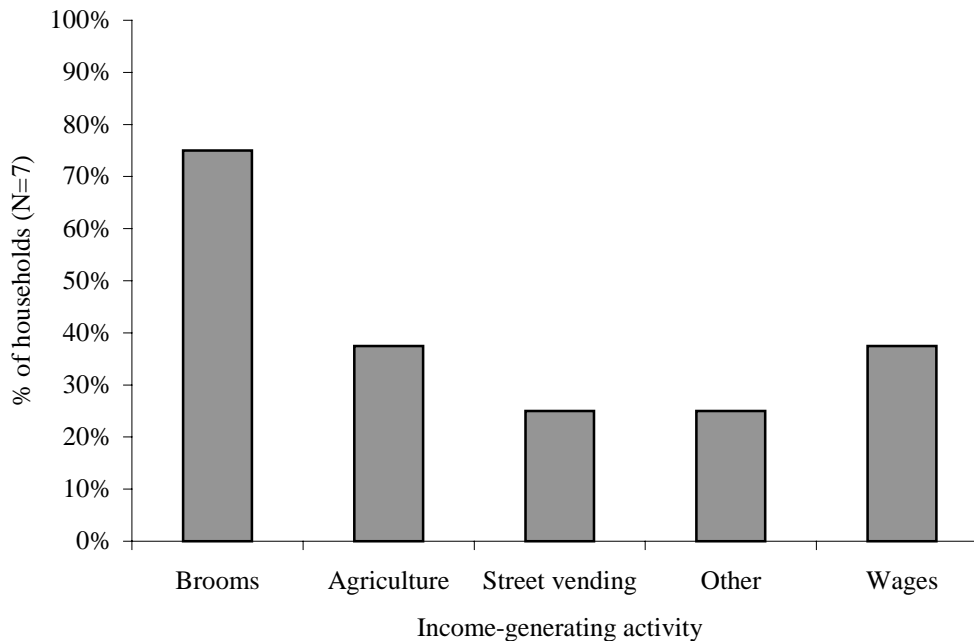
The majority of broomstick extractors do not depend on extraction and sale of broomsticks as their main source of household income. One extractor, Denise, reported that the extraction and sale of broomsticks was one of only two sources of income for his household. He and his spouse lived in a small house down the hill from his parents, and did not consider his parents' economic activities as part of his household. He and his brother had been extracting broomsticks since they were twelve and had created good relationships with several broom producers, being their sole provider of broomsticks. As such, he said that he did not have time to participate in other economic activities, as he and his brother extract on a daily basis and sell those broomsticks almost immediately. He reported that at one time he had tried to produce brooms as well, but because he does not cultivate straw, it proved too expensive. The other main income source is the extraction and sale of small snails from RNLA. These are sold locally household use in stews and soups. His spouse identified herself as the *ama de casa* (housewife) and reported no income generating activities.

Figure 4.1 illustrates the percentage of respondents who identified the different activities as being main sources of household income. The supplementary activities are not shown in this figure – these activities are only those reported as being the main income sources. The majority of extractor households rely on more than one form of economic activity, in fact some rely on more than three. About half of the extractors who sell broomsticks consider this activity one of their main income sources. In most households, agriculture and the production of brooms were considered the other main source. Several of the extractors reported being *mozo de campo* or salaried agricultural laborers. Others rent or own small pieces of land outside the community, usually near Masaya or Masatepe and cultivate *trigo* (straw) and basic crops (yucca, beans, corn).

The other half of the extractors considers the extraction of broomsticks as supplementary income. Three extractors interviewed are located inside RNLA and both they and their spouses are employed as *cuidadores* (caretakers) of weekend homes along the lake. In one case the spouse is employed as the *cuidadora*, while the extractor's main economic activity is agriculture. Although the majority of the extractors reported that their spouses were *amas de casas* (housewives), many of the spouses are also *vendedoras ambulantes* (street vendors) who sell fruit and vegetables from their *patios* (household gardens) in the market as a main cash income.

The roles of women reported by the male extractors corroborate with what are viewed as traditional female roles in Latin America, that is, petty commodity marketing of household goods and domestic work (*ama de casa*).

**Figure 4.2 Main income sources for Broomstick Extracting Households<sup>18</sup>**



Control over household income derived from these sources is a shared responsibility of both extractors and spouse in seventy-five percent of the households interviewed. This means that both the extractor and his spouse/partner share in managing cash income of the household. Only one extractor reported that he alone manages the household income, and another extractor reported that his spouse manages all household income. The shared management of household income is dominant throughout all the stages, as will be shown. This form of income allocation represents pooling, whereby all income-generating members of the household contribute to the common good of the household. This pattern is found in other studies of Latin America (Roldán 1988; Rothstein 1995).

<sup>18</sup> For the definitions of the specific income-generating activities, see Appendix 1.

(d) Other Issues – Ecology and Conservation

There are three main species harvested for broomsticks: *Guazimo ulmifolia* (guácimo), *Tecoma stans* (patre), and *Gliricidia sepium* (madero). When these species are not available, other species such as achote, chaperno, or capulin are harvested. Both extractors and producers reported that the best species for broomsticks is *Guazimo ulmifolia* because it grows very straight with few knots and is a lighter wood. *Guazimo ulmifolia* is harvested most often and at times extractors go long distances to find perfect sticks. The tree shoots from *Guazimo ulmifolia* (and the other two main species) are harvested with a machete near the base of the shoot.<sup>19</sup> As mentioned earlier, the bark is peeled immediately after cutting. Extractors claim that the harvesting of the shoots does not harm or kill the tree, but instead promotes the growth of more shoots. One extractor explained that if they cut the limbs a certain way, it is guaranteed that in a year he will be able to go back to that same tree and harvest another few limbs. He also reported that if too many limbs are cut off at one time then this might adversely affect the tree. Several studies on *Guazimo ulmifolia* and *Tecoma stans* have shown that these species sprout very readily and are able to reproduce from cuttings (Francis 1991). All three of the broomstick species grow in open areas, or medium to low canopied forests (Francis 1991; Salas 1993). They are considered pioneering species and tend to colonize open and disturbed areas. *Guazimo ulmifolia* is a small tree and very shade intolerant, so it is not found in high-canopied forests.

In RNLA, *Guazimo ulmifolia* is found primarily in the north end of the reserve where several open, disturbed areas are located close to the road. There are a few scattered open areas around the edge of the reserve as well. Near the lakeshore, *Guazimo ulmifolia* also grows successfully. Most extraction occurs inside the reserve near the roads. However, several extractors reported that they have to go further into the reserve to find ideal broomsticks; some stated that they have to walk an average of six kilometers further than ten years ago. They walk to open areas less used, as the areas near the roads are used intensely for firewood extraction. *Guazimo ulmifolia* is also considered ideal firewood as it splits and dries easily, and burns well with little smoke (Francis 1991). The extraction of green firewood is illegal in the reserve (only dry, dead wood extraction is legal) (MARENA 1999). Yet, it is estimated that two tons of firewood per day is removed from the reserve - almost all of which is freshly cut and green. The cutting of broomsticks is also illegal, as it is considered green wood, but all extractors stated that they never

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<sup>19</sup> Tree shoots are individual limbs that grow from stumps or partial stumps of certain tree species.

have to pay fines or bribes to the park guard. One extractor responded that the guard is more concerned about timber harvesting.

## ***Stage 2: Cultivation***

### ***(a) Activities***

This stage involves the cultivation of straw, which is utilized for the bristles of the broom. *Granjeros* or farmers carry out the cultivation of straw. In many cases, *granjeros* also produce brooms, however there are those who sell the straw to broom producers. A total of six *granjeros* were interviewed, all male, and the majority produces brooms. Most households in the communities surrounding RNLA are located on an average of one to two acres. There is very little land available to cultivate large crops, therefore many households rent or own land in other areas of the department, which they use for agricultural purposes.<sup>20</sup> For example, one household was given three *manzanas* of land just north of Masaya by the Sandinista government in the early 1980s.<sup>21</sup> This household cultivates corn, beans, yuca, rice and straw on these few *manzanas*. The *granjeros* who cultivate and sell the straw to broom producers usually do not produce brooms themselves.

### **Photograph 4.2 Bundles (*docena*) of straw**



**Photo:** J. McCrary

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<sup>20</sup> A department, or *departamento*, is the equivalent to a state or province.

<sup>21</sup> One *manzana* is equal to 0.7 hectares.

Straw is used for several purposes other than brooms; the seeds are used as concentrated animal feed for cattle, pigs, and birds (*e.g.* chicken). In our discussions with several different *granjeros* and broom producers, most stated that they prefer to grow straw because it is more drought and pest resistant, requiring fewer costs. As well, the seeds can be sold for the production of animal feed and then the stalks used for broom bristles. The *granjeros* who sell their straw to brooms producers obtain about 1400 Córdobas per *manzana*. One broom producer estimated that from one *manzana* it is possible to produce approximately fifty dozen brooms. There are generally two harvests of straw per year. The price of brooms is directly related to the harvest of straw. During the two harvests, when straw is widely available, the price of brooms (and broomsticks) is lower. The price of brooms is highest in March/April when straw is scarce. Straw can be stored for several months, but is usually used to make brooms as soon as it has dried.

(b) Household member participation

In the households interviewed, only three *granjeros* reported that their spouses assisted in the cultivation but that their sons almost always helped. Spouses/partners assist only when there is a need for more labor, such as during seeding and harvesting. In Nicaragua work in *huertas*, the agricultural land where straw and other crops (usually beans, corn and yuca) are cultivated, is generally considered ‘male’ (van der Borg 1994). So the participation of male household members – the sons – is common. The cultivators whose spouses do not assist reported that they hired help during sowing and harvesting. Women, when they do assist in the *huertas* are considered *ayudantes* (additional laborers) (van der Borg 1994).

(c) Importance to and management of household income

There was one *granjero* interviewed who held a position at ENACAL (*Empresa Nicaragüense de Acueductos y Alcantarillados*) the water and sanitation sector of the Nicaragua government. He is responsible for the *aguas negras* (gray or contaminated waters) in the community (he did not go into the specifics of his position). His spouse worked as a preschool teacher in the community. Agriculture and the cultivation of straw is a source of supplementary income. As many *granjeros* are also producers, I have grouped the information on household incomes together with producers, which is described in the production stage.

## **Production/Manufacturing**

The second stage of the straw broom commodity chain is the production or manufacturing of brooms.

### ***Stage 3: Broom Production***

#### **(a) Activities**

The activities at this stage involve the production of brooms from the above-acquired raw materials. The process of broom production is outlined in Figure 4.2. This stage is located in the home in the communities surrounding Reserva Natural Laguna de Apoyo (RNLA). These communities, particularly El Valle, form one of the main broom-producing areas in Nicaragua. There are two types of brooms made in Nicaragua: straw and palm. The palm brooms are primarily produced further north where the *Palma real* is cultivated, such as in Chinandega. While carrying out preliminary research at markets in both Managua and Masaya we found that the majority of straw brooms sold at stands had come from the communities surrounding RNLA. The original sample population for our interviews came from our key informants, but we were easily able to find broom-producing households throughout the area. In total, we interviewed nine broom producers. All except one of the interviewees are male; the one female interviewed we encountered by accident. The older woman, Diamante, was sitting on a small stool outside her house making brooms, with no one else in or around the house. It appeared to us that she was carrying out the entire process. Diamante was very willing to be interviewed but kept stating that her husband was the main broom producer and that she only assisted – she referred to herself as an *ayudante*.

### **Figure 4.3 Broom Production Process**

1. Drying the broomsticks
2. Classifying the straw by stem thickness and length
3. Attaching a nail with wire to the stick just above the bottom portion of the broomstick where the several inches of bark remains
4. Positioning a first layer of straw
5. Attaching this layer with the wire
6. Continuously adding layers of straw until it is sufficiently thick and attaching them with wire
7. Weaving several pieces of string through the straw to flatten it out (see photograph 4.1)
8. Cutting the straw on the top and bottom to even it out.

**Photograph 4.3 Broom production process****Photos: J. McCrary**

On average, households produce brooms three and half days a week (throughout the year) and make six-dozen brooms per day (it takes about five minutes to make one broom when all the materials are prepared). The majority of broom producers make brooms all year and will, if asked, rarely fulfill specific orders from stall vendors.

**(b) Household member participation**

All production of brooms is performed in the home and the majority of the households interviewed identified the male as the main broom producer. But, seven out of nine producers reported that their spouses/partners as well as the son(s) assisted in the process. The son is usually the main *ayudante*. It is considered a family business and is done exclusively in the home. One broom producer hired a young boy to assist him, but this producer is considered a

wealthier member of the community and also owns a large area of land next to his home, which he cultivates.

**Photograph 4.4 Finished straw brooms**

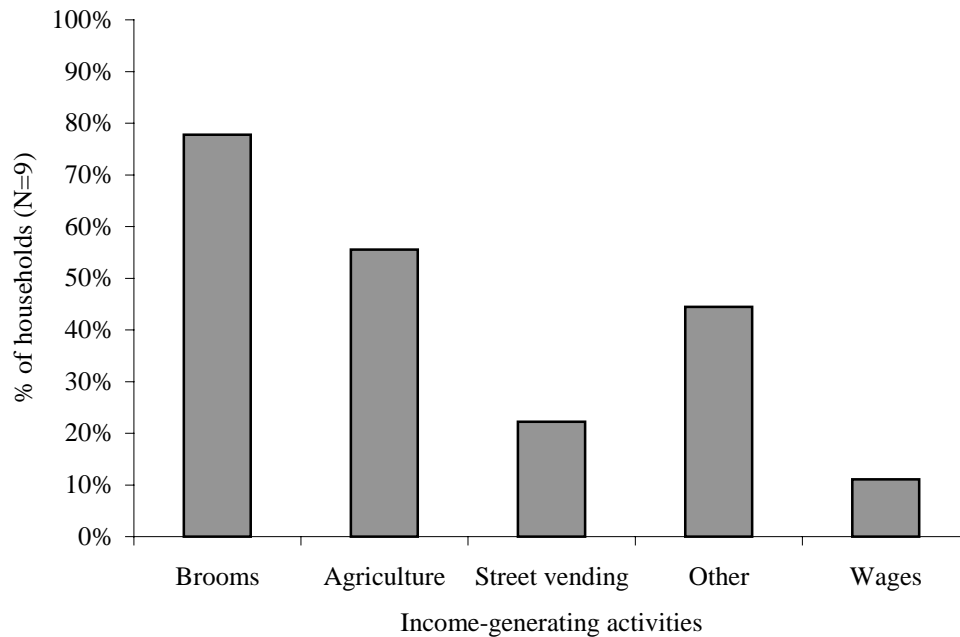


**Photos:** L.J. Shillington and J. McCrary

Many, but not all, producers stated that males perform the entire process, while the women usually only assist with the selection of straw, and the final weaving. In many cases the woman is responsible for purchasing the broomsticks, especially if the main producer is also involved in agriculture. Three of the producers reported that their spouses assist in the whole process. The women are considered, as Diamante declared, *ayudantes* because they assist only on a part-time basis, such as when there is a need to produce more brooms to increase household cash income or when there are specific orders from market stall owners.

**(c) Importance to and management of household income**

Similar to the finding of broomstick extractors, the majority of broom-producing households responded that management of income is a shared responsibility between spouses/partners. Three broom producers stated that they manage the household income. The source of income for broom-producing households is as diverse as broomstick extractors. Figure 4.4 shows the different income generating activities carried out by broom-producing households.

**Figure 4.4 Main income sources for Broom-producing Households**

Once again, agriculture is among one of the main sources, as is street vending of produce from *patios*. No broom producers inside RNLA were interviewed, so *cuidador* was not mentioned as a source of income. All but one household reported brooms as a main source of income. The household not reporting this was the wealthier household who also employed an *ayudante*. In one household the spouse of the broom producer makes *pastes de baño* (or bath scrubs), which contributes to the main income. In a couple households several of the members, both males and females, had opened *zapaterías* (shoe-making and repair workshops). These workshops seemed to be widespread in the communities surrounding RNLA.

The diversification of income generating activities is not as pronounced as in the broomstick-extracting households. In addition, more of the households depend on brooms as a main source. The dependence on brooms as a main source of income is directly linked to the next stage of the commodity chain – distribution. In broom-producing households it is almost exclusively females that sell the brooms. Thus, the contribution of brooms as a main source of income depends on the females of the household marketing/distributing these brooms in markets and streets. This is described in further detail below. Essentially, in many cases, the household may be involved directly in three stages of the commodity chain: cultivation, production, and distribution.

## **Distribution**

The third stage of a commodity chain is the distribution. This involves the delivery of a product to a selling location (*e.g.* a market or store). In the broom commodity chain, this is carried out by two actors (situated at two different stages): household traders and intermediaries. Both household traders and intermediaries also participate in the fourth stage, the marketing or sale of the product to the final consumer. I will discuss both household traders and intermediaries in this section, outlining their participation in both stages.

### ***Stage 4: Household Traders***

#### **(a) Activities and Household member participation**

Household traders are defined as those actors who take the brooms from the home, where they are produced, and sell them to retail vendors, intermediaries as well as directly to consumers. A total of seven household traders were interviewed, all females. In rural Nicaragua, it is tradition that females of the household carry out the sale of goods produced, such as fruit and vegetables from patios, while the men sell products from the agricultural land. The older females in the household sell brooms an average of twice per week. The main market is the Masaya market, which is approximately ten kilometers away from the north side of the reserve, and Saturday is the main day to sell at this market. Some women will sell in Granada, but very few will go directly to Managua because of time (longer bus ride), money (more expensive) and safety issues. Most women do not feel safe selling in certain markets in Managua, such as the Oriental. One woman stated that she prefers to sell in Rivas (over four hours away via public bus) rather than Managua (only one hour away).

An older woman who had been selling brooms for over twenty years told us her schedule of selling brooms. She, and most of the other female broom traders in the communities of RNLA, brings brooms to the Masaya market almost every Saturday morning at six in the morning. There is a small alleyway in between two rows of stalls that serves as the main broom trading location. Here between six and seven in the morning, brooms traders sell the brooms to both intermediaries and retail vendors. If the traders have brooms left over, they walk through the market selling to additional retail vendors as well as consumers. In addition, they will sell outside the markets on streets, walking through both residential and commercial areas, advertising their goods in loud falsetto voices. Some women will only sell on Saturdays, because

that is the best day of the week to sell as most people reserve Saturday for shopping. But many will also sell brooms during weekdays in Masaya and Granada.

**Photograph 4.5 Broom trader selling on the streets of Granada**



**Photo:** J. Gagliano

The broom household traders sell primarily in the Masaya market. This is the closest large urban market and also the easiest to reach. There are direct buses from El Valle to Masaya every hour or two depending on the day. To get to Managua or Granada, one has to take the El Valle-Masaya bus to the main highway and transfer to a Granada-Managua bus. The other option is to go to Masaya and transfer to a Managua bus (or Masaya bus, or any other town). The bus fare is affordable, but household traders usually have to pay extra to have their goods transported as well. It is also much more difficult to transport goods when several bus transfers are necessary. For this reason, the majority of the household traders sell in the Masaya market.

The majority of these women refer to themselves as *vendedoras ambulantes* (street vendors). My daily observations in the streets of Masaya and Granada indicated that there were very few male *ambulantes*; every Wednesday morning, a woman came down the street where I lived in Granada at seven in the morning selling her brooms. She was from a community near RNLA. Along with brooms, she also sold *pastes de baño*, which she purchases from the woman who makes them in RNLA. Several household vendors will also sell other products alongside the

brooms, such as spices, fruits and vegetables. If a broom-producing household has several females who act as traders, then in many cases these females will all sell together a variety of products. In other cases, the females will choose different locations to sell the brooms, that is one sells in Masaya, the other in Granada, and another in Rivas. The younger females tend to travel the longer distances to sell brooms. If they have smaller goods that can be easily transported with the brooms, such as spices and herbs (*hierba buena* or mint, and *manzanilla* or chamomile, were common herbs), they also sell them.

In the Masaya market alleyway, broom traders sell the brooms per dozen. The price depends on the season and the quantity of brooms being purchased. The lowest price reported by traders was fifty Córdoba per dozen during the winter months (July to December). The months of March to May, the price reaches a high of between 100 and 120 Córdoba/dozen. This is due to the low supply of straw. During the other months, the price per dozen is between seventy and eighty Córdoba. When the broom traders sell directly to the consumer, they sell brooms individually. These prices vary with season as well: five Córdoba at the lowest price and twelve Córdoba at the highest. If a retail vendor has requested a special order, then the prices will depend on the quality of the broom ordered. A high quality broom takes more time to produce and is therefore more expensive.

(b)Importance to and management of household income

All of the household traders but two responded that they manage the household income along with their spouses/partners. One broom trader reported that her spouse manages the income. Another broom trader stated that she manages all the household income, as she is not married nor *juntado* (accompanied).

Another women mentioned that she manages the income of brooms and whatever else she sell, then uses this income to purchase all the necessities of the house, including material needed for broom production (nails, wire, rope). Her husband will use the income he produces from the sale of agricultural products such as rice and beans, and purchase some food items for the household. This source of household income is very similar to those of broom-producers outline in the section above, as Figure 4.5 shows.

**Figure 4.5 Main income sources for Broom Traders Households**

Broom traders reported street vending as a main source of income more than producers. This could reflect the gender of these participants. Producers are male and traders are female. The responses reported above reflect that the traders view their activities, primarily street vending, as a main source of household income. In contrast, broom producers consider their activities as the main sources of income, wages and other activities. This reflects what other studies suggest: women's income is utilized entirely for household necessities whereas men's is allocated only partially (Roldán 1988; Benería 1992). As a result of this income use pattern, women may view their income as contributing more to the household than their partners, so consider it a main source of income. In contrast, men may view their income as more important because they tend to earn more (Bruce and Dwyer 1988).

### ***Stage 5: Intermediaries***

#### ***(a) Activities***

Intermediaries are actors who purchase brooms from household traders and at times retail vendors who sell directly to consumers or to other retail vendors in different locations. The broom trade seems to be centered in El Valle, as it was discovered that even some intermediaries are from the communities surrounding RNLA. All of the intermediaries were interviewed in the Masaya market alleyway, and the streets of Granada and Masaya. Seven (four females and three

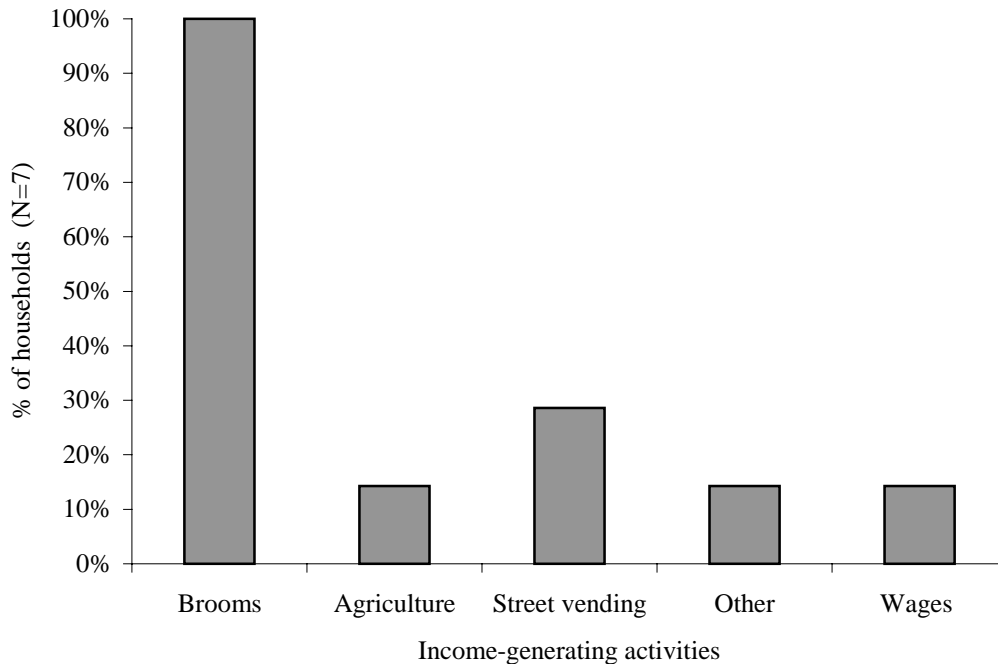
males) intermediaries were interviewed. Three are from El Valle, three from Masaya and one from outside Masaya. In the broom commodity chain, the intermediaries interviewed were equally female and male. All buy the brooms from the Masaya market, even the intermediaries from El Valle. Although the intermediaries from El Valle may be able to purchase brooms cheaper there, they prefer to buy in Masaya to avoid the hassles and costs of transportation. They then sell the brooms to market vendors in several urban centers throughout Nicaragua. None of the intermediaries sell the brooms to retail vendors in the market, only on the streets and to *pulperías* (small corner stores, usually in the front room of a home). Two intermediaries, both women, sell exclusively in Masaya. The others sell in Masaya as well as other locations. Urban centers reported include Managua, Rivas, Carazo, Masatepe, Granada, Diriamba, San Marcos, and Tipitapa (See Figure 3.2 in Chapter 3). The intermediaries did not go into northern towns. One intermediary reported that he had once sold brooms to a man who was going to try to sell them in San Salvador, but does not know of anyone who currently sells outside Nicaragua. Intermediaries also sell brooms directly to the consumer. The brooms are sold from eighty to 150 Córdobas per dozen, or ten to twenty Córdobas per unit, depending on the season and place. Managua is considered more expensive, so brooms are sold at a higher price.

(b) Household member participation

In most of the cases, both spouses sell brooms and there is no other income source. One male intermediary was single and had no spouse nor children while another responded that his spouse is *ama de casa*.

(c) Importance to and management of household income

The sources of income for intermediaries are considerably less varied than in any other stage thus far. All respondents reported the selling of brooms as a main source of income for their households. In four households, the sale of brooms is the only source of income. Some intermediaries also reported that the sale of spices and herbs was as important as the sale of brooms. Only one also participated in agriculture. Figure 4.6 outlines the percentage of respondents reporting the stated activities as a main source of income.

**Figure 4.6 Main income sources for Broom Intermediary Households**

### **Marketing**

The selling and marketing of a product to the consumer is the fourth stage of the commodity chain. In the broom commodity chain there are three different stages at this stage: household traders, intermediaries, and retail vending (stalls in markets and shops). The first two are discussed in the previous stage. Retail vending is outlined below.

#### ***Stage 6: Retail Vending***

##### **(a) Activities**

There are two types of retail vendors: *vendedores de tramos* (market stall vendors) and *pulperías* (small store vendors).<sup>22</sup> We interviewed twelve retailers in *tramos* and *pulperías*, as well as one large supermarket, in both Masaya and Granada. The large supermarket is a locally owned business in Granada and we interviewed the owner, but he was hesitant to give us any personal information. He only answered the questions regarding purchasing and selling of brooms. Because he was not willing to respond to the majority of the questions, his information is not included in the results.

<sup>22</sup> *Tramos* can be divided into three types: *tramo artesanía* (artisan stall – in market), *tramo mercado* (general market stall), and *tramo de calle* (street stall – usually on the sidewalk, or beside the road)

**Photograph 4.6 Stall in Masaya market selling brooms**



**Photo:** J. Gagliano

Both *tramos* and *pulperías* sell a variety of household goods and food. The *tramos* are located in urban markets and are organized by what products they sell. In the Masaya market, *tramos* that sell brooms are located in the housewares department as well as in the hardware section. Brooms are sold along other items such as cleaning items (mops, rags), and rope, wire, nails, and bags (such as potato sacks). In most *tramos*, the straw brooms are sold alongside manufactured imported plastic brooms, which have become major competition. Eight interviewees were *vendedores de tramo*, and of which one is male and seven are female. The majority of stall vendors purchase brooms once or twice a week and usually buys only one or two-dozen each time directly from household traders. Brooms are sold in *tramos* for between ten and fifteen Córdobas each. Most *tramos* only sell brooms individually. One *vendedora de tramo* sells brooms by the dozen if someone wants.

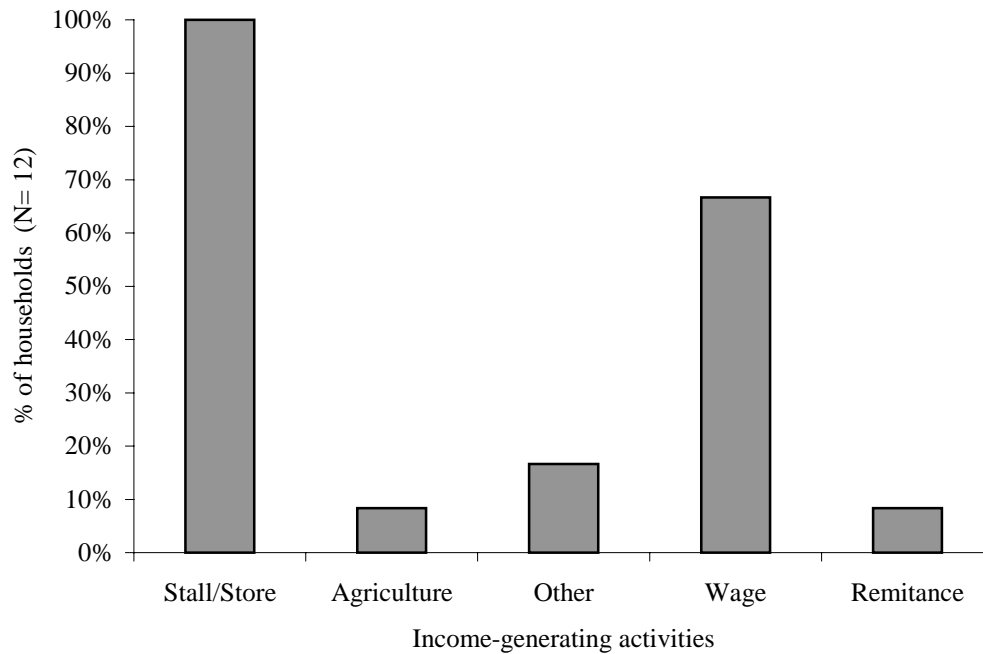
We interviewed three female and one male *pulperías* owners. All the *pulperías* are located in the front part of the home and sell a large diversity of products, including cleaning supplies and packaged foods, fruits, and vegetables. These vendors tend to purchase brooms less often than those of *tramos*, usually once every two weeks, but they also purchased the same quantity. Additionally, they purchased the brooms from both household traders and intermediaries. *Pulperías* only sell brooms individually with prices ranging from ten to twenty Córdobas.

**Photograph 4.7 Brooms in the Mercado Municipal, Masaya****Photo:** J. Gagliano**(b) Household member participation**

*Tramos* and *pulperías* in many cases represent a family business and as such members of a household (or family with multiple households) share the responsibility of working, including children. Some of the *vendedoras de tramo* interviewed reported that their spouses (usually husbands) also operated a *tramo* in the same or different market. The participants who reported more than one main source of income (*i.e.* their spouse worked or participated in another income generating activity) usually operated the *tramo* or *pulpería* themselves with the assistance of their children.

**(c) Importance to and management of household income**

In all of the households, the income from brooms represented a very small proportion, as the stalls and stores sold a large variety of products. The main sources of income for households of retail vendors are the total income from the stall or store, as well as income from other family members. In some cases both spouses operated different stalls in the market, as mentioned above. The *vendedoras de pulpería* are usually females, as the men were employed outside the home. Figure 4.7 illustrates the sources of income for retail vendors.

**Figure 4.7 Main income sources for Retail Vendor Households**

The main sources of household income at this stage do not include any street vending and very little agriculture, as all live in urban centers. Two of the *vendedoras de tramo* are not married and the income from the stall serves as their only source. One female *pulpería* owner has a spouse who is an evangelical pastor (recorded under 'Other'), a son who buys artisan products in Masaya and sells them in Costa Rica as well as a daughter working in Costa Rica as a *domestica* (domestic worker). All the females interviewed, both in *pulperías* and *tramos*, responded that they manage the income the produce and whatever their spouse produced, he manages. The one male interviewed in a *tramo* responded that both he and his spouse manage the income.

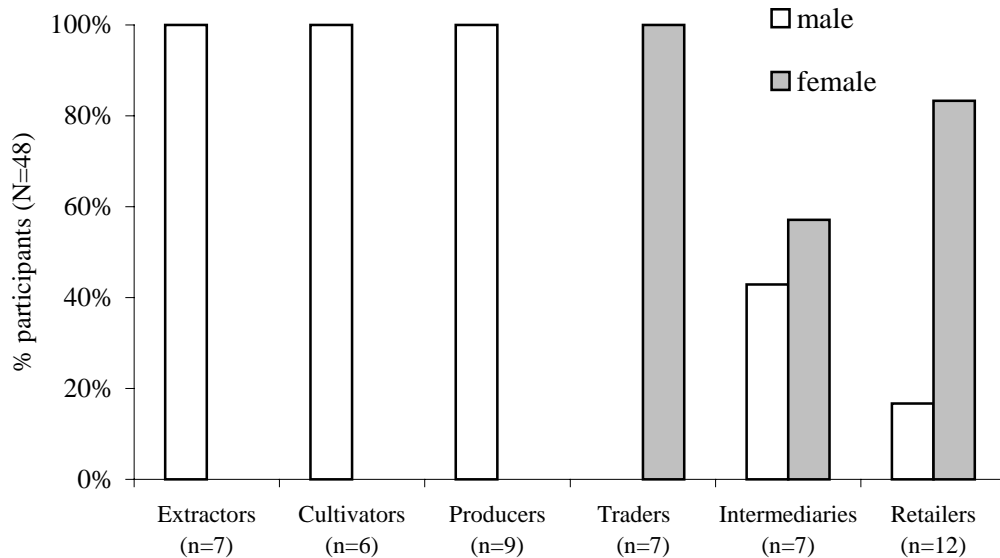
## **B. Discussion of Results**

Four main research questions guided this research and are discussed here in relation the results of the case study. I begin with a discussion of the first research question and move through to the last.

1. What are the roles of women and men at the different stages of the NTFP commodity chain and to what extent do these roles adhere to traditional gender roles?

A graph representation of the main participants interviewed at each stage is illustrated in Figure 4.8.

**Figure 4.8 Sexual division of labor in Broom Chain (main participants)**



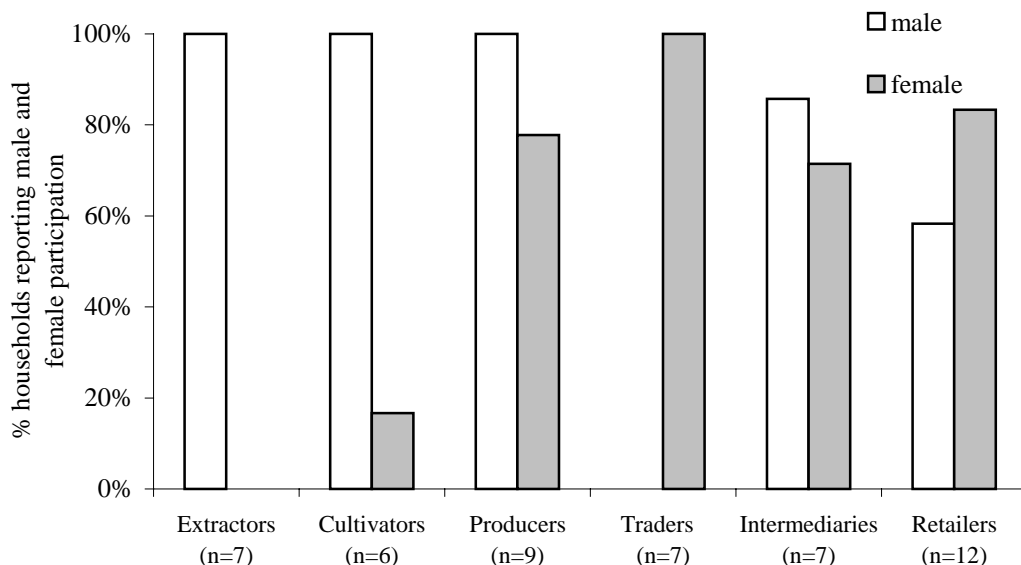
Note: n = number of households at each stage (total 48 households).

This figure essentially represents the sex of participants interviewed. Because I interviewed only men in the first three stages, men represent 100% of participants in the first three stages. In contrast, I interviewed all females in the trading stage, and more women than men in the latter two stages. The rationale for interviewing only females and males at these individual stages is because those participants are considered the main actors.

However, when I examined all the participants at each stage, that is everyone who contributed labor to the activity at the stage (extracting, production, etc), the representation of males and females is altered slightly, as expressed in Figure 4.9. For example, men are considered the main broom producers, but women assist in the end weaving of the brooms. This chart includes those women as participants in the stage. Thus, in the production stage, 100 percent of the households report male participants, and in addition, eighty percent also report female participants. For this reason, the columns will not add up to 100 percent and may in some

cases exceed 100 percent (such as in the production and retail stages where most households report both male and female participation).

**Figure 4.9 Sexual division of labor in Broom Chain (all participants)**



Note: 'n' = number of households at each stage, with a total of 48 households.

In Figure 4.9, there are significantly more males than females at the extraction stage and significantly more females than males at the trading stage (both at 95 percent confidence levels). There is not, however, a significant difference between male and female participation at the other 4 stages (although cultivation, the confidence level is just barely lower than 95 percent).<sup>23</sup>

The most obvious difference between the two figures is at the production stage. While women were not present in the first figure, eighty percent of broom-producing households report that women 'assist' in the process. Overall, in both figures the division of labor follows a similar pattern: men are more represented in the beginning stages of the broom commodity chain and women in the latter stages.

This overall sexual division of labor reflects the different activities of males and females within the individual stages. The cultivation, production, and trading stages reflect this division more than the others. Men and women at each of these stages carry out activities that represent strongly the traditionally defined gender roles in both Nicaragua and Latin America. As van der Borg (1994), Poncela (1996), and Babb (2001) illustrate, women in Nicaragua tend to carry out

<sup>23</sup> For statistical calculations and figures, please see Appendix E.

the majority of household tasks in addition to petty commodity trading (in markets and on streets) of goods and produce from patios. In contrast, men perform activities in *huertas*, the large agricultural land, in addition to wage labor.

Men in the stages of cultivation and production cultivate straw in their agricultural fields and produce brooms in the home. There are several aspects of these two activities that represent the defined male roles in Nicaraguan (and Latin America) culture. First, men in rural households, as pointed out by Flora and Santos (1985) and van der Borg (1994), generally retain titles to agricultural land and therefore make decisions as to what is planted and controls the labor on that land. As such, men are considered the main agriculturalists, even though women participate extensively as laborers, both paid and unpaid (van der Borg 1994; Sachs 1996). The cultivation of straw is considered the responsibility of males in the household because it is part of the agricultural arena. Women are only viewed as assistants in the cultivation of straw, which corresponds to Brydon's (1989) observations that both men and women view women's work in rural agricultural production as help. Extraction of forest products, although not discussed in any of the articles reviewed, could be considered within the realm of agriculture. Several NTFP studies show that men usually carry out the collection of NTFPs (Belsky and Siebert 1998; Mange and Puga n.d. in Neumann and Hirsch 2000). These studies also show, however, that women are the main producers of NTFPs. In contrast, men are considered the main producers of brooms.

Many studies have shown that women generally carry out home-based craft production (Nash 1986; Buechler 1986; Boris and Prügl 1996). Therefore, the dominance of men as main producers at this stage does not conform. Nonetheless, men's role as broom producers is consistent with the defined gender roles in Latin America and to a greater extent Nicaragua. The production of brooms, as reported by the interviewed broom producers, requires a certain physical strength that women presumably do not possess. Only certain activities in the production process are seen as appropriate for women: the selection of straw and process of weaving rope through the straw. Both of these tasks are viewed as tedious, something women are naturally better at dealing with. This corresponds to the definitions of men as physically superior than women and the myth that women are naturally weaker and better adept at detailed tasks (Fernández-Kelly 1983a, 1983b; Bustos 1985; Acevedo 1995; Ríos 1995). The broom producers also claimed that traditionally broom production is carried out by men and that this trade is

usually passed on from father to son. Some broom producers had been producing brooms for over 40 years and considered it very important as part of their role as provider and head of the household, since many of the households are defined by this trade.

Whereas the production of brooms is considered the role of men in Nicaragua, the selling of brooms is the role of women as is most of the petty commodity trading (van der Borg 1994; Babb 2001). The role of women in marketing is common throughout Latin America; such as Babb (1989) and Hays-Mitchell (1993) observe in their studies of market women and *ambulantes* in Peru. Accordingly, the dominance of women in trading and retail vending is consistent with traditional female occupations in Nicaragua and Latin America. Broom producers also view petty commodity trading and market vending as tedious and state that women are better suited for this type of work. Again, this corresponds to the idea that women are ‘naturally’ suited and that they “tolerate tedious, repetitious, and monotonous tasks” (Ríos 1995, 127).

Retail vending, however, is not viewed exclusively as ‘female,’ and in many markets there are both men and women vendors. Brooms are sold both by market stall vendors and *pulperías* (small stores). Market stalls are usually managed as a household (family) business and both males and females in the family, including children, work at the stalls. Although studies of markets and street vendors in Latin America show a difference between the goods that men and women sell, my data does not enable me to examine this in all the different stalls of the markets (Babb 1989; Hays-Mitchell 1993). My findings did not show any difference between what women and men sell alongside brooms. In fact most stalls that sell brooms sell very similar products such as cleaning supplies, hardware, and basic foodstuff. *Pulperías*, however, are managed more by women and as mentioned previously are operated in the front rooms of houses (Babb 2001). The prevalence of women in *pulperías* reinforces the idea that women’s income generating activities are connected with domesticated activities (Babb 1989). In Latin America the home, the private space, is considered female and the traditional roles of women are defined around this space (Scarpaci and Frazier 1993; Bayard de Volo 2001; Guzmán Stein 2001).

The gendered division of labor within and along the broom commodity chain does follow the traditionally defined gender roles within Nicaraguan and Latin American society. Both men and women participate extensively in the NTFP chain, but their participation and prevalence in certain stages is based upon the gender roles of Nicaragua. Some stages can be labeled ‘female’

and others ‘male,’ and these labels reflect how women and men are viewed in Nicaragua, and, as I discuss next, how important the NTFPs are to the households at each stage.

2. To what extent do households depend on NTFPs, specifically, are these NTFPs significant sources of household incomes? And how is NTFP income and household income in general managed (i.e. who maintains control over the income)?

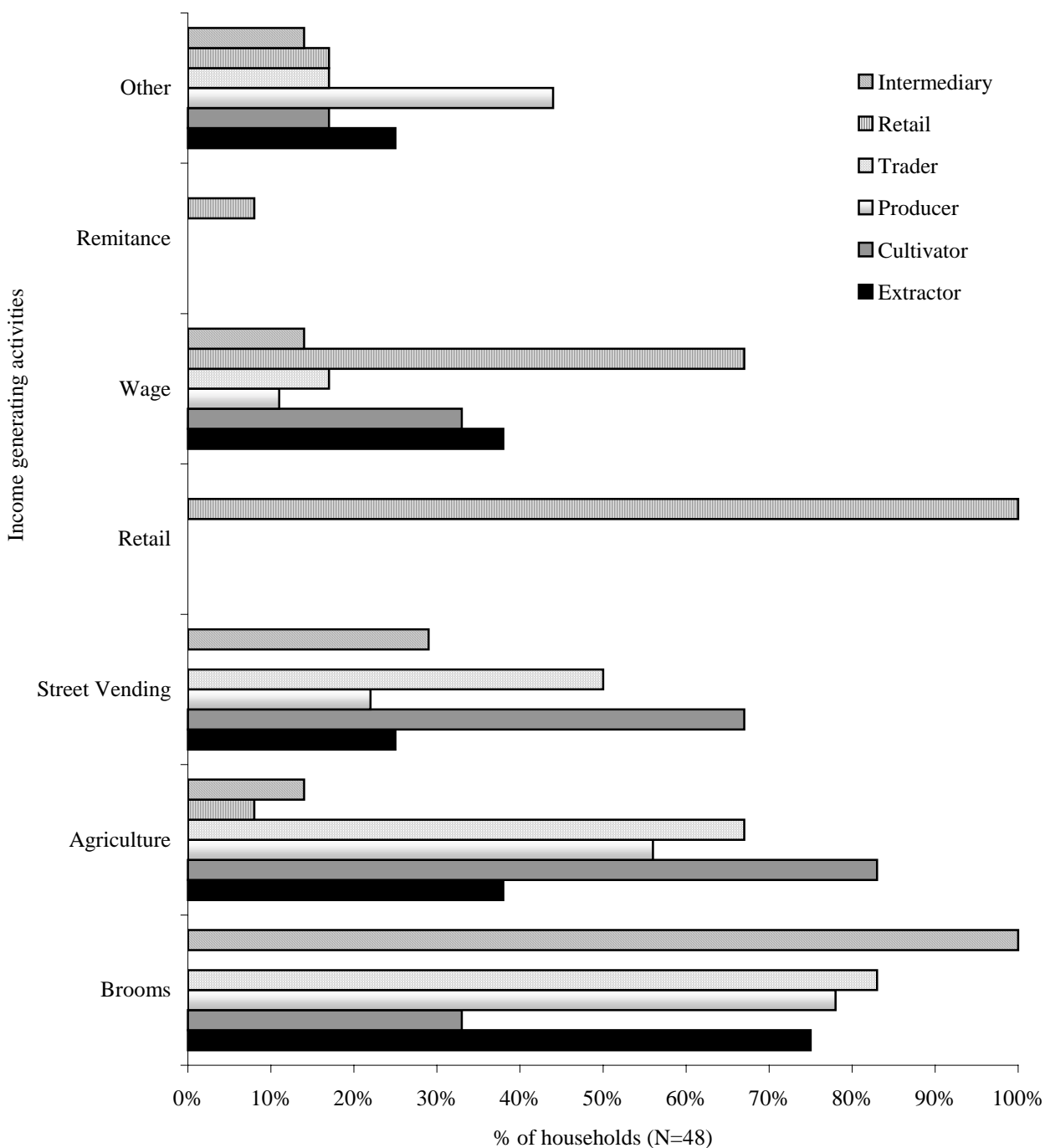
Before discussing the results of this research questions, a review of the definitions of income sources is necessary. ‘Primary’ source of income is the activity that provides the highest proportion of household income. ‘Main source’ of income means any income generating activity that members of the household perform throughout the year, whether on a daily or weekly basis. ‘Supplementary’ income is from activities that are undertaken only at certain times of the year (seasonally) or on a need basis. All activities reported represent those that contribute to the household; they do not include incomes of family members not contributing to the participant’s household. However, if a relative or friend living outside the household (in another region of Nicaragua or abroad) sends money to the participant’s household, then this is considered part of the household income.

The majority of households, from extraction through to intermediary stages, reported brooms as one of their main sources of income. The retail vendors, both market stall and store did not report brooms even as supplementary because brooms are only one of many products sold and represent only a small portion of the total income of the stall or store. These participants reported their store or stall as either the primary source of income or one of the main sources of income for their households. Common to all participants was that they reported multiple main sources of income; very few households depend on only one primary income. Figure 4.10 illustrates the percentage of households reporting different income-generating activities considered main sources.

Households in the broom commodity chain represent what Rothstein (1995) calls multiple income strategies. The retail stages report less sources of income than other households, usually reporting on average only two per household. Households in the extraction, production, and trader stages reported on average four different main sources of income carried out by household members. It has been noted in other studies that poorer households depend on many sources of income and that both men and women contribute income (Rothstein 1995; Hamilton 2000; Babb 2001). Most participants, aside from many retail vendors, are among the poorest in Nicaragua.

Employment options are limited in Nicaragua and as such most households do not have the ability to survive solely off their agricultural earnings or wage labor. This is most likely the situation with many poor households throughout Latin America, as Rothstein (1995, 169) notes in her study on rural Mexico. She states that most households depend on the incomes from a variety of different income generating activities. This multiple income strategy is evident in households in the broom commodity chain. Brooms are considered among one the main sources of income for most families at the beginning stages of the chain. This finding contradicts some previous studies which show NTFPs as supplementary activities that account only for shortfalls in income (Neumann and Hirsh 2000). These results do, however, support the argument of Browder (1992) who states that although many households obtain a large percentage of cash income from NTFPs, very few depend on them exclusively. The only participants that reported brooms as the primary (and only) source of income were intermediaries.

In their study of NTFP usage among the Sumu Indians of Nicaragua, Godoy et al. (1995) observe in general that as incomes decline, the reliance on income from NTFPs increases. Intermediaries may represent some of the poorest households along the chain, although my data do not enable me to make any exact calculations on the economic ranking of households along the chain. Some NTFP studies find that intermediaries tend to be wealthier than extractors or traders, and are often viewed as exploitative (Padoch 1992; Peluso 1992). However, these studies also examine internationally traded NTFPs which involve a complex set of relations between extractors, producers, and traders, with intermediaries acting as liaison between the stages. In the broom commodity chain this is not the case; intermediaries are not liaisons between stages, but serve as an expansion of the traders roles. Intermediaries distribute the brooms to locations where traders do not sell.

**Figure 4.10 Main income sources for stages in the Broom Commodity Chain**

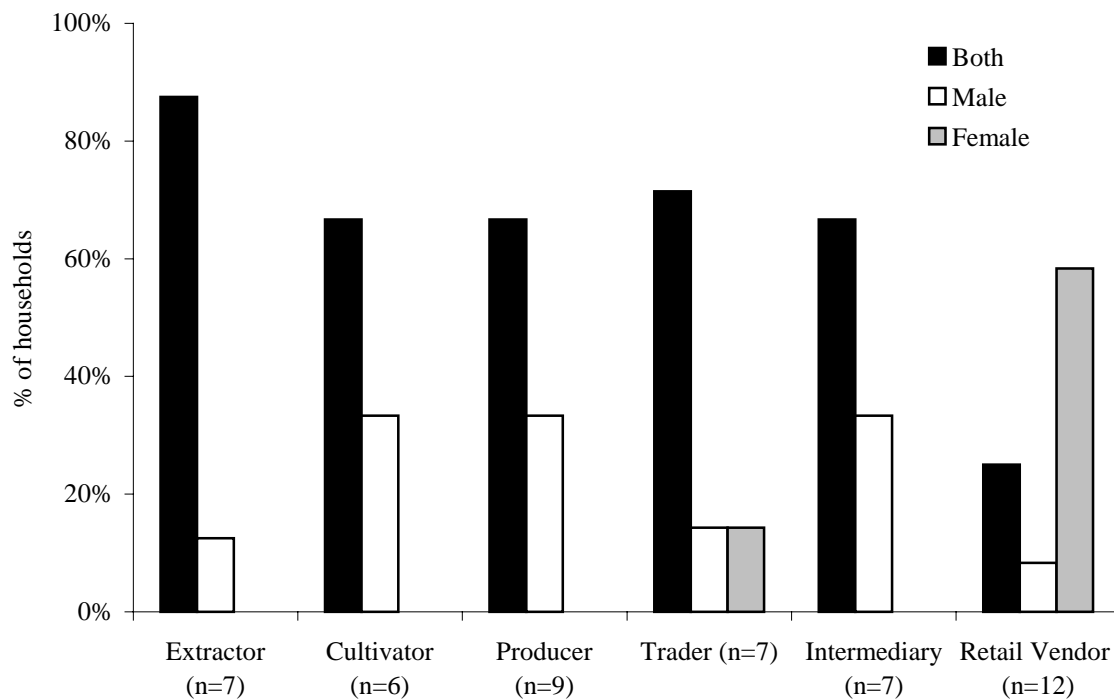
In terms of management of household income, in all stages the majority of participants, both men and women, reported that both partners manage income together. These results are displayed in Figure 4.11, which shows the percentage of households reporting that women, men or both manage household income. From this figure, it is revealed that the majority of

participants responded that both management household income. The usual response to the questions was “*ambos*,” or both. One woman’s response sums up the bulk of the responses:

“*Trabajamos de manera individual; él maneja lo que es suyo y yo lo que es mía.*”<sup>24</sup>

Thus, these responses correspond to the previous studies that find women and men control their individual income and then utilize it for common household expenses (Salifios-Rothschild 1988). Broom income is usually under control of the household trader – women. Because these women sell the brooms that men produce, they obtain the cash income directly. Most traders stated that they use this income immediately to purchase household necessities such as food and clothing in addition to supplies needed for the production of brooms (nails, rope, wire). This pattern is similar to those in other studies that report women are more likely than men to spend all their income on common household goods (Benería and Roldán 1987; Rothschild-Rothschild 1988; Deere 1990). Broom producers obtain their income from the sale of agricultural products from the *huertas* and wage income. This income is used to purchase food for the household (usually larger bulk items such as rice and bean) as well as for needed agricultural inputs and rents.

**Figure 4.11 Management of income in Broom Commodity Chain**



Note: ‘n’ is the number of households at each stage, with a total of 48 households

<sup>24</sup> We both have our own work; he manages what he makes and I manage what I make.

These findings concur with those outlined by van der Borg (2001), who notes that in rural Nicaragua women bring in cash income from the sale of home-produced goods and garden surpluses while men have access to the majority of income from wages and farm produce. I had hypothesized that the management of the broom income would depend on who in the stage is the main participant in that NTFP activity. In the broom commodity chain, this did not bear out. In some cases people in the same household carry out the first several stages. Men carry out broom production in the home and then their spouses or partners sell these brooms in the market. Although men are the main producers, they do not sell the brooms to household trader thus never collecting income from the brooms. Instead, the household traders sell the brooms and collect the cash income themselves. Therefore, control over cash income in the broom commodity chain depends on who is in control of the marketing. Three assumptions emerge in the broom commodity chain: brooms are a main source of income for the majority of households along the commodity chain; although men produce the brooms, women ultimately gain control over the income earned; and household income is managed by both men and women in the household.

3. How does the gendered division of labor in the NTFP chains and individual stages define the gendered roles in conservation?

To address this question, we need to first look at the participants in the extraction stage, as they are the direct-forest users. Men are the dominant extractors of broomsticks. These participants did not report that their spouses/partners assisted in the process. However, I observed that in one case this was not so and that the spouse of one extractor assisted in the process. Most extractors claimed that if their spouses/partners joined them on extraction excursions, they only collect firewood and not broomsticks. Van der Borg (2001) notes that in rural Nicaragua both women and men engage in the collection of firewood; women collect firewood more frequently for immediate household consumption while men tend to collect in large quantities both for household consumption and to sell. Women at both the extraction and production (and therefore household trading) stages collect firewood, and because stages are located in the region directly adjacent to Reserva Natural Laguna de Apoyo, both men and women represent key stakeholders in the conservation of the reserve. As the chain progresses, households depend less on the forest directly. As the income from NTFPs becomes less

significance for households, the dependence on forests decreases, as I have discussed above. Therefore, participants at the retail stages are not key stakeholders in conservation.

In the broom commodity chain, although extractors directly depend on the forest for portions of their income, female traders further along the chain also depend directly on the forest. Brooms serve as a main source of income for the household, and traders obtain and control this income. Because these traders are women, it can be presumed, based on previous studies, that this income is spent almost entirely on household necessities. Income from extractors, because they are male, may be spent only partially for the household. Thus, the household of the trader may depend more on the forest through the income of that NTFP, than the extractor's household.

Although both men and women are key stakeholders in conservation, it does not mean that their activities encourage conservation. All extractors that I interviewed commented that there is a specific way to harvest the broomsticks without harming or killing the tree. They were very aware that certain methods would prevent them from harvesting from the same tree. Only certain trees are considered ideal for broomsticks and in the past several years extractors have had to go further to find the ones with the straightest limbs. Because of this, many extractors are very mindful of how they cut so that they are able to return to the same tree several times a year. Unconsciously, these extractors are promoting conservation. Whether their activities are sustainable would require ecological assessments of the forest.

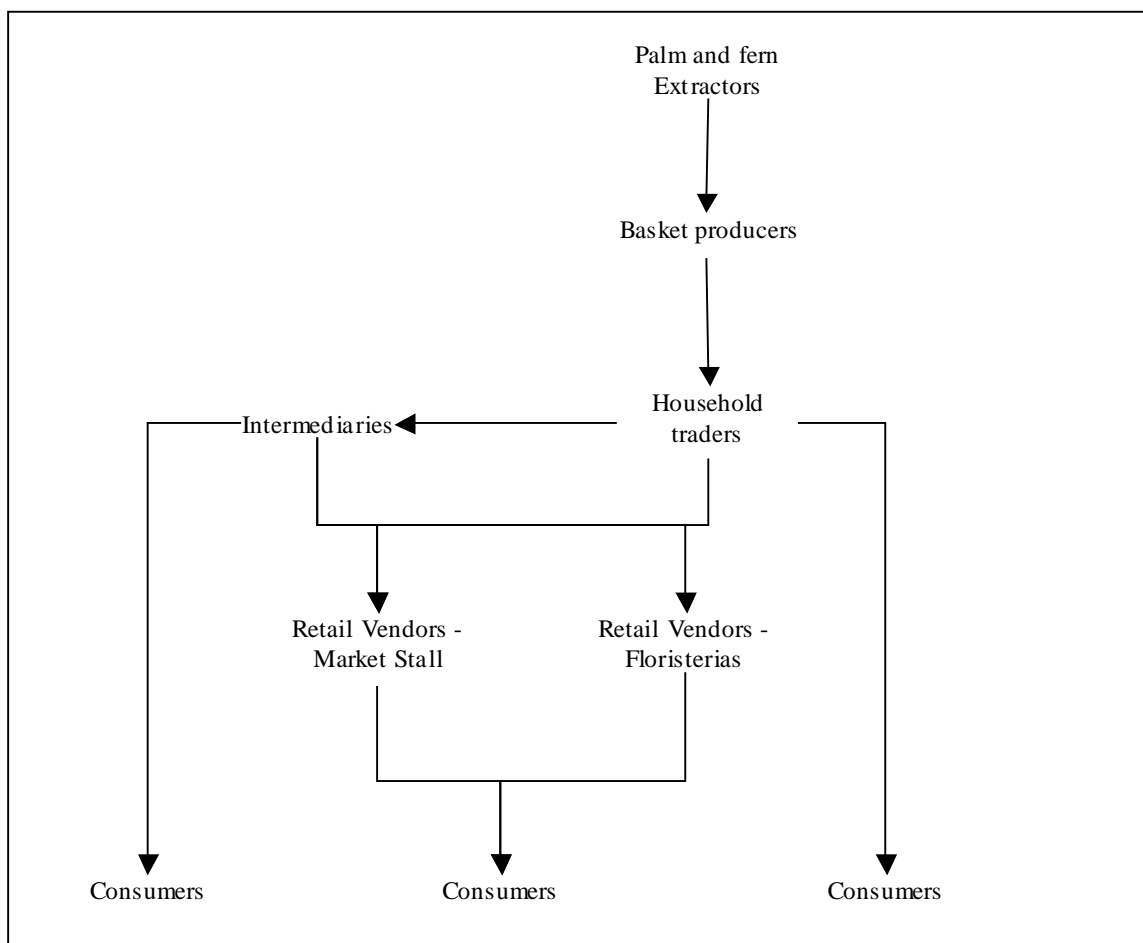
## 5 Coco/Fern Basket Commodity Chain

This chapter discusses the results of the basket commodity chain. This first section outlines the results and the second analyzes and discusses these results in relation to the literature.

### A. Results of the Basket Commodity Chain

Following the identified stages of the basket commodity chain, this section summarizes the results. There are five stages consisting of extraction, production, household trading, intermediary, and retail vending. Figure 5.1 provides a diagram of the entire chain. Identical to the previous chapter, these are organized under four main sub-sections: raw material acquisition, production, distribution, and marketing.

**Figure 5.1 Schematic of the Basket Commodity Chain**



This chapter is organized in a similar manner to Chapter 4, with the results separated into four main subsections: (a) activities (the specific activities of the stage, location, who was interviewed and how many); (b) participation of household members (who in the household participates and the division of labor); (c) household income (the importance of the stage's activities to household income, other income-generating activities and management of income); and (d) other important information relevant to the particular stage. The categories of income-generating activities follow the definitions given in the previous chapter.

In all stages of the basket commodity chain five households (a total of twenty-six participants) were interviewed. The only two stages that are not carried out by members of the same household are the retail vending and intermediary. All of the basket-producing households were part of the Ramírez family, except one (who had learned from the Ramírez's). Three of the households interviewed lived within ten meters of each other while the other two households were roughly one kilometer away each in opposite directions. The relation is three brothers and a sister; they were all taught how to make baskets from their brother, Jorge.

As in Chapter 4, I begin with the demographics of participants. Table 5.1 outlines the marital status of participants. The majority of participants in this chain are married. In contrast to the broom commodity chain, there is a larger percent of single participants. This is explained by the fact that the main producers of baskets are younger women in households – this is also evident in table on participant ages.

**Table 5.1 Marital status of participants in the Basket Commodity Chain**

	Married	Consensual Union	Single	Widowed	Divorced
<b>Basket Commodity Chain Participants (N = 26)</b>					
Extractor	4	1	0	0	0
Producer	2	0	3	0	0
Trader	4	1	0	0	0
Retail Vendor	7	1	1	1	0
Intermediary	1	0	0	0	0
<b>Total</b>	<b>18 (69.2%)</b>	<b>3 (11.5%)</b>	<b>4 (15.4%)</b>	<b>1 (3.8%)</b>	<b>0 (0%)</b>

Table 5.2 shows the ages of the participants interviewed. The average age of all participants in the basket commodity chain is around thirty-five years, significantly younger than the average age of those participating in the broom commodity chain

**Table 5.2 Average age of participants in the Basket Commodity Chain**

	Baskets					
	Extractor	Producer	Trader	Retail Vender	Intermediary	Total
Average Age	32	23	37	49	n/a	35.3

### **Raw Material Acquisition**

#### ***Stage 1: Extraction***

##### **(a)Activities**

This stage of the basket commodity chain involves two raw material inputs: fern (the vine or stem) and coconut palm leaves. These two raw materials represent two different activities within Stage 1, as did cultivation and extraction in the broom commodity chain. However, unlike the stages in the first stage of the broom commodity chain, the same actors carry out the extraction of coco leaves and fern usually at the same time. Therefore these stages will be described together in this section. As mentioned above, there were five household interviewed in this stage (and the following three). All the interviews were located in the participants' homes in El Chilamate and El Valle de La Laguna.

The timing of extraction is crucial to the production process. All material has to be green for the production stage. If the material is dry, it does not weave properly and breaks. Therefore, extraction has to be carried out the day before or the morning of production. Both the fern and coconut palm leaves are extracted from within Reserva Natural Laguna de Apoyo (RNLA). Although coconut palm leaves can be found in many other areas, it is usually collected with the fern to save time and to make sure that the materials are not too dry for basket production. The average amount of the fern (*Lygodium venustum*) extracted each time is about twenty to thirty *rollos* or rolls (each roll has an average of one-hundred vines of varying length). For one dozen medium sized baskets (e.g. fruit baskets) it takes twelve large rolls of fern. The fern is used for the *fondo* (bottom) of the basket.

The veins of the coconut palm leaflets are used to weave the main body of the basket. The entire palm leaf (or *frond*) is extracted and then the individual leaflets are cut and bound for transport. The stems of the frond are also used to make a star shaped base with which to weave the fern. An average of ten to thirty dozen-palm leaves are collected at one time.

(b) Household member participation

In basket-producing households, members of the households carry out all but the end stage. This means that members of the same household do all the extraction, production, and distribution. In most basket-producing households, each member has a different “duty.” The older female of the household usually carries out the extraction of both coco palm leaves and fern. For example, in the Molina-Ramírez household, the mother extracts material, makes baskets as well as sells them. She is considered the main extractor and trader, and an *ayudante* in the production process. In the Cabrales-Ramírez household, it is both the mother and father who extract the raw materials. One household, it was the daughters who extracted the material as well as produced and sold the baskets. The parents assisted in the production: the father peeled the coco leaves and the mother assisted in finishing the baskets (cleaning them up for sale). We interviewed one basket producer who carried out the entire process himself and did not have assistance from anyone else in his family.

(c) Importance to and management of household income

The main sources of income for these households will be discussed in the section on household traders.

(d) Other issues – ecology

The fern collected in RNLA has been identified as *Lygodium venustum*.<sup>25</sup> This is a species of climbing fern that grows primarily in disturbed areas of secondary forests, at the edge of roads, in pastures, and gallery forests, and usually grows over trees and shrubs. This species of fern is ubiquitous in tropical America and is considered very weedy. It is by far the most abundant species of *Lygodium* in the Americas at low

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<sup>25</sup> Herbarium staff at *Universidad Centroamericana* identified *Lygodium venustum* and all information on the ecology *Lygodium venustum* is from personal communication with Dr. John Mickel at the New York Botanical Garden (January 2002).

elevation. When we interviewed extractors of fern, they all reported that there is no shortage of this specie in RNLA and even though they pull the roots out when they collect, it continued to grow back thicker.

**Photograph 5.1 *Lygodium venustum* outside Cabrales-Ramírez home**



**Photo:** L.J. Shillington

The palm leaves collected are from the coconut palm *Cocos nucifera*. It is not a native species and does not grow wild in the reserve, but grows abundantly on the private property (weekend homes) surrounding the lake. The *Cocos nucifera* leaves are extracted from RNLA as well as from surrounding areas. In most cases, the caretakers of the property inside the reserve will allow these extractors to collect palm leaves for free, as it saves them the trouble of pruning up the trees. Pruning or trimming the palms encourage increased fruit production, which many caretakers harvest and sell in the markets. There are certain times where the extractors have to pay a small “fee” for taking the palm leaves. This is usually about five to fifteen Córdoba per dozen (depending on the property).

**Production/Manufacturing**

***Stage 2: Production***

**(a) Activities**

As with broom production, the entire process is located in the home. Most producers work an average of four to five days a week and produce approximately fifteen dozen baskets per week. The production of baskets is continuous all year in all but two

households. These households produce baskets the last five months of the year. The highest demand for these baskets is in November and December, during the Christmas season. Because of this, some of the households only produce baskets during these months, while others just increase production.

The production of baskets occurs in several different segments. First, the material must be prepared – processing of raw material. This includes peeling the veins from the coco leaves, cutting the leaves off the fern vines, and cutting the palm leave stem into long thin strips to be used as the weaving base.

**Photograph 5.2 Cutting *Cocos nucifera* leaves**



Photo: J. McCrary

**Photograph 5.3 Weaving the *fondos* of baskets at home**



Photos: L.J. Shillington and J. McCrary

#### (b) Household member participation

In some households, different family members carry out these segments. Figure 5.1 illustrates the distribution of household members (by total number of members who participate in the process) in all five households interviewed<sup>26</sup>. In one household, the father's only part in the basket production is to peel the coco veins. The daughters in this household carried out the rest of the process with their mother assisting in the final stages. In another household, the two daughters carried out the whole process along with their brother. The mother assisted as well, when she was not selling or involved in another activity. There was a younger daughter who tried to help, but was not yet fully integrated into the process. What is interesting in this household is that all of these children attend school and produce baskets when classes are adjourned; in the above-mentioned household neither of the daughters were still in school. In the household where the male was the main extractor, producer, and trader, his spouse assisted during busy times (October through December), but her primary economic activity was as a beautician in the Masaya market.

One male household member explained to us that the men are involved only in the first few segments of the basket production process because those tasks are less time-consuming and detailed. He said that men do not have the patience to weave baskets, as it requires a lot of dedication and detail. Figure 5.1 shows that this is true in almost all households (there is only male who carries out the entire process); females and younger males carry out the majority of the work.

#### (c) Importance to and management of household income

The main sources of income for these households will be discussed in the following section on household traders.

#### (d) Other - History

The technology of producing baskets from the veins of coco palm leaves was taught to two adolescent boys in the RNLA area by an El Salvadorian couple. These boys were taught how to prepare the coco leaves and how to weave them into baskets. The couple

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<sup>26</sup> Note that this does not represent the total number of household members, only the number of members involved in the process (even occasionally). Some households had members that did not assist at all, such as very young children or older relatives.

taught only one style of basket, *frutera* (fruit basket). The original design used the coco palm leaf veins for the base as well. It was one of these boys, Jorge Ramírez, who discovered that the fern growing all over RNLA could be used to make baskets

**Photograph 5.4 *Frutera* style basket**



**Photo:** L.J. Shillington

. He experimented with several other types of vines, but found that this species of fern formed a stronger base than the coco palm leaf and does not become brittle when dry. Jorge also fabricated several other styles of baskets and taught the process to several members of his family, who are one of only two families that produce baskets in the communities surrounding RNLA. The other adolescent boy did not pass on this knowledge and no longer produces baskets himself. There are five households in the Cabrales-Ramírez family for whom baskets are a main income source. The other household that produced baskets is Guitar, and only by one male in the household. One of the daughters in the Cabrales-Ramírez household has designed several different styles of baskets and as such that household produces more styles than all the others combined (fifteen versus six different styles).

**Distribution**

The distribution of coco/fern baskets is carried out by household traders (women in the basket-producing household) and intermediaries. Similar to the broom traders, the

basket trader women sell both to retail vendors and intermediaries as well as directly to the consumer. The intermediaries in this commodity chain only sell to retail vendors.

### ***Stage 3: Household traders***

#### ***(a) Activities***

Traders sell these baskets to *tramos*, roadside stands, and *floristries* (flower shops). The main markets for these traders are the Masaya market and Huembes market in Managua, both known to have the largest artisan sections in Nicaragua. Masaya is known as the *capital de folklórica* and handicraft center in Nicaragua. *Mercado Oriental* in Managua is the other main market for basket traders, although this is known as one of the more dangerous markets and traders are reluctant to go there. The male household trader is the only basket trader who routinely sells at this market. Many of the *floristerías* in Managua are located near the Oriental. Only three of the households sell baskets to *floristerías*, and mainly in Managua. These three households also produce baskets for specific orders (*en cargo*). Special orders are usually requested by *floristerías*, but some *tramos* will also request certain styles of baskets that sell well. Because the production of baskets is dependent on when fresh material is obtained, the selling of baskets is based around this. All of the household traders reported that they usually sell twice a week, three times a week if they have additional baskets or if there are special orders. Three households sell in both Masaya and Managua, while the other two sell exclusively in Masaya.

#### **Photograph 5.5 Baskets in route to Managua for sale**



**Photo:** L.J. Shillington

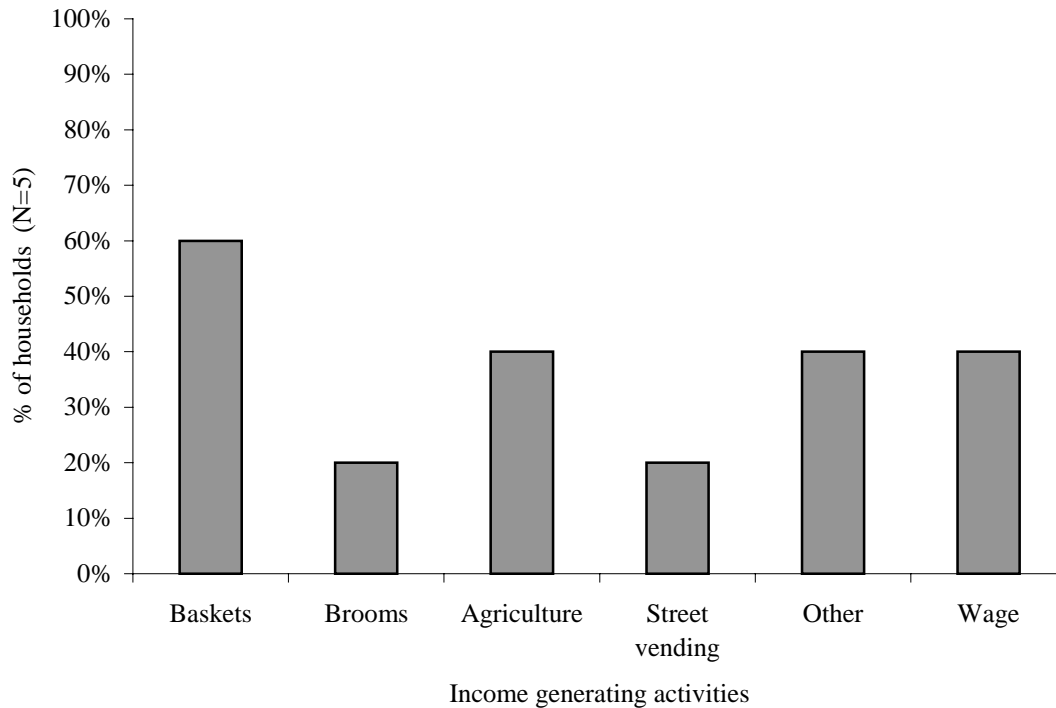
Generally, household traders sell baskets by the dozen and the prices of the baskets depend on the styles. The average price of one dozen baskets ranges between twenty and 240 Córdobas (or US\$1.45 and \$17.50), depending on size, style, and degree of difficulty (usually measured by the time required to make one basket). If the basket traders are able to sell the baskets individually, they do and the price per basket ranges from five to twenty-five Córdobas (or \$0.35 to \$1.80), again depending on the size and style.

(b) Household member participation

The older female in all but one of the households takes the baskets to various markets and sells them. In one household the male partner carries out all stages of the basket production, including trading. Some household traders reported that they are usually the only ones who sell. If they are unable to go and have older daughters at home, then the daughters will assist. In one household the female spouse shared the trading duties with her eldest daughter.

(c) Importance to and management of household income

Household income sources for basket-producing households varied with household. All of them depended on baskets as a main source of income. Figure 5.2 below outlines those different sources of household income.

**Figure 5.2 Main income sources for Basket-producing Households**

Two of the households cultivate straw and produce brooms. Only one house mentioned the selling of fruits and vegetables as an income source. The other sources of income included an accountant (the older male), hairdresser (spouse of the male basket producer), and *zapatero* (shoe-repair/maker).

#### ***Stage 4: Intermediaries***

Through our interviews with household traders, we were told that there are two intermediaries, who buy and sell baskets, and they only sell the baskets outside Nicaragua. The household traders are the only local distribution channels in Nicaragua. These traders do not sell to any intermediaries who then sell the baskets to stores or stall vendors. One household trader, Esperanza Molina, provided us the name of a woman who sometimes buys coco/fern baskets to sell in Costa Rica. We went to her home in Masaya and talked to her about selling baskets in Costa Rica. She purchases the baskets from one of the household traders in RNLA and then sells them in Honduras and Costa Rica (more in Costa Rica because of the distance). She purchases three or more dozen baskets, of only two styles, roughly ten times throughout the year. The number of times

she purchases depends on how much she sells. In Honduras and Costa Rica, she sells the baskets at temporary *ferías* (fairs). These fairs are set up at certain times of the year for importers to sell their goods. In Honduras, she only goes to the capital – Tegucigalpa, while in Costa Rica she sells in several large urban centers. The prices for baskets in Costa Rica range from 400 to 600 Colones<sup>27</sup> per basket (\$1.15 to \$1.80). In Honduras the prices are approximately the same. Along with the baskets, she sells clothes and shoes which she and her spouse manufacture in their home. Baskets are only an additional item that she sells with her main products, being clothes and shoes. Thus household income is derived from the sale of clothing and shoes as well as smaller items.

### **Marketing**

Retail vendors constitute the participants at Stage 4 of the basket commodity chain, as described below.

#### ***Stage 5: Retail Vendors***

##### **(a) Activities**

There are two types of retail vendors who sell baskets in Nicaragua: *tramos artesanía* (artisan market stall) and *floristerías* (flower shops). The Masaya market has a large artisan section and is frequented by many locals and tourists. In Managua, the main artisan market is Huembes (this is the main market for tourists), although there are also artisan sections in Oriental, Israel, and Iván. *Floristerías* are found throughout all of the main urban centers as well as in the markets. The majority of household traders sell to *floristerías* in Ciudad Jardín (Managua) and near the Masaya market. No *floristerías* in Granada buy coco baskets. We interviewed *tramos artesanía* in Huembes, Masaya and outside Oriental, as well as several *floristerías* in Ciudad Jardín and Masaya<sup>28</sup>. A total of ten retail vendors were interviewed. All but two of the vendors are female, the two male being stall vendors in Huembes and Masaya. The baskets are sold with a variety of other artisan crafts such as wood-turned items (bowls, cups, toys), clothing, woven bags, paintings, and small ornaments. Much of the clothing and woven items are imported from

<sup>27</sup> At the time of the research, US \$1.00 was equivalent to 336 Costa Rican Colones.

<sup>28</sup> We were instructed by our key informants and the basket household traders not to attempt interviewing in Oriental as it is considered the most dangerous market, even for locals. So we interviewed a woman who owned a small street stall in near Oriental.

Guatemala. Some of the artisan stands had many different styles of baskets, which meant we could easier identify which household those baskets came from.

**Photograph 5.6 Artisan section of the Masaya market**



**Photo:** J. Gagliano

While *floristerías* purchase baskets all year round, the market stall vendors purchase significantly more during the months from November through January. The demand for baskets is highest during Christmas and New Years when they are used as gifts and ornaments. Some market stall vendors only buy baskets during those months. The majority of market stall vendor and *floristerías* purchase baskets on once or twice a month. *Floristerías* tend to request special orders more than markets stall vendors. All retail vendors buy the baskets per dozen at a price between thirty-five and 250 Córdobas (\$2.50 and \$18.00) depending on the style and size. They sell the baskets per unit between the prices of three and twenty Córdobas (\$0.22 and \$1.45). The *floristerías* sell the baskets with floral arrangements, so their prices are higher. These prices range from forty to 140 Córdobas (\$3.00 and \$10.30) per basket with flowers (usually plastic)— this price depends both on the style of basket and type of flowers. The sale prices charged by both *floristerías* and market stall vendors increase slightly during the busy months (end of October to January), although the price at which they purchase the baskets does not.

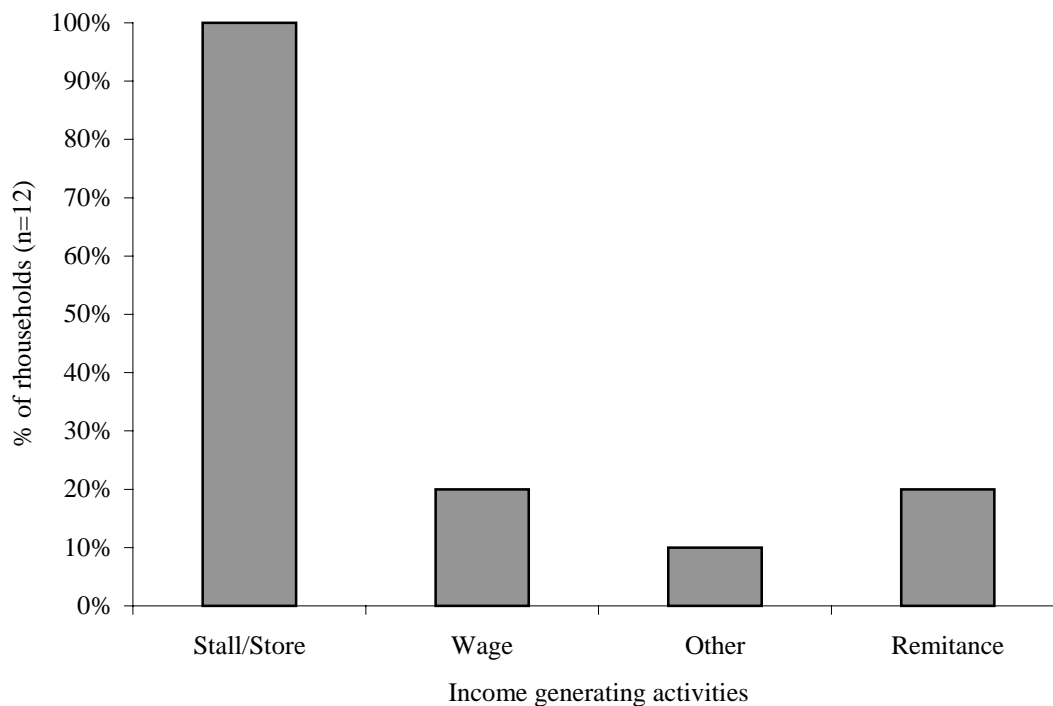
**(b) Household member participation**

The majority of market stalls are family-operated and almost all members of the household take turns working.

**(c) Importance to and management of household income**

As with the retail vendors of the broom commodity chain, the sale of baskets represents a small fraction of the total household income. All but three vendors reported that both spouses operate stalls in the market; some share the operation of the same stall, while the others operate separate stalls. Because the majority of household members (and other family members) work at the stall the income from stalls and *floristerías* is the main source of household income for many participants. Three retail vendors reported the economic activity of their spouse or partner as the following: chauffeur, hammock producer, and construction laborer in Costa Rica. The woman *floristería* owner who reported her spouse as being in Costa Rica also has two sons in the United States who send her money every few months. These results are outlined in Figure 5.3.

**Figure 5.3 Main income sources for Retail Vendors Households**



As this figure illustrates, all stall vendors interviewed reported that the sales from that stall as a main source of income. Almost half the participants reported that the stall is their only main source of income with no supplementary income reported. The importance of baskets to households in the retail (marketing) stage is significantly less than that in other stages. But, similar to all of the previous stages, the management of household income is generally a shared responsibility.

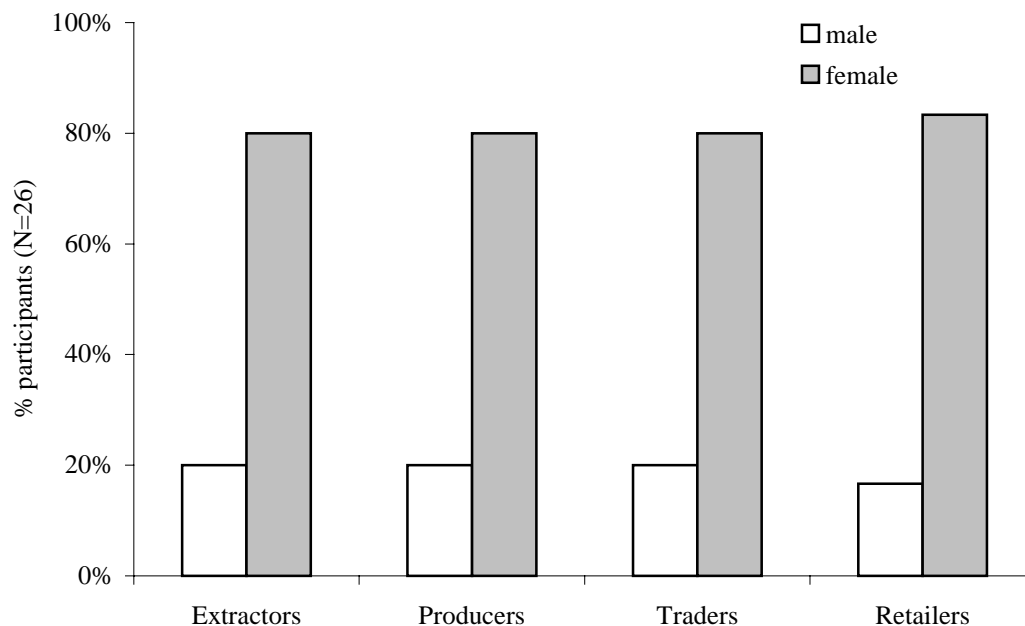
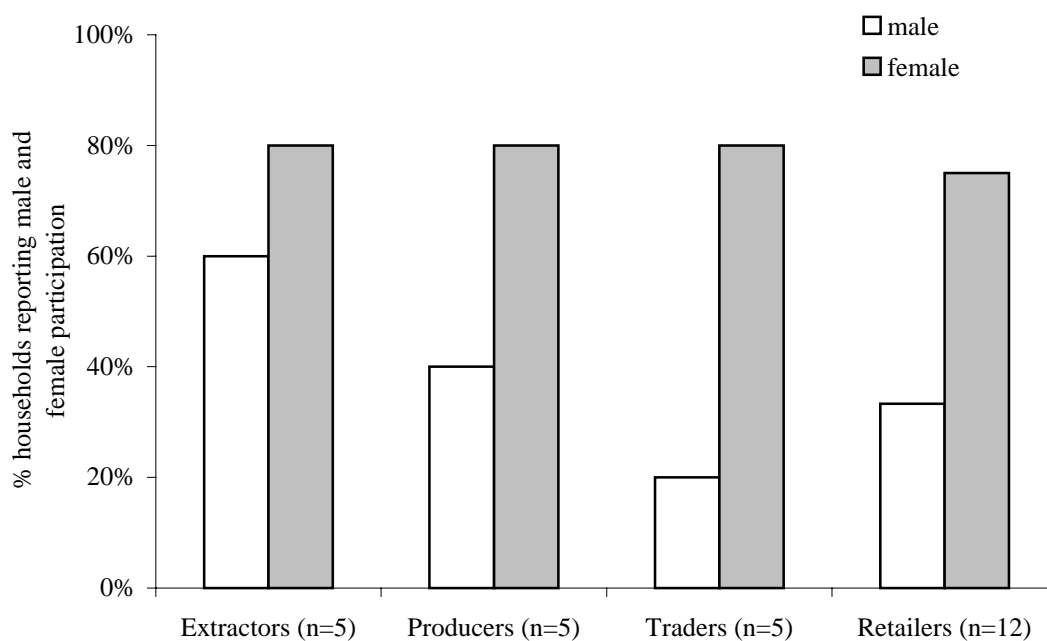
## **B. Discussion of Results**

The basket commodity chain was guided by the same research questions as the broom chain. In the following discussion I outline how the results of the basket commodity chain address these questions.

1. What are the roles of women and men at the different stages of the NTFP commodity chain and to what extent do these roles adhere to traditional gender roles?

As I show in my discussion of the broom commodity chain, there are two different ways to chart the division of labor at each stage and in the chain as a whole: a ‘superficial’ look at the general division and a ‘true’ examination of the division in each stage. A representation of the main participants interviewed at each stage is illustrated in Figures 5.4.

Similar to Figure 4.8 for the broom commodity chain, Figure 5.4 essentially represents the division by sex of the participants interviewed at each stage. At all stages, I interviewed more females than males. Based on this figure it could be assumed that the basket commodity chain is ‘female.’ However, the participants interviewed only represent one of the several participants at each stage. Therefore, I identified all the members in the household who also participate at each stage. Figure 5.5 represents this ‘true’ division of labor because it shows in more detail the participation of males and females and the division of activities both within the stages and in the chain as a whole.

**Figure 5.4 Sexual division of labor of Basket Chain (main participants)<sup>29</sup>****Figure 5.5 Sexual Division of Labor of Basket Chain (all participants)<sup>30</sup>**

Note: n= number of households at each stage (total 26 households)

<sup>29</sup> Because only one intermediary was identified and interviewed, there are not enough data to be included (N=26 does not include the intermediary).

<sup>30</sup> Because only one intermediary was identified and interviewed, there are not enough data to be included.

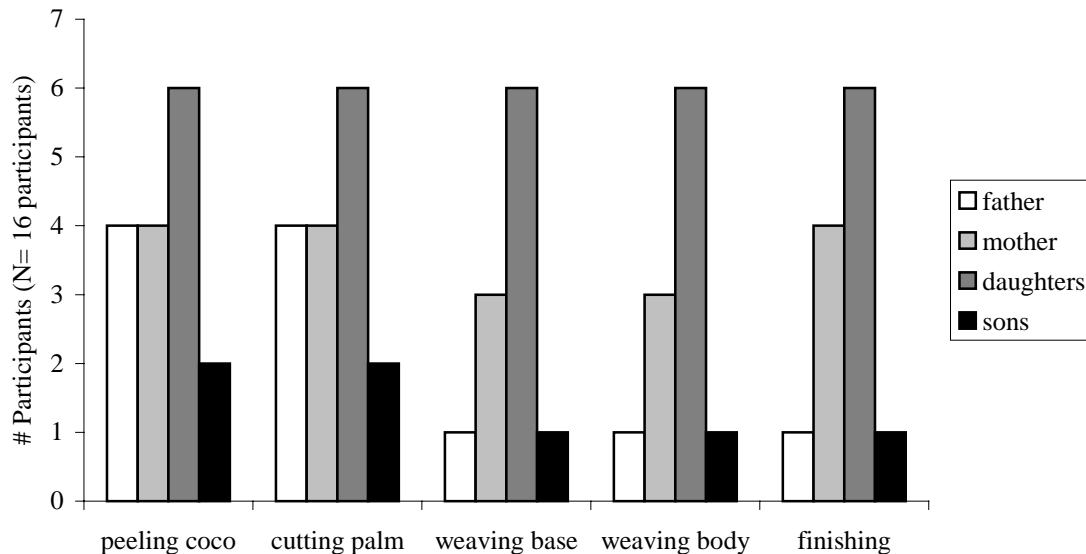
Similar to Figure 4.9 of the broom commodity chain, Figure 5.5 represents every member of the household who contributes to the particular process. For example, in the production stage eighty percent of households report females participating while forty percent report the involvement of males. At no stage is there a significant difference statistically between the participation of males and females. In contrast to the broom commodity chain, this chain is predominantly female. Even identifying all participants reveals the greater involvement of females than males in the basket chain. This difference will be expanded on in Chapter 6. The most obvious change is in the extraction and production stages.

At the extraction level, the results show that both men and women carry out the extraction of raw materials. The extraction in the basket chain depends on who is available to collect raw materials when they are needed, since the production process depends on fresh material. Thus, this stage is dependent on the need and urgency for material more so whether this task is allocated to men or women. In the basket-producing households, there is more of a dependence on men working in wage-labor, as I discuss later on, and therefore they are not considered 'extractors.' In some households, the basket producers themselves are the extractors, while in others the basket trader is considered the main extractor. Both of these actors are women, except in one household. Therefore, at the extraction level it is difficult to define whether these roles 'fit' into any socially defined gender role. At the production stage, these gender roles are more visible.

The main basket producers in all but one household are women and in three of those households the women are between the ages of fifteen and twenty-two. They are in charge of designing and producing baskets that their mother sells in markets and to florist shops. The involvement of women in the production process confirms the findings of other studies that show most craft production is carried out by women in the home (Nash 1986; Buechler 1986; Boris and Prügl 1996). In addition, NTFP studies show that women almost exclusively carry out basket production in many regions of the world (Bishop and Scoones 1994; Belsky and Siebert 1998). The dominance of women in basket production also corresponds with NTFP findings that women are in many cases the primary processors (Neumann and Hirsch 2000). However, these producers also receive assistance from several other family members. Men in the household, including younger

boys if present, assist mostly in the processing of the raw material. Figure 5.5 shows that participation of males and females in the production process divided by task.

**Figure 5.5 Participation in Basket production of household members by task**



The participation of men in this process was justified by the physical strength required to cut the palm leaf stems and the handling of machetes for the task. Once again, the argument of strength as a characteristic male quality emerges (Bustos 1985; Acevedo 1995; Ríos 1995). The younger women participated in all stages of the production process but received little help in the weaving stages from males. Weaving baskets is considered a very time consuming and detailed task, and most men responded that they do not have the patience to weave baskets. Again, the myth of female dexterity, patience, and attention to detail emerges as a primarily reason for the gendered division of labor (Fernández-Kelly 1983a, 1983b; Bustos 1985; Acevedo 1995; Ríos 1995). But, what does not corroborate with 'myth' in the basket chain is that the technology of the baskets was originally taught to these households by a male relative. As well, there is one household where one male carries out the entire chain.

Neumann and Hirsch (2000) state that the gendered division of labor in NTFP activities depends on several aspects, including the product type. This statement assumes that some products are inherently 'female' and some are 'male.' If we are to base this distinction on product use, the baskets should be considered 'female' since they are used

primarily in the home, and in Latin America the home is considered the domain of women (Scarpaci and Frazier 1993; Guzmán Stein 2001). But beginning to define products as inherently female or male does not account for the gendered division of labor in NTFP activities. One reason I suggest why the one male carried out extraction, production and trading is that he is able to sell in a seldom-supplied market, Managua. In this study, the one male is an outlier, because in Nicaragua (and Latin America) the petty commodity trading of home-produced crafts is viewed as women's work (Chant and Brydon 1989; Hays-Mitchell 1993; van der Borg 1994; Katz 1995). However, only one of the female traders sells baskets in Managua, and this is because markets in Managua are reported as too dangerous and the female traders do not feel comfortable doing business. The one female trader that does sell in Managua concentrates on the smaller artisan markets targeted to tourists (such as Huembes) and upper-middle class Nicaraguans as well as florists. The male trader, however, sells in larger municipal markets which are considered 'dangerous,' including Mercado Oriental and Iván. The other traders sell mainly in the smaller markets of Masaya, Granada, Rivas, and Carazo.

This spatial division of labor between the female and male traders represents to some extent the traditional divide between public and private. In many ways local markets are considered an extension of the private, female sphere because the activities undertaken in the home and market are closely integrated (Babb 1989). Nevertheless, the markets of Managua are larger and perhaps to some extent more 'male' because they maintain closer connections with formalized larger businesses and are viewed as more dangerous. For example, larger wholesale goods are usually sold in Managua because there are more buyers. Babb's (1989) notes that men tend to sell wholesale more so than women. Basket traders tend to deal with smaller, independent retailers and may not have the confidence to do business in larger centers. However, consistent with the ideal gender roles of women and men in Nicaragua and Latin America, men are viewed as having a natural authority and therefore better suited to dealings in the public sphere (Bustos 1985; Chant and Brydon 1989).

Women, as mentioned, primarily carry out the marketing of the baskets. Street vending of baskets is not normally done and sales are concentrated in markets and florist shops. Baskets are considered artisan products are among the most common type of

product sold by women vendors (Babb 1989; Hays-Mitchell 1993; Katz 1995; Espinal and Grosmuck 1997). Women generally manage florist shops, whereas both men and women manage the artisan market stalls (as they are usually a family business). Many of the florist shops are similar to *pulperías* in that they are located in the front rooms of homes, the female sphere. One intermediary was interviewed in the basket chain, but she was the only one we were able to identify and did not purchase and sell baskets on a regular basis.

Generally, the gendered division of labor along the basket commodity chain conforms to the gender roles defined in Latin American and Nicaraguan society. Unlike the broom commodity chain, however, the participation of women and men is less equal and less varied. Women are prevalent at all stages in the chain, even when examining the division of labor within the individual stages. This prevalence of women in the chain is determined by the specific activities required to produce and market baskets, which are traditionally defined as 'female.'

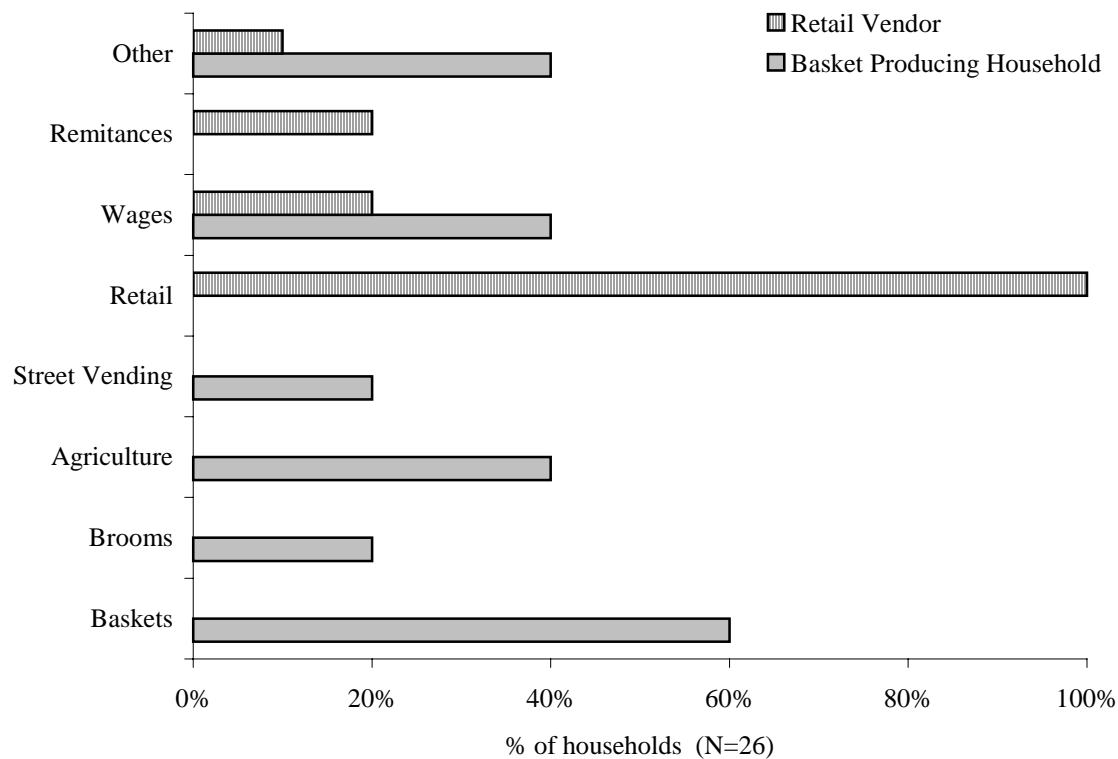
2. To what extent do households depend on NTFPs, specifically, are these NTFPs significant sources of household incomes? And how is NTFP income and household income in general managed (i.e. who maintains control over the income)?

The reliance on baskets as a primary or main source of income for households is not large.<sup>31</sup> Two out of the five basket-producing households only produce in the last five to six months of the year (from August/September to December/January) and as such they consider this income supplementary to their other main sources of income. In the other three households, baskets represent a continuous flow of income throughout the year and are thus regarded as one of the main sources. In the retail mode, like in the broom chain, baskets represent a very small portion of the income obtained in the market stall of florist shop. Figure 5.7 shows the main sources of income for the stages in the basket chain.<sup>32</sup>

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<sup>31</sup> In the basket commodity chain the categories of 'primary,' 'main,' and 'supplementary' sources of income are the same as in the broom commodity chain.

<sup>32</sup> Extraction, production, and trading all are carried out by members of the same household, therefore they are all represented under the category 'basket producing households.'

**Figure 5.7 Main income sources for all stages in the Basket Commodity Chain**

Basket producing households reported six different main sources of income, each household three. The retail participants only reported, in general, two different activities. Households in the basket commodity chain also engage in multiple income strategies (Rothstein 1995), as did households in the broom commodity chain. Unlike the broom commodity chain, my findings in the basket commodity chain agree with two different patterns found in the NTFP literature. First, that NTFP income is used in as seasonal supplementary (Neumann and Hirsch 2000), and second, that most households do not rely solely on NTFPs as a source of income (Browder 1992). Women control the income from baskets because as traders they directly obtain the cash income from sales. In two households this income is considered supplemental. However, in the other three houses both men and women consider this income to be one of the main forms of income. The same as in the broom commodity chain, the pattern found here does not correspond with the perception of women's income being supplemental and men's being primary (Acevedo 1995; Rothstein 1995). Because men in this commodity chain also identify their spouse's income as a main source, it appears that they do not view their traditional

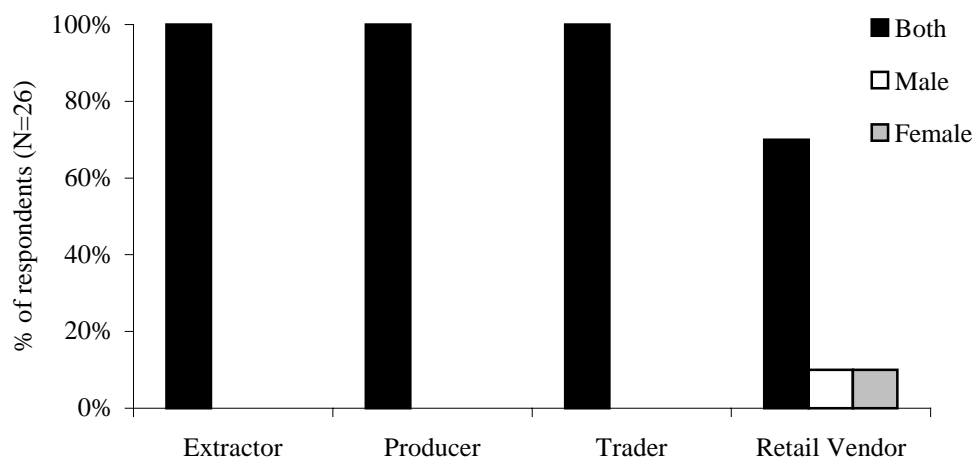
male role as ‘threatened,’ as Rothstein (1995) and van der Borg (1994) argue occurs when men’s role as breadwinner is no longer possible.

In households along the basket chain, men also do not maintain control over all household income either. But, both men and women in the broom-producing households report that they share in the management of household income. Even one man interviewed at the retail stage reported that his spouse/partner managed all the income and that he preferred not to. This response, I assume, is not normal, because most other men (and women as well) reported that in most cases they managed their individual income and that each is responsible for purchasing necessities for the whole household. As one basket trader commented:

*Yo utilizo los ingresos [de las canastas y escobas] para todos los gastos de la casa: Alimentación, vestido, educación. No los distribuyo. - Marta Meneses*  
*(I use the income [from brooms] for all the household costs: food, clothing education. I do not distribute it.)*

Thus, most households engage in a different form of income pooling than outlined by Roldán (1988). In these households, men and women have separate incomes which they manage independently and contribute food and other necessities for entire household. This follows a pattern similar to that found in a portion of households surveyed in rural Honduras by Rothschild-Rothschild (1988).

**Figure 5.8 Management of income in Basket Commodity Chain**



Note: As in the previous figure, there are not enough data to include the intermediary, although she responded that her and her spouse manage the household income.

Basket traders reported that they usually use the income from baskets immediately to purchase food and supplies (usually for basket production). Some traders reported that their spouses purchase most of the food staples such as rice and beans, while she uses her income to pay for school fees and books. At the retail stage, women interviewed stated that when they are working at the stall the income from the day usually goes immediately into households necessities as well as to pay bills such as phone and the rent for the stall. A common trend in the basket chain is like that of the broom chain where women use virtually all their income for household expenses, which is what Roldán (1988), Benería (1992) and Deere (1990) observe. One basket trader summed up what most participants alluded to, that both men and women are responsible for the household and as such both contribute their income for the common good of household members.

*Los dos somos la base de la casa – Auxiliadora Cabrales (Both of us are the foundation of the house)*

In terms of income in the basket commodity chain, there are three main conclusions that emerge. First, the income from baskets is both a main and supplementary and this income is usually considered women's contribution to household income. Second, both men and women control household income and make decisions on how to spend their individual income for the household good. Lastly, women in all stages of the chain report using the majority, if not all, their income for household expenses.

### 3. How does the gendered division of labor in the NTFP chains and individual stages define men and women as conservation stakeholder?

In the basket commodity chain one household consists of extractors, producers, and traders. The majority of these households also depend on the baskets as a main source of household income. As a result, each of the members involved in one of these stages, and dependent of the income produced at these stages, is a conservation stakeholder. Women and men both participate in the extraction stage, although more women in the households than men. These same women also produce and trade the baskets, therefore obtaining directly the income from the baskets. Based on these conclusions, women who participate in these tasks are the key conservation stakeholders in these households. It is these women, particularly the traders, who control and allocate the income from baskets for household benefit. This income is also one of the only ways in which these women

collect cash income, thus contributing to the total household income. As key conservation stakeholders, these women are dependent on the forest resources necessary to produce baskets for the generation of their cash incomes.

Similar to the extractors in the broom commodity chain, these extractors unconsciously support forest conservation, but in an opposite way. *Lygodium venustum* is considered a weedy species and is known to out compete native plants. By harvesting this vine, these extractors are preventing it from spreading further. However, the rate at which these five households extract this vine may not be hindering its spread through the open secondary forests where it is most rampant. I am not recommending that more households become involved in basket production because there has been no ecological study completed on harmful nature of *Lygodium venustum* in RNLA. The other plant used in basket production, *Cocos nucifera*, is not harvested in the wild but from planted palms, and as reported, does not harm the plant. In some cases it encourages the production of coconuts.

Overall, the basket commodity chain can be viewed as more “feminine” than the broom commodity chain, if we situate both chains within a broader gender classification. More females participate in this chain than in the broom. This difference is based mainly on the classification of tasks along the chains. The majority of tasks in the basket chain are viewed as female. This difference is examined more closely in the following chapter. Although these chains are different in terms of the gendered division of labor along the chain, the gendered division of labor within the different stages is similar.

## 6 Conclusion

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The comparison of the broom and basket commodity chains brings up important issues in the gendered division of labor and gender relations within the different households and stages, as well as several broader issues. I will discuss these broader issues in the context of three main claims of non-timber forest products (NTFPs): they promote gender equity, contribute to development, and encourage conservation. The first two claims I discuss under the broader theme of gender and development. I then attempt to situate these two NTFPs into the wider discourses of conservation. Throughout the following discussion I will review my use of commodity chain analysis and whether it was a useful tool for the study of non-timber forest products and their potential for sustainable development initiatives. But I will begin with a comparison of the basket and broom commodity chains.

### *Basket and Broom Commodity Chain Comparison*

The gendered division of labor in each commodity chain is a good starting point for a comparative analysis. Throughout the broom commodity chain there is more or less equal participation between men and women. However, there is tends to be more men in the earlier stages and women in the latter stages. This can be shown statistically: the proportion of males at the beginning stages of the broom commodity chain is higher than female participation.<sup>33</sup> The basket commodity chain shows a similar pattern; men participate in the beginning stages more than in the latter stages. However, in this chain women participate consistently in all stages. In general, women dominate the basket chain. For example, if we compare the extraction stage of both chains, there is a significant difference between male and female participation.<sup>34</sup> Overall, the proportion of females is much less than that of males at the extraction stage. There is no significant difference at the production stage of both chains.

In the previous chapter, I finish by stating that the basket commodity chain is more ‘feminine’ than the broom commodity chain. I suggest that the gendered division of labor may depend on the type of product (Neumann and Hirsch 2000), that is, that the product

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<sup>33</sup> See Appendix E for statistical calculations.

<sup>34</sup> At a ninety-five percent confidence level.

type helps to define whether the NTFP commodity chain encompasses more men or women. From this, I could make the assumption that the basket and broom commodity chains differ in their gendered divisions of labor because one product is essentially male and the other female. However, the broom commodity chain has more or less equal male and female participants and is thus neither female nor male.

By what characteristics do we define a product as either female or male –the final user, by the production process, by tradition, or by the value or status placed on the labor process at different stages? Women primarily use both baskets and brooms, as they are considered household items and as many Latin American scholars have noted, the home is considered the private, female space. Therefore, by this definition both chains should be female. If we examine the production processes, the two chains are different, as I discuss later. Based on the activities within the production stage, the broom chain should be more male and the basket more female, which is not entirely inaccurate. Tradition can also be used as a defining characteristic of whether a product is female or male and thereby delineating the gendered division of labor.

By tradition, brooms in Nicaragua are produced by men in the households. Baskets, however, have no tradition in Nicaragua and were instead an imported process from El Salvador. On the whole, it is impossible to define a product as inherently ‘female’ or ‘male’ and thereby determine the gendered division of labor based on this classification. The gendered division of labor depends not on the product as much as the socially defined gender roles, which assign certain types of tasks to men and women. Moreover, it is the individual stages and the activities within those stages which further define the gendered division of labor in NTFP (and other) commodity chains.

When the stages of the basket and broom chains are examined individually, there is a similar pattern in each. There is a definite division of tasks based on perceived physical and ‘natural’ abilities. These perceived ‘natural’ abilities are based on the construction of gender in Nicaragua. Men in both chains and in all stages carry out tasks that represent the male’s superior strength and management ability (Bustos 1985). Women carry out tasks that are defined as detailed, tedious, and repetitious, which emphasizes their natural dexterity and patience (Acevedo 1995). These characteristics are socially assigned and represent to a great extent the *machismo* and *marianismo* ideals prevalent in Latin

American countries (Chant and Bryon 1989). Gender roles in Nicaragua are based around these assigned differences between men and women and influence the gendered division of labor.

Consequently, the main participants in both the broom and basket commodity chain represent the dominant activity at that stage. For example, in the production stages of the basket and broom chains each activity requires different set of skills. Broom production involves more physical strength while basket production requires patience and manual dexterity. Thus men are the main participants of the broom production stage and women in the basket production stage. The same is true in the trading stage of both chains. In Nicaragua, and Latin America as a whole, petty commodity trading is considered to be a tedious task and is thus for the most part feminized. Overall, this trend is evident in the majority of stages in both commodity chains.

Another commonality in both the basket and broom commodity chains is the overall importance of these products to households in the earlier stages and that these products are key sources of women's income. This trend is not evident in the extraction stage of the broom commodity chain where men extract and sell the broomsticks, but it is evident in the production and trading stages of both chains. Based on traditional gender roles in Nicaragua, women carry out the petty commodity trading, which consists of marketing home-produced crafts in the streets and markets. Both brooms and baskets are considered this type of product and as such, women sell these products. By selling these products, women receive directly any cash income and maintain control over the income. No woman reported giving this income over to her spouse/partner to manage; all control and decide how to spend this income. Roldán (1995) notes that this is common in lower income households. She suggests that when the male is unable to be the primary breadwinner in the household, income is earned by and controlled by two or more family members and that women in these households tend to control a large portion of the income. In almost all cases, the women used all of this income for household expenses such as food, clothing, education, and supplies for the production of brooms, baskets and other products. Both men and women in the commodity chains consider this income as the women's main economic contribution to the household. Because women typically spend this income on household expenses, the household depends greatly on this income.

In most households, this study found that baskets and brooms are produced and sold continuously throughout the year. As such, the income earned from these two NTFPs is considered one of the main sources of income, and as such as important to the household economy. This pattern does not support Acevedo (1995) and Rothstein (1995) contention that in Latin America men's income-generating activities are generally viewed as the 'primary' or 'main' source, while women's income is considered secondary or supplementary. Households in both chains at virtually all stages follow a multiple income strategy, relying on more than one form of income generation to meet their needs. This finding is representative of the poor economic situation of the majority of households, as Rothstein (1995) illustrates is true in most Mexican households. Basket and brooms are considered an important part of households multiple income strategy. However, some households represent the patriarchal allocation pattern where males control and manage income while others exhibit a pattern where the female controls and manages this income. This type of allocation pattern must be included to the list of patterns outlined by Pessar (1988) and Roldán (1988), because it represents a significant portion of the population in Nicaragua and other developing nations where female-headed households are common.

### ***Gender, Environment, and Development***

I would like to return to the claim that non-timber forest products (NTFP) promote gender equity, help facilitate economic development, and encourage conservation. The promotion of NTFPs as tools for sustainable development is based on these claims, and for this reason is important to examine. Do NTFPs really promote gender equity, economic development, and environmental conservation? The first two claims warrant discussion within the framework of gender and development (GAD). The third claim I will examine under the broader issues of conservation.

Many NTFP studies have argued that women are among the main extractors, producers, and marketers, and therefore represent important participants in NTFP projects (Hecht *et al.* 1988; Bishop and Scoones 1992; Ghatak 1995). As such, many NTFP studies have focused on women. But, do these projects address the main concerns within a gender and development agenda? Does the commercialization of NTFPs address issues of equity? Are NTFPs empowering to participants? That is, do they allow greater

negotiating power for individuals and households? There are no simple answers to these questions, but they must be addressed not only within a regional context, but also historically and politically. To understand whether or not the commercialization of NTFPs, as tools for sustainable development, can address these concerns, an examination of the different roles of men and women in the commercialization process and how these 'traditional' roles empower (or disempower) participants is necessary.

Gender roles in societies are rooted in regional definitions and socio-cultural constructions of gender. Participation in NTFP activities is in general based upon these constructions. This is evident in the basket and broom commodity chains. Most tasks that men and women carry out conform to the ideals of the feminine and masculine in Nicaraguan society. However, although most women and men perform activities based on the traditional ideals, most of these roles are constantly shifting out of necessity. In broom production, although generally considered a male occupation, men and women participate almost equally. There is a gendered division of labor within this activity, but we see women performing tasks of men and vice versa.

We also see this exchanging of roles in most stages of the chain, except trading. Unless there is a need, males will almost never participate in trading. As Babb (2001) argues, the activities of market women are often viewed as an extension of the domestic responsibilities, and the lack of men in trading may represent this. Men are not interested in becoming involved in domestic responsibilities unless it is absolutely necessary. Yet, it is at this stage where income from the brooms and baskets is obtained. Whoever receives this income is most likely to control and manage it, which in almost all the households were woman. In Latin America, unlike many other regions of the world, women tend to have greater control in the household (Pessar 1988; Roldán 1988; Hamilton 2000; Babb 2001). The money that women make and contribute to the household remains in their control, and this enables them to negotiate and maintain a voice in household relations (Pessar 1988; Roldán 1988; Benería 1990). In contrast to the findings in this study and others in Latin America, Ghatak's (1995) study in West Bengal showed that men control the income earned from the products women process. Ugandan men also control income from shea butter, although women are the processors and marketers (Masters and Puga n.d. in Neumann and Hirsh 2000).

I do not want to suggest that Nicaraguan women in this study are better off than their counterparts in Africa and Asia. This is not the case. All the households interviewed were poor households and due to the need to survive, gender roles and responsibilities are modified. In the households I interviewed, men and women were both involved in income generating activities and each managed their own incomes. To adequately support a household based on one income would be impossible. What is important in gender and development is how women and men's roles empower them to emancipate themselves. The ability of these Nicaraguan women to control income can translate into greater negotiation within the households. For example, women's ability to contribute to and manage equally household income may enable them to make important decisions in the household, such as allocating household tasks among other members. Whether this 'power' shifts outside the household into the political sphere depends on women's ability to gain free time. This in itself is an extensive topic and not explored within the scope of this paper. But many scholars have argued that the ability to negotiate power and resources in the household often translates into greater political power for women (Moser 1993; Agarwal 1994).

The ability of NTFPs to address concerns of equity and empowerment lies ultimately in how they enable both men and women to negotiate equally in the household. Control over income in the broom and basket commodity chain seems to be a good indicator. Many scholars argue that control over household income leads to great power within the household (Agarwal 1994; Benería and Roldán 1987; Babb 2001). If this is the main tool for equitable household negotiation, then NTFP studies need to identify how income can be inserted into the household in a way that promotes this. This requires a comprehensive examination of gender roles within that society. Knowledge of the construction and perception of gender in a region will allow researchers or agencies to determine what roles men and women will perform in NTFP commercialization. It is not enough to just look at how these NTFPs will influence households at the extraction and production stages, as so many limited studies do, but to examine the role of NTFPs all stages (such as this study).

Successful commercialization of an NTFP is dependent on households at many different stages. By identifying where men and women are situated at each stage in a

commodity chain, their ability to negotiate, and their ability to change and shift roles, will enable NTFPs to be better utilized as tools for economic development. Careful examination of gender roles at each stage in the commodity chain of a product will also make visible participants that may otherwise be hidden. A good example of this is the production of brooms. If my research findings were based solely on the people I interviewed, all participants at the broom production stage would have been male. However, it was revealed that females in eighty percent of the households also participated. This is also true of the basket-producing households. In most households young girls are the main producers, but they rely on assistance from several other family members, including men.

These examples from the broom and basket chains bring up an important aspect of the use of commodity chain analysis: at what scale do we examine each stage? In my research, I have chosen to focus on the local and rather than be concerned with how the local commodity chain connects with the global. I began with the individual and realized that it is difficult to disaggregate these individuals from the households. This research is more about gender *in* households than about gender *and* households. The roles that men and women do are defined within a society and a household, so to examine these roles in isolation of each other becomes, as gender and development scholars have noted, problematic (Moser 1993; Agarwal 1994). However, the idea of a household is also problematic. There is not one general definition of a household, and the organization and structure is important to the gender relations (Brydon and Chant 1989; Dwyer and Bruce 1989; Booth 1993; Agarwal 1994). Thus observing not only the household, but also individual women and men in those households addresses aspects other commodity chain analyses fail to consider.

Hopkins and Wallerstein (1989; 1994) focus on the firm or unit of production. As we move from Hopkins and Wallerstein's focus on the global to the local (or even regional) commodity chain, the size of the firm gets smaller and in many cases becomes the household. If one were to trace a global commodity chain away from the large multinational focal point to the local, the household becomes more visible. It is the invisibility of the household in the global commodity chain that concerns Dunaway (2001). Because Hopkins and Wallerstein only examine the firm or unit of production,

the household remains invisible. I examined the household and its individuals, attempting to make visible those who are not, such as the females in the broom production or the males in the basket production. Thus the use of commodity chain analysis as I have modified and applied it to this case study, not only provides a means of identifying all participants in an NTFP commodity chain, but also a feasible method to explore the role of NTFPs in households and local markets. Commodity chain analysis also allows the incorporation of a gender analysis, not just at each stage, but also through the entire chain.

The above discussions speak to the issue of gender and development, but a key motive for the commercialization of NTFPs is sustainable development (Neumann and Hirsch 2000). That NTFPs are commonly presumed to be less damaging than timber harvesting has justified the expansion of their markets both locally and globally. The idea of sustainable development, although very vague and subjective, is to promote conservation of natural resources (forest, marine or other) while sustaining the local community (Nepstad and Schwartzmann 1992). This research did not examine in depth the ‘sustainability’ of baskets and brooms in terms of ecology. However, this research examined how these products and the people who extract, produce and market them are associated with conservation.

The environmental attitudes of forest users are vital to the support of forest conservation (Godoy and Bawa 1993; Neumann and Hirsch 2000). The extractors and producers of both baskets and brooms show awareness for the effects that their activities have on the forest. For example, broomstick extractors stated very clear that they know there are certain limbs that can be cut and ones that should not be cut in order to continuously return to the same tree month after month. They know how the tree grows and what methods of extraction harm. *Lygodium venustum* extractors know that even when they pull the vine from its roots, that the vine continues to spread through the area. They have seen it cover and kill trees and shrubs that they use for fuel wood. However, most of these women and men do not view their activities as encouraging or discouraging conservation specifically; their attitudes of conservation are based on satisfying basic needs.

This research has revealed several facets of NTFP commodity chains and its participants. Each NTFP commodity chain will be different, as the broom and basket chains are, and will uncover different aspects of the construction of gender, division of labor, control of income, and household livelihood strategies. The introduction or expansion of an NTFP into the market to satisfy the goals of a NTFP project needs to take into account the variability of each product, each stage, and the historical and social context in which it is located. As this study shows, no NTFP is the domain of only women or men. NTFPs are exchanged between stages, within stages and households, and between individuals. Commodity chain analysis has proven to be a useful method to examine each of these elements of NTFPs, and if used to carry out more detailed studies, its utility would increase.

## Literature Cited

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1. Acevedo, Luz del Alba. 1995. Feminist inroads in the study of women's work and development. In *Women in the Latin American development process* ed Christine E. Bose and Edna Acosta-Belén, 65-98. Philadelphia: Temple University Press.
2. Agarwal, Bina. 1994. *A field of one's own: Gender and land rights in South Asia*. Cambridge, UK: Cambridge University Press.
3. Arnold, J.E.M. 1996. Economic factors of farmer adoption of forest product activities. In *Domestication and commercialization of non-timber forest products in agroforestry systems*, Non-wood forest products 9, 131-146. Rome, Italy: Food and Agricultural Organisation of the United Nations (FAO).
4. Atkinson, R. and J. Flint. 2001. Accessing hidden and hard-to-reach populations: Snowball research strategies. *Social Research Update* 33 (2001). Available: [www.soc.surrey.ac.uk/sru/SRU33.html](http://www.soc.surrey.ac.uk/sru/SRU33.html). [18 April 2002]
5. Babb, Florence. 1989. *Between field and cooking pot: The political economy of marketwomen in Peru*. Austin, TX: University of Texas Press.
6. Babb, Florence. 1997. Negotiating spaces: Gender, economy, and cultural politics in Post-Sandinista Nicaragua. *Identities* 4(1): 45-70.
7. Babb, Florence. 2001. *After revolution: Mapping gender and cultural politics in neoliberal Nicaragua*. Austin, TX: University of Texas Press.
8. Balick, M.J. and R. Mendelsohn. 1992. Assessing the economic value of traditional medicines from tropical rainforests. *Conservation Biology* 6: 128-130.
9. Barborak, J.R. 1998. Buffer zone management: Lessons for the Maya forest. In *Timber, tourists and temples: Conservation and development in the Maya forests of Belize, Guatemala and Mexico*, ed R. Primack, D. Bray, H. Galleti, and I. Ponciano, 209-222. Washington, D.C.: Island Press.
10. Bayard de Volo, L. 2001. *Mothers of Heroes and martyrs: Gender identity politics in Nicaragua 1979-1999*. Baltimore: The John Hopkins University Press.
11. Belsky, J.M. and S.F. Siebert. 1998. Nontimber forest products in Community Development and Conservation: *Desmoncus* sp. (Tie-tie) in Gales Point, Belize. In *Timber, tourists and temples: Conservation and development in the Maya forests of Belize, Guatemala and Mexico*, ed R. Primack, D. Bray, H. Galleti, and I. Ponciano, 141-154. Washington, D.C.: Island Press.

12. Benería, L. 1992. The Mexican debt crisis: Restructuring the economy and the household. In *Unequal burden: Economic crisis, persistent poverty, and women's work*, ed L. Benería and S. Feldman, 83-104. Boulder, CO: Westview Press.
13. Benería, L. and Martha Roldán. 1987. *The Crossroads of Class and Gender: Industrial Homework, Subcontracting, and Household Dynamics in Mexico City*. Chicago: University of Chicago Press.
14. Berg, B.L. 2001. *Qualitative research methods for the social sciences*. Boston, Mass.: Allyn and Bacon.
15. Berger, M. and M. Buvinic. 1989. *Women's Ventures*. West Hartford, CT: Kumarian Press.
16. Bishop, J. and I. Scoones. 1994. *Hidden Harvest Project 3 - Beer and baskets: The economics of women's livelihoods in Ngamiland, Botswana*. Sustainable Agriculture Programme. London: International Institute for Environment and Development (IIED).
17. Boot, R.G. and R.E. Gullison. 1995. Approaches to developing sustainable extraction systems for tropical forest products. In *Ecological Application* 5(4): 896-903.
18. Boris, E. and E. Prügl. 1996. *Homeworkers in global perspective: Invisible no more*. New York: Routledge.
19. Bossen, L. 2000. Women farmers, small plots, and changing markets in China. In *Women farmers and commercial ventures: Increasing food security in developing countries*, ed Anita Spring, 171-189. Boulder, CO: Lynne Rienner Publishers.
20. Browder, J. 1992. Social and economic constraints on the development of market-oriented extractive reserves in Amazon rain forests. In *Non-timber forest products from Tropical forests: Evaluation of a conservation and development strategy*, ed D. Nepstad and S. Schwartzman, 33-42. New York: New York Botanical Gardens.
21. Bruce, J. and D. Dwyer. 2001. Introduction. In *A home divided: Women and income in the Third World*, ed D. Dwyer and J. Bruce, 1-19. Stanford, CA: Stanford University Press.
22. Brydon, L. 1989. Gender and Rural Production. In *Women in the Third World: Gender issues in rural and urban areas*, ed. S. Chant and L. Brydon, 69-93. New Brunswick, New Jersey: Rutgers University Press.
23. Buechler, J. M. 1986. Women in petty commodity production in La Paz, Bolivia. In *Women and change in Latin America*, ed June Nash and Helen Safa, 165-188. Boston, Mass.: Bergin and Garvey Publishers, Inc.

24. Bustos, Jorge Gissi. 1976. Mythology about women, with special reference to Chile. In *Sex and class in Latin America* ed June Nash and Helen Safa, 30-45. New York: Praeger Publishers.
25. Butler, J.R. 1992. Non-timber forest products extraction in Amazonia: Lessons from development organizations. In *Non-timber forest products from Tropical forests: Evaluation of a conservation and development strategy*, ed D. Nepstad and S. Schwartzman, 87-100. New York: New York Botanical Gardens.
26. Carr, M., M. Alter Chen, and J. Tate. 2000. *Globalization* and home-based workers. *Feminist Economics* 6 (3): 123-142.
27. Central Intelligence Agency (CIA). 2000. *Country Profiles: Nicaragua*. Available: [www.cia.gov/cia/publications/factbook/index.html](http://www.cia.gov/cia/publications/factbook/index.html). [25 January 2002].
28. Chant, Sylvia and Brydon, Lynne. 1989. *Women in the Third World: Gender issues in rural and urban areas*. New Brunswick, New Jersey: Rutgers University Press.
29. Chen, Martha Alter. 2001. Women in the informal sector: A global picture, the global movement. *SAIS Review* 21 (1): 71-82.
30. Cohn, Theodore H. 2000. *Global Political Economy: Theory and Practice*. New York: Addison Wesley Longman.
31. Corral, L. and T. Reardon. 2001. Rural nonfarm incomes in Nicaragua. In *World Development* 29(3): 427-442.
32. de Beer J.H., and M.J. McDermott. 1989. *The economic valuation of non-timber forest products in South-East Asia*. Amsterdam, Netherlands: Netherlands Committee for IUCN.
33. Deere, C.D. 1990. *Household and class relations: Peasants and landlords in Northern Peru*. Berkeley, CA: University of California Press.
34. Deere, C.D. and M. León. 2001. *Empowering women: Land and property rights in Latin America*. Pittsburgh, PA: University of Pittsburgh Press.
35. Dugelby, B.L. 1998. Governmental and customary arrangements guiding chicle latex extraction in the Petén, Guatemala. In *Timber, tourists, and temples: Conservation and development in the Maya forests of Belize, Guatemala and Mexico*, ed R. Primack, D. Bray, H. Galleti, and I. Ponciano, 141-154. Washington, D.C.: Island Press.
36. Dunaway, W.A. 2001. The double register of history: Situating the forgotten woman and her household in capitalist commodity chains. *Journal of World-Systems Research* 8(1): 2-29.

37. Dwyer, D. and J. Bruce, eds. 1988. *A home divided: Women and income in the Third World*. Stanford, CA: Stanford University Press
38. Espinal, R. and S. Grasmuck. 1997. Gender, Households and Informal Entrepreneurship in the Dominican Republic. *Journal of Comparative Family Studies* 28 (1): 103-129
39. Falconer, J. 1990. *The major significance of minor forest products: The local use and value of forests in the West African humid forest zone*. Community Forestry Notes 6. Rome, Italy: FAO.
40. Fernández-Kelly, María Patricia. 1983a. *For we are sold, I and my people: Women and industry in Mexico's frontier*. Albany, NY: State University of New York Press.
41. Fernández-Kelly, María Patricia. 1983b. Mexican border industrialization, female labor force participation and migration. In *Women, men and the international division of labor*, June Nash and María Patricia Fernández-Kelly, 205-223. Albany, NY: State University of New York Press.
42. Flora, C. Butler and Blas Santos. 1986 Women in farming systems in Latin America. In *Women and change in Latin America*, ed June Nash and Helen Safa, 208-228. Massachusetts: Bergin and Garvey Publishers, Inc.
43. Food and Agriculture Organization of the United Nations (FAO). 1995. *Non-wood forest products for rural income and sustainable forestry*. Rome, Italy: FAO.
44. FAO. 1998. *Rural women and food security: Current situation and perspectives*. Rome, Italy: FAO
45. Francis, J.K. 1991. *Guazuma ulmifolia* Lam. USDA Tree fact sheet # SO-ITF-SM-47. September. United States Department of Agriculture, Forest Service.
46. Gereffi, G., M. Korzeniewicz, and R. P. Korzeniewicz. 1994. Introduction: Global commodity chains. In *Commodity chains and global capitalism*, ed G. Gereffi and M. Korzeniewicz, 1-16. Westport, Connecticut: Greenwood Press.
47. Ghatak, S. 1995. A recipe for success: Women and non-timber forest products in Southwest Bengal, India. In *Voices from the field: Sixth workshop on 'Community management of forested lands,'* ed J. Fox, D. Donovan, and M. DeCoursey, 164-179. Honolulu, Hawaii: East-West Center
48. Godoy, R. and K. Bawa. 1993. The economic value and sustainable harvest of plants and animals from the tropical forest: Assumptions, hypothesis, and methods. *Economic Botany* 47(3): 215-219.

49. Godoy, R., Brokaw, N., and D. Wilkie. 1995. The effect of income on the extraction of Non-timber forest products: Model, hypotheses, and preliminary findings from the Sumu Indians of Nicaragua. *Human Ecology* 23: 29-52.
50. Guzmán Stein, Laura. 2001. The politics of implementing women's rights in Catholic countries of Latin America. In *Globalization, gender, and religion: The politics of women's rights in Catholic and Muslim contexts*, ed Jane H. Bayes and Nayereh Tohidi, 127-137. New York: Palgrave.
51. Hamilton, S. 2000. The myth of the masculine market: Gender and agriculture commercialization in the Ecuadorean Andes. In *Commercial Ventures and Women Farmers: Increasing Food Security in Developing Countries*, ed Anita Spring, 65-88. Boulder, CO: Lynne Rienner Publishers.
52. Hays-Mitchell, M. 1993. The ties that bind. Informal and formal sector linkages in streetvending: the case of Peru's *ambulantes*. *Environment and Planning A* 25: 1085-1102.
53. Hankins, A. 2000. *Producing and Marketing Wild Simulated Ginseng in Forest and Agroforestry Systems*. Virginia Cooperative Extension. Publication Number 354-312. University of Virginia, Charlottesville, VA. Available: <http://www.ext.vt.edu/pubs/forestry/354-312/354-312.html>. [27 March 2001].
54. Hecht, S.B., A.B. Anderson, and P. May. 1988. The subsidy from nature: Shifting cultivation, successional palm forests, and rural development. *Human Organization* 47: 25-35.
55. Holcomb B. and T. Y. Rothenberg. 1993. Women's work and the urban household economy in developing countries. In *Women's lives and public policy: The international experience*, ed M. Turshen and B. Holcomb, 51-195. Westport, Connecticut: Greenwood Press.
56. Hopkins, T.K. and I. Wallerstein. 1986. Commodity chains and the world economy prior to 1800. *Review* 10 (1): 157-170.
57. Hopkins, T.K. and I. Wallerstein. 1994. Commodity chains: Construct and research. In *Commodity chains and global capitalism*, ed G. Gereffi and M. Korzeniewicz, 17-50. Westport, Connecticut: Greenwood Press.
58. Instituto Nicaragüense de Tecnología Agropecuaria (INTA). 1994. *Diagnóstico Agro-socioeconómico*. Masaya, Nicaragua: Instituto Nicaragüense de Tecnología Agropecuaria.
59. Iqbal, M. 1993. *International trade in non-wood forest products: An overview*. FAO Forest Products Working Paper Misc/93/11. Rome, Italy: FAO.

60. Joregenson, J.P. 1998. The impact of hunting on wildlife in the Maya forest of Mexico. In *Timber, tourists and temples: Conservation and development in the Maya forests of Belize, Guatemala and Mexico*, ed R. Primack, D. Bray, H. Galleti, and I. Ponciano, 179-194. Washington, D.C.: Island Press.
61. Katz, E.G. 1995. Gender and trade within the household: Observations from Rural Guatemala. *World Development* 23 (2): 327-342.
62. Korzeniewicz, R.P. and W.F. Martin. 1994. The global distribution of commodity chains. In *Commodity chains and global capitalism*, ed G. Gereffi and M. Korzeniewicz, 67-91. Westport, Connecticut. Greenwood Press.
63. Lelsie, D. and S. Reimer. 1999. Spatializing commodity chains. *Progress in Human Geography* 23(3): 421-427.
64. Ministerio de Ambiente y recursos naturales (MARENA). 1999. *Reglamento de áreas protegidas de Nicaragua*. Decreto No. 14-99. Managua, Nicaragua: MARENA (SINAP).
65. McCrary, J.K., A.L. Hammett, M.A. Barany, A.E. Machado, B.J. Garcia, and J.I. Barrios. 2001. *Illegal extraction of forest products in Reserva Natural Laguna de Apoyo, Nicaragua*. Working paper. Proyecto Ecológico and Universidad Centroamérica. Managua, Nicaragua.
66. Melhuus, M. and K.A. Stølen. 1996. Introduction. In *Machos, mistresses, Madonnas: Contesting the power of Latin American gender imagery*, ed M. Melhuus and K.A. Stølen, 1-33. New York: Verso.
67. Michel, John. (New York Botanical Garden) Information on *Lygodium venustum*. Email to Laura Shillington. January 30, 2002.
68. Moser, C. 1993. *Gender planning and development: Theory, practice and training*. New York: Routledge.
69. Nash, June. 1986. Introduction. In *Crafts in the world market: The impact of global exchange on Middle American Artisans*, ed June Nash, 1-24. Albany, New York: State University of New York Press.
70. Nepstad, D. and S. Schwartzmann, eds. 1992. Introduction. *Non-timber forest products from tropical forests: Evaluation of a conservation development strategy*. New York: New York Botanical Garden.
71. Neumann R. P. and E. Hirsch. 2000. *Commercialization of non-timber forest products: Review and analysis of research*. Bogor, Indonesia: CIFOR.

72. O'Hara, J.L. 1998. Monitoring non-timber forest product harvest for ecological sustainability: A case study of Huano (*Sabal maritima*) in the Río Bravo Conservation and Management Area, Belize. In *Timber, tourists and temples: Conservation and development in the Maya forests of Belize, Guatemala and Mexico*, ed R. Primack, D. Bray, H. Galleti, and I. Ponciano, 195-208.. Washington, D.C.: Island Press.
73. Østergaard, Lisa. 1992. Gender. In *Gender and Development: A practical guide*, ed. Lise Østergaard, 1-10. New York: Routledge.
74. Padoch, N. 1992. Marketing of non-timber forest products in Western Amazonia: General observations and research priorities. In *Non-timber forest products from Tropical forests: Evaluation of a conservation and development strategy*, ed D. Nepstad and S. Schwartzman, 43-50. New York: New York Botanical Gardens.
75. Panayotou, T. and P. Ashton, eds. 1992. *Not by timber alone: Economics and ecology for sustaining tropical forests*. Washington, D.C.: Island Press.
76. Pearson, F. and S. Payaslian. 1999. International political economy. New York: McGraw-Hill College.
77. Peluso, N.L. 1992. The rattan trade in East Kalimantan, Indonesia. In *Non-timber forest products from Tropical forests: Evaluation of a conservation and development strategy*, ed D. Nepstad and S. Schwartzman, 115-127. New York: New York Botanical Gardens.
78. Pessar, P. 1988. The constraints on and release of female labor power: Dominican Migration to the United States. In *A home divided: Women and income in the Third World*, ed D. Dwyer and J. Bruce, 195-215. Stanford, CA: Stanford University Press.
79. Peters, C.M., A.H. Gentry, and R.O. Mendelsohn. 1989. Valuation of an Amazonian rain forest. *Nature* 339: 655-656.
80. Plotkin, M. and L. Famolare. 1992. *Sustainable Harvest and Marketing of Rain Forest Products*. Washington D.C.: Island Press.
81. Poncela Fernandez, Anna M. 1996. The disruptions of adjustment: Women in Nicaragua. *Latin American Perspectives*. 23:1 (8): 49-66.
82. Prügl, E. 1999. *The global construction of gender: Home-based work in the political economy of the 20<sup>th</sup> century*. New York: Columbia University Press.
83. Renzi, M.R. and S. Agürto. 1996. *La mujer y los hogares rurales nicaragüenses: Indicadores economicos y sociales*. Managua, Nicaragua: Fundación internacional para el desafío económico global (FIDEG).

84. Ríos, Palmira N. 1995. Gender, industrialization, and development Puerto Rico. In *Women in the Latin American development process* ed Cristine E. Bose and Edna Acosta-Belén, 125-148. Philadelphia: Temple University Press.
85. Roldán, M. 1988. Renegotiating the marital contract: Intrahousehold patterns of money allocation and women's subordination among domestic outworkers in Mexico City. In *A home divided: Women and income in the Third World*, ed D. Dwyer and J. Bruce, 229-247. Stanford, CA: Stanford University Press.
86. Rothstein, Frances Abrahamer. 1995. Gender and multiple income strategies in rural Mexico: A twenty-year perspective. In *Women in the Latin American development process* ed Cristine E. Bose and Edna Acosta-Belén, 167-193. Philadelphia: Temple University Press.
87. Sachs, C. 1996. *Gendered fields: Rural women, agriculture, and environment*. Boulder CO: Westview Press.
88. Safa, Helen, and María de los Angeles Crummett. 1996. The magic of the market and the price women pay: Examples from Latin America and the Caribbean. In *Economic development and women in the world community*, ed K.C. Roy, C.A. Tisdell, and H.C. Blomqvist, 183-196. Westport, Connecticut: Praeger.
89. Salas, J.B., 1993. *Arboles de Nicaragua*. Managua, Nicaragua: IRENA.
90. Salick, J., Mejía, A., Anderson, T., 1995. Non-timber forest products integrated with natural forest management, Río San Juan, Nicaragua. *Ecological Applications* 5: 878-895.
91. Salifios-Rothschild, C. 1988. The impact of agrarian reform on men's and women's incomes in rural Honduras. In *A home divided: Women and income in the Third World*, ed D. Dwyer and J. Bruce, 216-228. Stanford, CA: Stanford University Press.
92. Sánchez, M.L., 1999. Áreas Naturales Protegidas. In *Biodiversidad en Nicaragua: Un Estudio de País*, ed Ministerio de ambiental y recursos naturales (MARENA), 387-426 Managua, Nicaragua: MARENA.
93. Scarpaci, J. And L.J. Frazier. 1993. State terror: Ideology, protest and the gendering of landscapes. *Progress in Human Geography* 17(1): 1-21.
94. Shillington, L.J. 2002. *Nicaragua Case Study - Gendered access: Commodity chain analysis of non-timber forest products from Laguna de Apoyo Nature Reserve, Nicaragua*. WIDTech and USAID.  
[[www.widtech.org/Publications/Publications.htm#SG](http://www.widtech.org/Publications/Publications.htm#SG)]

95. Shillington, L.J. and McCrary, J.K. 2000. Results from forest plot studies in Reserva Natural Laguna de Apoyo, Nicaragua. Working paper. Proyecto Ecológico and Universidad Centroamérica. Managua, Nicaragua
96. Terry, M.E. and A.B. Cunningham. 1993. Impact of commercial marketing on the basketry of southern Africa. *Journal of Museum Ethnography* 4: 25-48.
97. Tewari, D.D. 1994. Developing and sustaining non-timber forest products: Policy issues and concerns with special reference to India. *Journal of World Forest Resources* 7: 151-178.
98. United Nations (UN). 2000. *The Women's World: Trends and Statistics*. New York: United Nations.
99. United National Development Programme (UNDP). 2001. *Human Development Report 2001*. New York: UNDP. Available: <http://www.undp.org/hdro>
100. van der Borg, B.J. 1994. *Conservación y manejo de los recursos naturales en la vertiente occidental de la cordillera de los maribios: Consultaría en aspectos de género*. Managua, Nicaragua: FAO-MARENA GCP/NIC/019/NET.
101. Vellenga, D.D. 1985. Women, households and food commodity chain in southern Ghana. *Review* 8 (3): 293-318.
102. Waters, W.F. 1997. The road of many returns: Rural bases of the informal urban economy in Ecuador. *Latin American Perspectives* Issue 94, 24(3): 50-64.
103. World Bank. 2000a. Nicaragua Profile Data. Available: <http://www.worldbank.org/data>. [27 February 2002].
104. World Bank. 2000b. *World Bank reviews global forest strategy*. News Release No. 2000/193/S. Available: <http://wbln0018.worldbank.org/news/pressrelease.nsf/673fa6c5a2d50a67852565e200692a79/0d517bffb70dd30085256874008012f8?OpenDocument>. [2 February 2002].

#### Map Sources

Nicaragua Travel Net, CentralAmerica.com  
<http://centralamerica.com/nicaragua/maps/maparea.htm>

Perry-Castañeda Library Map Collection, University of Texas Austin  
[http://www.lib.utexas.edu/maps/americas/nicaragua\\_pol\\_97.jpg](http://www.lib.utexas.edu/maps/americas/nicaragua_pol_97.jpg)

## Appendix A Income-generating Activities

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In the text describing household income sources, several different income-generating activities are reported. These are defined as follows.

- ♦ Brooms include the income from any activity associated with the production process of brooms.
- ♦ Baskets include the income from any activity associated with the production process of brooms.
- ♦ Agriculture includes the production of cash and subsistence crops for sale in international, regional and local markets (this does not include farm wage labor or income derived from the products of patios).
- ♦ Street vending involves the sale of goods (other than baskets and brooms) at temporary roadside stands or by ambulatory vendors. Items sold vary and can include vegetables and fruits from patios and other areas (*e.g.* goods extracted from the reserve and surrounding forested areas);
- ♦ Retail (stall/store) is income produced from the sale of goods at a permanent market stall or other retail outlet (such as a *pulpería*);
- ♦ Wage employment includes paid labor in agriculture (working agricultural land other than one's own) and any other type of wage employment (factory, teaching, domestic labor, security guard).
- ♦ Remittance is funds provided to households by family members working outside the country (in the case of Nicaragua, this is usually as farm , domestic or construction wage work in Costa Rica).
- ♦ Other includes additional forms of income such as other self-employed activities (*zapaterías*, at home clothing production, and food preparation<sup>35</sup>).

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<sup>35</sup> For example, several women in the survey set up small stands to sell cooked lunches to schools and other workers in the community. These women refer to themselves as *cocineras* and are not employed by any company or firm. Some cases these women are temporary and only set up stands when there is construction or other temporary jobs being carried out. Other women set up permanent stands beside the school and sell food and drinks to students. These stands are different from *pulperías* as they are not located in the home, although most of the food is cooked in the home. Food preparation also includes foodstuffs made and sold on the streets.

## Appendix B Straw Broom Surveys

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### **A. Original Survey - Spanish**

#### **Los extractores de los palos de escobas**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA EXTRACCIÓN DE LOS PALOS DE ESCOBAS**

7. ¿Extrae los palos de escobas del bosque de La Laguna de Apoyo? ¿Extrae de otros lugares – dónde?
8. ¿Su casa queda cerca del bosque donde extrae los palos? ¿A qué distancia?
9. ¿Cuántas veces va al bosque? ¿Diario?
10. ¿Cuántas veces extrae los palos de escobas (por semana, por mes)?
11. ¿Cuánto obtiene cuándo extrae los palos de escobas?
12. ¿Cuánto tiempo para extraer esta cantidad (de palos)? (en horas)
13. ¿Qué tipo de palos extrae del bosque?
14. ¿Qué más extrae de La Laguna de Apoyo mientras que extrae los palos?
15. ¿Cuándo no extrae los palos de escobas, qué más extrae / saca?
16. ¿Qué extraen las mujeres? ¿Los varones? ¿Los niños?
17. ¿Si sabe, cuántas personas extraen los palos de escobas del bosque de La Laguna de Apoyo? ¿Todos viven en el Valle o alrededor la laguna?
18. ¿Cómo corta los palos – corta el trunco del árbol o con la raíz? ¿Corta las ramas?
19. ¿Cómo cortando el trunco afecta el árbol? ¿Cómo afecta el crecimiento de los árboles? ¿Qué pasa al árbol después cortar – se muere?
20. ¿Dónde en La Laguna extrae los palos – cerca el camino (adentro la Reserva), abajo El Valle, abajo Catarina, abajo Diría – dónde?
21. ¿Qué tipo de bosque crecen los palos – con muchas diferente tipos de gran árboles o con árboles medio y pocos tipos (o pequeño)? ¿P.ej. El bosque es denso o más o menos abierto?
22. ¿Hay muchos tipos de árboles para los palos de escobas en el parte del bosque que los extrae?
23. ¿Todo los extractores extraen en el mismo parte del bosque en Laguna de Apoyo? ¿Hay arreglos en cuanto a dónde se extrae en la Reserva? (arreglos entre los extractores)
24. ¿Por cuánto tiempo ha extraído los palos de escobas (p.ej. cuántos años)?
25. ¿Ya tiene que ir más lejos (en el bosque) que cuándo empezó extraer los palos? ¿Cuántos más lejos?
26. ¿Cuál es el mejor tiempo para extraer los palos de escobas?
27. ¿Prepara los palos para vender? (p.ej. pela la corteza) ¿Si pela la corteza, dónde lo pela?
28. ¿Si hay guardas en la entrada a la Reserve (o en el camino), tiene que pagar sobornos o multas? ¿O cómo sale la reserva con los palos?
29. ¿Los palos pueden cultivado?
30. ¿Hay alguien que cultive los palos de escobas en el bosque de La Laguna de Apoyo? ¿En otro lugar?
31. ¿Trabaja con una cooperativa u otra organización? (Si sí, ¿qué es la función del organización / la cooperativa?)

#### **INFORMACIÓN DE LA VENTA DE LOS PALOS DE ESCOBAS**

32. ¿A quién vende los palos de escobas? ¿Directamente a los productores de las escobas o a un intermediario?
33. ¿Dónde quedan las gentes que compran los palos de escobas de usted? ¿Cerca de su casa, en el Valle (o Catarina) u otra parte? (¿Adónde van los palos de escobas?)
34. ¿Dónde vende los palos de escobas? ¿En su casa o trae los palos de escobas a los productores de las escobas (o el intermediario)?
35. ¿A qué precio vende los palos de escobas? (Por cantidad, por peso – cómo)
36. ¿Quién determina el precio para los palos de escobas?

37. ¿Cuál es el mejor tiempo para vender los palos de escobas?
38. ¿Quién en su familia vende los palos de escobas – u otra persona fuera de su familia?
39. ¿Si vende a los intermediarios, a qué precio venden los palos de escobas los intermediarios?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

40. ¿Los palos son la primera fuente de ingreso (para su familia)?
41. ¿Los palos son uno de los principales fuentes de ingreso (para su familia)?
42. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
43. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
44. ¿Quién maneja los ingresos de los palos? ¿De las otras actividades?

#### **Los granjeros del trigo**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA PRODUCCIÓN DEL TRIGO**

7. ¿Dónde cultiva el trigo? ¿Cultiva algún trigo en La Laguna de Apoyo? ¿Cerca de su casa?
8. ¿Hay alguien que cultive trigo en el bosque de La Laguna de Apoyo?
9. ¿Dónde en la Laguna se cultiva el trigo?
10. ¿Por cuántos años ha cultivado el trigo?
11. ¿Cultiva el trigo con otros productos (cómo caña de azúcar, maíz)?
12. ¿Cuántas veces cosecha el trigo (por semana, por año)?
13. ¿Cuánto obtiene cuándo cosecha el trigo?
14. ¿Quién cosecha el trigo – los varones o las mujeres?
15. ¿Hay otros usos para el trigo?
16. ¿Trabaja con una cooperativa u otra organización? (Si si, ¿qué es el función del organización / la cooperativa?)

#### **INFORMACIÓN DE LA VENTA DEL TRIGO**

17. ¿A quién vende el trigo? ¿Directamente a los productores de escobas o a un intermediario?
18. ¿Dónde viven las gentes que compran el trigo de usted? ¿Cerca de su casa, en el Valle, Catarina u otra parte? (Cómo Masaya, Granada, Managua)– ¿dónde?
19. ¿Dónde vende el trigo? ¿En su casa o trae el trigo a los productores de escobas (o el intermediario)?
20. ¿A qué precio vende el trigo? (Por cantidad, por peso – cómo)
21. ¿Quién determina el precio para el trigo?
22. ¿Cuál es el mejor tiempo para vender el trigo?
23. ¿Quién en su familia vende el trigo – u otra persona fuera de su familia?
24. ¿Si vende a los intermediarios, a qué precio venden el trigo los intermediarios? (Si sabe)

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

25. ¿El trigo es la primera fuente de ingreso (para su familia)?
26. ¿El trigo es uno de los principales fuentes de ingreso (para su familia)?
27. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
28. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
29. ¿Quién maneja los ingresos del trigo? ¿De las otras actividades?

#### **Los productores de las escobas**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?

4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA ADQUISICIÓN DEL PALOS**

7. ¿Dónde compra los palos de escobas? (En el mercado, en su casa, o en otra parte)
8. ¿Dónde compra el trigo? (En el mercado, en su casa, o en otra parte)
9. (Si en la casa), ¿Quién viene a su casa para vender los palos de escobas y el trigo? (El intermediario, el granjero, o el extractor)
10. ¿Usualmente, son varones o mujeres (los vendedores de los palos)?
11. ¿Hay diferencia en el precio de los palos si se vende por intermediario o extractor de los palos?
12. ¿Quién extrae los palos de escobas?
13. ¿Los palos que compra, de dónde es? ¿Todo son de La Laguna de Apoyo?
14. ¿Qué tipo de palos compra?
15. ¿Qué es el mejor tipo?
16. ¿Hay diferencia en el precio entre los tipos de palos?
17. ¿Quién cultiva el trigo? ¿Usted?
18. ¿Dónde cultiva el trigo? ¿En el bosque de la Laguna de Apoyo? ¿Alrededor La Laguna?
19. ¿Cuál es el término medio del precio de los palos y el trigo? (por cantidad o por peso)
20. ¿Quién determina el precio de palos?
21. ¿Quién en su casa compra los palos – por ejemplo, los varones o las mujeres? ¿Los varones o las mujeres obtienen el mismo precio?
22. ¿Cuántas veces compra los palos? (por mes, por semana)
23. ¿Hay contratos entre los productores de escobas y los extractores de los palos (o la gente que venden los palos)?
24. ¿Trabaja con la cooperativa u otra organización? (Si sí, ¿qué es la función de la organización / la cooperativa?)

#### **INFORMACIÓN DE LA PRODUCCIÓN DE LAS ESCOBAS**

25. ¿Hace usted escobas en su casa u otro lugar?
26. ¿Hace las escobas cada día?
27. ¿Quiénes en su familia hacen las escobas? ¿Hay personas fuera de su familia que hagan las escobas en su casa?
28. ¿Qué parte hacen los hombres? ¿Las mujeres? ¿Los niños?
29. ¿Cuántas escobas hace usted por día? ¿Semana?
30. ¿Qué se necesita hacer para preparar los palos para hacer las escobas?
31. ¿Cuánto tiempo necesita para hacer una escoba?
32. ¿Cuánto tiempo duran las escobas?
33. ¿Hay cooperativa u organización que haga las escobas?

#### **INFORMACIÓN DE LA VENTA DE LAS ESCOBAS**

34. ¿Dónde vende las escobas? ¿En su casa u otra parte?
35. ¿A quién vende las escobas? (¿Quién compra las escobas?) – intermediarios, vendedores?
36. ¿Usualmente, las gentes que compran las escobas son mujeres o varones?
37. ¿Quién vende sus escobas – usted o algún otro en su familia o fuera de su familia? ¿Mujeres o varones?
38. ¿Qué precio obtiene por las escobas? ¿Cuánta vale una escoba?
39. ¿Hay diferencia en el precio de las escobas por estación de tiempo?
40. ¿Cuál es el mejor tiempo para vender las escobas?
41. ¿Quién determina el precio para las escobas?
42. ¿Y los intermediarios o vendedores, dónde venden las escobas? ¿Adónde llevan las escobas los intermediarios – Masaya, Managua?
43. ¿Si sabe, cuánto más es el precio que venden las escobas los intermediarios?
44. ¿Las escobas que hacen se venden fuera de Nicaragua? ¿Dónde y por quién?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

45. ¿Las escobas son la primera fuente de ingreso (para su familia)?
46. ¿Las escobas son uno de los principales fuentes de ingreso (para su familia)?
47. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?

48. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
49. ¿Quién maneja los ingresos de las escobas? ¿De las otras actividades?

### **Los comerciantes de escobas de coco**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA VENTA DE LAS ESCOBAS DE COCO**

7. ¿Quién en su casa hace las escobas? ¿Les ayuda usted hacer las escobas?
8. ¿Compra escobas (para vender) de otros productores de escobas? ¿De dónde las compra y de quién? (p.ej. en El Valle)
9. ¿Dónde vende las escobas? ¿En su casa, mercado, u otra parte?
10. ¿Cuántas veces vende las escobas – por semana?
11. ¿Vende las escobas por docena y/o por unidad?
12. ¿A qué precio vende las escobas? (¿Cuánto vale una docena y cuánto vale una canasta (por tipo)?)
13. ¿A quién vende las escobas? (¿Quién compra las escobas?) – ¿vendedores en el mercado (que tiene un puesto), intermediarios, y/o consumidores? ¿A quién vende más?)
14. ¿Usualmente, son mujeres o varones?
15. ¿Hay diferencia en el precio depende a quién compra las escobas? (p.ej. si vende a los intermediarios, ¿el precio es más barato que los vendedores?) ¿Y qué es la diferencia?
16. ¿Hay diferencia en el precio de las escobas por estación de tiempo?
17. ¿Cuál es el mejor tiempo para vender las escobas?
18. ¿Cuál es el mejor lugar para vender las escobas (p.ej. cuál mercado)?
19. ¿Quién determina el precio para las escobas?
20. ¿Dónde venden las escobas los intermediarios – p.ej. vende en otros lugares en Nicaragua? ¿A qué precio?
21. ¿Las escobas que hace se venden fuera de Nicaragua? ¿Dónde y por quién?
22. ¿Compra y vende otros productos? ¿Qué?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

23. ¿Las escobas son la primera fuente de ingreso (para su familia)?
24. ¿Las escobas son unos de los principal fuentes de ingreso (para su familia)?
25. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
26. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
27. ¿Quién maneja los ingresos de las escobas? ¿De las otras actividades?

### **Los vendedores de las escobas**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA ADQUISICIÓN DE LAS ESCOBAS**

7. ¿Dónde compra las escobas? (En el mercado, en su casa, o en otra parte)
8. (Si en la casa), ¿Quién viene a su casa para vender las escobas? (El intermediario, el productor de escobas)
9. ¿Usualmente, son varones o mujeres (los intermediarios o los productores que venden las escobas)?
10. ¿Hay diferencia en el precio de escobas si se vende por intermediario o productor de escobas?

11. ¿Cuándo compra, cuál es el término medio del precio de las escobas (por cantidad o por peso)?
12. ¿Las escobas que compra, de dónde son? (Qué parte de Nicaragua) ¿La mayor parte de las escobas son de alrededor de La Laguna de Apoyo?
13. ¿Quién compra las escobas – por ejemplo, los varones o las mujeres? ¿Los varones o las mujeres obtienen el mismo precio?
14. ¿Quién determina el precio de las escobas (cuándo compra)?
15. ¿Cuántas veces compra escobas? (Por mes, por semana) ¿Y Cuánto compra cada vez?
16. ¿Hay contratos entre los productores de escobas y los vendedores de escobas? (p.ej. encargo)

#### **INFORMACIÓN DE LA VENTA DE LAS ESCOBAS**

17. ¿Solo vende aquí en la pulpería?
18. ¿Quién vende sus escobas – usted o algún otro en su familia o fuera de su familia? ¿Mujeres o varones?
19. ¿A quién vende las escobas? ¿(¿Quién compra las escobas?) – intermediarios, consumidores?
20. ¿Usualmente, las gentes que compran las escobas son mujeres o varones?
21. ¿Qué precio obtiene para las escobas? ¿Cuánta vale una escoba?
22. ¿Hay diferencia en el precio de las escobas por estación de tiempo? ¿Cuál es la diferencia?
23. ¿Cuál es el mejor tiempo para vender las escobas?
24. ¿Quién determina el precio para las escobas (cuándo vende)?
25. ¿Vende a algunos(as) intermediarios?
26. ¿Dónde venden las escobas los intermediarios? ¿A qué precio? ¿Afuera de Nicaragua?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

27. ¿El tramo (la tienda) es la primera fuente de ingreso (para su familia)?
28. ¿El tramo es uno de los principales fuentes de ingreso (para su familia)?
29. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
30. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
31. ¿Quién maneja los ingresos del tramo (la tienda)? ¿De las otras actividades?

#### **Los intermediarios de las escobas**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA ADQUISICIÓN DE LAS ESCOBAS**

7. ¿Dónde compra las escobas? (p.ej. en el mercado de Masaya, casa en Apoyo, etc.)
8. ¿Obtiene usted escobas de su casa – hay gente en su familia que se hace escobas?
9. ¿Compra las escobas de los productores? (¿Son mujeres o varones?)
10. ¿Dónde viven la mayor parte de los productores las escobas?
11. ¿A qué precio compra las escobas?
12. ¿Quién determina el precio de las escobas?
13. ¿Hay contratos entre los productores de las escobas y los intermediarios (como usted)?
14. ¿Hay diferencia en el precio de las escobas por estación de tiempo?
15. ¿Hay diferencia en el precio de las escobas? (P.ej. por lugar – de un productor a otro)
16. ¿Cuál es el mejor tiempo para comprar las escobas?
17. ¿Cuántas veces compra las escobas? (por mes, por semana)
18. ¿Cada vez que compra, cuánto es la cantidad de las escobas?
19. ¿Trabaja con una cooperativa u otra organización? (Si sí, ¿qué es el función de la organización / la cooperativa?)
20. ¿Compra y vende otros productos? ¿Cuántos más? (p.ej. ¿compra, hace, y vende los palos de escobas también?)
21. ¿Hay más de un vendedor local que compra las escobas? ¿Cuántos hay?

**INFORMACIÓN DE LA VENTA DE LAS ESCOBAS**

22. ¿Dónde vende las escobas? (p.ej. en el mercado, en su casa, otro lugar)
23. ¿Quién compra las escobas? (¿Mujeres o varones?)
24. ¿Vende las escobas a otros vendedores? ¿Cuántos?
25. ¿A qué precio vende las escobas?
26. ¿Quién determina el precio de las escobas?
27. ¿Hay diferencia en el precio de las escobas por estación de tiempo?
28. ¿Hay diferencia en el precio de las escobas dependiendo de quién compra las escobas?
29. ¿Cuál es el mejor tiempo para vender las escobas?
30. ¿Vende las escobas fuera de Nicaragua? ¿O vende a algún otro que los vende fuera de Nicaragua?

**INFORMACIÓN DE LOS INGRESOS DE LA CASA**

31. ¿Las escobas son la primera fuente de ingreso (para su familia)?
32. ¿Las escobas son una de las principales fuentes de ingreso (para su familia)?
33. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
34. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
35. ¿Quién maneja los ingresos de las escobas? ¿De las otras actividades?

**B. Translated Survey – English****Broomstick Extractors**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**INFORMATION ON BROOMSTICK EXTRACTION**

7. Where in the reserve do you extract brooms?
8. How close is your house located to the reserve (distance)?
9. How often do you use the reserve? Daily?
10. How often do you extract broomsticks (per week, per month)?
11. How many do you collect when you extract broomsticks (number of sticks/bundles)?
12. How long does it take you to collect this amount of broomsticks (hours)?
13. What type (species) of broomsticks do you extract?
14. Do you extract other products at the same time as broomsticks?
15. Do you extract other products separately from broomsticks?
16. What products do the women, men, children extract from the reserve?
17. About how many people extract broomsticks from the reserve? Do all these people live in or around the reserve?
18. How do you harvest the broomsticks – do you cut branches of the whole tree? Or part of the trunk?
19. How does cutting affect the tree – such as the growth of the tree? Does harvesting kill the tree? If not what happens to the tree?
20. Where in the reserve do you usually go to extract broomsticks? Close to the road or further into the forest?
21. What type of forest do the broomsticks grow in – open or closed? Are there many different types of trees that grow with it – are they large or small trees?
22. Are there many different types of trees that are used for broomsticks? Which are the best?
23. Do all extractors harvest from the same area? Is there a spoken agreement between extractors as to who can harvest where?
24. How long have you extracted broomsticks (years)?
25. Do you have to travel farther into the forest to collect good broomsticks? How much farther?

26. Which is the best time of year to extract broomsticks?
27. Do you prepare the broomsticks before you sell them (peel, dry, etc)?
28. If there are guards at the entrance (main road) to the Reserve, do you have to pay fines or a fee (or bribes)
29. Could the broomsticks be cultivated?
30. Is there anyone that cultivates them?
31. Are you a member of a cooperative or other organization that is associated with the production of brooms/extraction of broomsticks?

#### **INFORMATION ON THE SALE OF BROOMS**

32. Who do you sell the broomsticks to – producers, intermediaries?
33. Where are the producers you sell to located?
34. Where do you sell the broomsticks – out of your home, in the producers home?
35. At what price do you sell the broomsticks – per bundle, individual?
36. Who determines the price?
37. What is the best time to sell?
38. Who else in your family sells broomsticks?
39. If you sell to intermediaries, is the price different?

#### **INFORMATION OF HOUSEHOLD INCOME**

40. Are brooms the primary source of income for your household?
41. Are they among the main sources of income or are they supplementary?
42. What are the main sources (the primary sources) of income for your household? The supplementary sources?
43. What activities (those above) do the women carry out that produce income for the household? The men? Children?
44. Who manages the income from brooms? The other activities?

#### **Straw Cultivators**

1. Name (Pseudonym):

#### **DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

#### **INFORMATION ON THE PRODUCTION OF STRAW**

7. Where so you cultivate the straw? Near your house, in the reserve?
8. Are there people that grow straw in the reserve?
9. Where in the reserve?
10. How long have you cultivated straw?
11. What other products do you cultivate straw with?
12. How many crops of straw do you harvest each year?
13. How much do you obtain each harvest?
14. Who cultivates the straw – both you and your spouse? Children?
15. Are there other uses for straw?
45. Are you a member of a cooperative or other organization that is associated with the production of brooms/extraction of broomsticks?

#### **INFORMATION ON THE SALE OF STRAW**

16. To whom do you sell the straw (if you sell it)? To broom producers?
17. Where are these people located?
18. Do you sell the straw in your house or do you go to their house? Market?
19. At what price do you sell straw (and by what quantity)?
20. Who determines the price of straw?
21. What is the best time to sell straw?
22. Who in your household sells the straw?

23. If you sell to intermediaries, where are they located and is the price different?

#### **HOUSEHOLD INCOME INFORMATION**

24. Are brooms the primary source of income for your household?

25. Are they among the main sources of income or are they supplementary?

26. What are the main sources (the primary sources) of income for your household? The supplementary sources?

27. What activities (those above) do the women carry out that produce income for the household? The men? Children?

28. Who manages the income from brooms? The other activities?

#### **Broom Producers**

1. Name (Pseudonym):

#### **DEMOGRAPHIC INFORMATION**

2. Where do you live?

3. What is your age?

4. Are you married? Common law?

5. Do you have any children? How many?

6. Sex:

#### **INFORMATION ON THE ACQUISITION OF BROOMSTICKS**

7. Where do you buy the broomsticks (or do you extract them)?

8. Where do you buy straw (or do you cultivate it)?

9. If in your house, who comes to sell you straw and broomsticks – extractors, farmers, intermediaries? Are they usually men or women?

10. Is there a difference in the price of these materials if an intermediary is selling them?

11. Who extracts the broomsticks?

12. The broomsticks you use are from the reserve?

13. What type of broomstick do you usually buy?

14. What is the best type?

15. Is there a difference in price between the types?

16. Who cultivates the straw? Yourself?

17. Where do you cultivate it?

18. What is the average price you pay for broomsticks and straw?

19. Who determines these prices?

20. Who in your house purchases this material (broomsticks and straw)?

21. How often do you purchase broomsticks? Straw?

22. Are there contracts between broom producers and yourself?

#### **INFORMATION ON THE PRODUCTION OF BROOMS**

23. Where do you produce the brooms – in your home or another location?

24. Who in your family produces/makes the brooms? Are there people outside of your family who produce brooms with you?

25. What parts of the production process does each family/non-family member perform?

26. Do you produce brooms everyday? How often – per week, per month?

27. Do you produce brooms all year or only certain times of the year? What is the best time to produce brooms?

28. How much time is needed to produce a broom?

29. How many brooms do you normally produce in one day of work?

30. What is needed to prepare the material to make the brooms?

31. How long does one broom usually last (one month, one year, etc)?

32. Who in your household sells the brooms? Is it always the same person or is there more than one person in your household you sell them?

33. Where do they sell the brooms– out of the home or in the market? Or both?

#### **HOUSEHOLD INCOME INFORMATION**

34. Are brooms the primary source of income for your household?

35. Are they among the main sources of income or are they supplementary?

36. What are the main sources (the primary sources) of income for your household? The supplementary sources?
37. What activities (those above) do the women carry out that produce income for the household? The men? Children?
38. Who manages the income from brooms? The other activities?
39. Are you a member of a cooperative or other organization that is associated with the production of brooms/extraction of broomsticks?

#### **INFORMATION ON THE SALE OF BROOMS**

40. Where do you sell the brooms? Out of your house in other locations?
41. To whom do you sell the brooms? (Who buys the brooms – intermediaries, consumers, etc.?)
42. Are the people who purchase the brooms usually male or female?
43. Who in your household sells the brooms? Only yourself or other members as well?
44. How much does one broom cost? One dozen?
45. Is there a price difference seasonally?
46. What is the best season/time to sell brooms?
47. Who determines the price of the brooms? Seller or buyer?
48. The intermediaries, where so they sell the brooms – in what markets or cities?
49. How much do the intermediaries sell the brooms for?
50. Are the brooms sold outside of Nicaragua? If so, by whom?

#### **Broom Traders**

1. Name (Pseudonym):

#### **DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

#### **INFORMATION ON THE SALE (TRADING) OF BROOMS**

7. Where do you sell the brooms? In your house, on the street, in the markets?
8. Do you ever buy brooms from other broom producers to sell? If so, who do you buy from and where?
9. How many times a week do you sell brooms?
10. Do you sell the brooms by the dozen (bunch) or individually?
11. What price do you sell the brooms at – dozen? Individual? How does it differ per broom type?
12. Who do you sell the brooms to - market stalls, intermediaries, and/or consumers? Who do you sell to most?
13. Are they usually men or women?
14. Is there a difference in the price of brooms depending on whom you sell them to and the quantity? What is the difference?
15. Is there a difference in price depending on the season?
16. What is the best time to sell brooms?
17. Who determines the price of the brooms?
18. Where is the best place to sell brooms?
19. Where so intermediaries sell the brooms after they buy them from you? Other locations in Nicaragua? At what price?
20. Are the brooms sold outside of Nicaragua? Where and by who?
21. Do you buy and sell other products alongside the brooms?

#### **HOUSEHOLD INCOME INFORMATION**

22. Are brooms the primary source of income for your household?
23. Are they among the main sources of income or are they supplementary?
24. What are the main sources (the primary sources) of income for your household? The supplementary sources?
25. What activities (those above) do the women carry out that produce income for the household? The men? Children?
26. Who manages the income from brooms? The other activities?

**Retail Vendors**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**INFORMATION ON THE ACQUISITION OF BROOMS**

7. Who do you buy brooms from? Directly from producers or intermediaries?
8. Where do the sellers live – from whom you purchase brooms? Are they usually men or women?
9. Do you buy the brooms in the market (at your stall), in your house, or on the street?
10. How many people do you normally purchase brooms from?
11. At what price do you buy the brooms? Dozen and individual?
12. Who determines the price of brooms?
13. Are there any contracts between yourself and the broom sellers (spoken or written)?
14. Is there a difference in price per season?
15. Is there a difference in price depending on whom you buy from?
16. What is the best time to buy brooms (seasonally)?
17. How many times (a week, month, year) do you purchase brooms?
18. How many brooms do you purchase each time? (Quantity)

**INFORMATION OF THE SALE OF BROOMS**

19. Where do you sell the brooms – only in your stall?
20. Who do you sell your brooms to? Intermediaries, consumers, other stalls?
21. Do you sell to any intermediaries?
22. At what price do you sell the brooms? (by dozen and/or individual)
23. Who determines the price of the brooms?
24. Is there a difference in the sale price per season?
25. Is there a difference in the price of brooms depending on who buys the brooms?
26. What is the best time to sell the brooms?
27. Do you sell the brooms outside of Nicaragua, or to anyone who sells them outside the country?

**HOUSEHOLD INCOME INFORMATION**

28. Are brooms the primary source of income for your household?
29. Are they among the main sources of income or are they supplementary?
30. What are the main sources (the primary sources) of income for your household? The supplementary sources?
31. What activities (those above) do the women carry out that produce income for the household? The men? Children?
32. Who manages the income from brooms? The other activities?

**Intermediaries – Brooms**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**INFORMATION ON THE ACQUISITION OF BROOMS**

7. From who do you buy brooms (directly from the producers/traders, from stall vendors, etc)?
8. Do you obtain brooms from your household – are there people in your household that make brooms?
9. Where do the people live from whom you purchase brooms? Are the women or men?
10. Do you buy the brooms on the streets, in the market, or in your house?

11. From how many producers/traders do you purchase brooms?
12. At what price do you purchase brooms? (by the dozen and/or individual)
13. Who determined the price of the brooms?
14. Are there contracts between you and the people you purchase brooms from?
15. Is there a difference in the price per season?
16. Are there differences in price depending on whom you purchase brooms from and by location?
17. What is the best time to purchase brooms?
18. How many times do you purchase brooms per week, month, and/or year?
19. How many do you purchase at each time?
20. Do you work with a cooperative or other organization?

**INFORMATION ON THE SALE OF BROOMS**

21. Where do you sell the brooms?
22. To whom do you sell the brooms? (Stores, stalls, consumers)
23. Do you sell to other intermediaries?
24. Are there contracts between yourself and the people you sell to?
25. At what price do you sell the brooms (dozen and/or individual)?
26. Who determines the price of the brooms?
27. Is there a difference in the price of brooms by season?
28. Is there a difference in the sale price of brooms depending on whom you sell to?
29. What is the best time of year to sell brooms?
30. Do you sell the brooms outside of Nicaragua?

**HOUSEHOLD INCOME INFORMATION**

31. Are brooms the primary source of income for your household?
32. Are they among the main sources of income or are they supplementary?
33. What are the main sources (the primary sources) of income for your household? The supplementary sources?
34. What activities (those above) do the women carry out that produce income for the household? The men? Children?
35. Who manages the income from brooms? The other activities?

## Appendix C Coco-fern Basket Surveys

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### **A. Original Survey - Spanish**

#### **Los extractores de los bejucos, la palma y las hojas de coco**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA EXTRACCIÓN**

7. ¿Extrae los bejucos del bosque de La Laguna de Apoyo? ¿Dónde en la Laguna?
8. ¿Qué tipo de bejuco extrae? (¿Cuál es el nombre del bejuco que usa para canastas?)
9. ¿Quién en su familia extrae los bejucos?
10. ¿Su casa queda cerca del bosque donde extrae el bejuco? ¿A qué distancia?
11. ¿Cuántas veces va al bosque (en La Laguna) para extraer los bejucos? ¿Para otros productos, como leña? (por semana)
12. ¿Cuánto obtiene cuándo extrae los bejucos? (en cantidad)
13. ¿Los bejucos que extrae, son cosecha o crece natural?
14. ¿Cómo corta los bejucos? ¿Jala las raíces o solo corta las enredaderas del bejuco?
15. ¿Si jala las raíces de los bejucos, cómo afecta el crecimiento de los bejucos?
16. ¿Cuál es el mejor tiempo para extraer los bejucos? ¿Las hojas de coco? ¿La palma?
17. ¿De dónde obtiene las hojas del coco y la palma? ¿En La Laguna de Apoyo o alrededor de la reserva o en El Valle?
18. ¿Las hojas del coco y las palmas son del mismo árbol? ¿Extrae los dos al mismo tiempo?
19. ¿Quién en su familia extrae las hojas del coco y la palma?
20. ¿Las hojas del coco y las palmas que extrae, son cosecha o crece natural? ¿Y, dónde crece o se cultiva?
21. ¿Cómo corta las hojas de coco? ¿Las palmas?
22. ¿A veces compra los bejucos, las hojas o las palmas?
23. ¿Quién los vende y dónde?
24. ¿A veces vende los bejucos, las hojas y las palmas a otros productores de canastas? ¿Cuándo?
25. ¿A qué precio vende y/o compra cada uno? (p.ej. por docena)
26. ¿El único uso para los bejucos es para canastas o hay otros usos? ¿Las hojas de coco? ¿Las palmas?
27. ¿Trabaja con una cooperativa u otra organización?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

28. ¿Las canastas son la primera fuente de ingreso (para su familia)?
29. ¿Las canastas son unos de los principal fuentes de ingreso (para su familia)?
30. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
31. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
32. ¿Quién maneja los ingresos de las canastas? ¿De las otras actividades?

#### **Los productores de canastas de coco**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado(a)?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

**INFORMACIÓN DE LA PRODUCCIÓN DE LAS CANASTAS DE COCO**

7. ¿Hace usted canastas del coco en su casa u otro lugar?
8. ¿Quién en su familia hacen las canastas? ¿Hay personas fuera de su familia que haga las canastas en su casa?
9. ¿Quién hace qué parte?
10. ¿Hace las canastas cada día? (¿O cuántas veces por semana hace canastas?)
11. ¿Hace canastas todo el año? ¿Cuál es el mejor tiempo para hacer canastas?
12. ¿Cuántos tipos de canastas hace usted? ¿Cuáles son los usos?
13. ¿Qué tipo de canasta hace más?
14. ¿Cuánto tiempo necesita para hacer una canasta?
15. ¿Cuántas canastas hacen por día?
16. ¿Qué se necesita hacer para preparar los bejucos, las hojas, y la palma para hacer las canastas?
17. ¿Cuánto tiempo duran las canastas?
18. ¿Quién en su casa vende las canastas? ¿Siempre una persona, o más de una persona en su familia las vende?
19. ¿Vende en su casa y el mercado? O los dos?

**INFORMACIÓN DE LOS INGRESOS DE LA CASA**

20. ¿Las canastas son la primera fuente de ingreso (para su familia)?
21. ¿Las canastas son unos de los principal fuentes de ingreso (para su familia)?
22. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
23. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
24. ¿Quién maneja los ingresos de las canastas? ¿De las otras actividades?

**Los comerciantes de canastas de coco**

1. Nombre (seudónimo):

**INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

**INFORMACIÓN DE LA VENTA DE LAS CANASTAS DE COCO**

7. ¿Dónde vende las canastas? ¿En su casa, mercado, u otra parte?
8. ¿Compra canastas (para vender) de otros productores de canastas? ¿De dónde las compra y de quién? (p.ej. en El Valle)
9. ¿Cuántas veces vende las canastas – por semana?
10. ¿Vende las canastas por docena o/y por unidad?
11. ¿A qué precio vende las canastas? (¿Cuánto vale una docena y cuánto vale una canasta (por tipo)?)
12. ¿A quién vende las canastas? ¿Quién compra las canastas - vendedores en el mercado (que tiene un puesto), intermediarios, y/o consumidores? ¿A quién vende más?
13. ¿Usualmente, son mujeres o varones?
14. ¿Hay diferencia en el precio depende a quién compra las canastas? (p.ej. si vende a los intermediarios, ¿el precio es más barato que los vendedores?) ¿Y qué es la diferencia?
15. ¿Hay diferencia en el precio de las canastas por estación de tiempo?
16. ¿Cuál es el mejor tiempo para vender las canastas?
17. ¿Cuál es el mejor lugar para vender las canastas (p.ej. cuál mercado)?
18. ¿Quién determina el precio para las canastas?
19. ¿Dónde venden las canastas los intermediarios – p.ej. vende en otros lugares en Nicaragua? ¿A qué precio?
20. ¿Las canastas que hace se venden fuera de Nicaragua? ¿Dónde y por quién?
21. ¿Compra y vende otros productos? ¿Qué?

**INFORMACIÓN DE LOS INGRESOS DE LA CASA**

22. ¿Las canastas son la primera fuente de ingreso (para su familia)?
23. ¿Las canastas son unos de los principal fuentes de ingreso (para su familia)?

24. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
25. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
26. ¿Quién maneja los ingresos de las canastas? ¿De las otras actividades?

### **Los vendedores (tramos y tiendas) de las canastas de coco**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

#### **INFORMACIÓN DE LA ADQUISICIÓN DE LAS CANASTAS DE COCO**

7. ¿De quién compra las canastas? (¿Por ejemplo, directamente de los productores de canastas o los intermediarios?)
8. ¿Dónde viven? ¿Son mujeres o varones?
9. ¿Compra las canastas en el mercado, de una casa, en la calle?
10. ¿De cuánto productores o intermediarios compra las canastas?
11. ¿A qué precio compra las canastas? (por docena y/o unidad)
12. ¿Quién determina el precio de canastas?
13. ¿Hay contratos entre los productores de canastas y usted (vendedores)?
14. ¿Hay diferencia en el precio de las canastas por estación de tiempo?
15. ¿Hay diferencia en el precio de las canastas depende de quién compra las canastas? ¿y por lugar?
16. ¿Cuál es el mejor tiempo para comprar las canastas?
17. ¿Cuántas veces compra las canastas? (por mes, por semana)
18. ¿Cuánto compra cada vez? (cantidad)

#### **INFORMACIÓN DE LA VENTA DE LAS CANASTAS DE COCO**

19. ¿Dónde vende las canastas? (p.ej. en el mercado, en la calle, etc.)
20. ¿A quién vende las canastas? (¿P.ej. los consumidores, los pulperos)
21. ¿Vende a los intermediarios?
22. ¿A qué precio vende las canastas? (p.ej. por unidad)
23. ¿Quién determina el precio de canastas?
24. ¿Hay diferencia en el precio de las canastas por estación de tiempo?
25. ¿Hay diferencia en el precio de las canastas depende de quién compra las canastas?
26. ¿Cuál es el mejor tiempo para vender las canastas?
27. ¿Vende las canastas fuera de Nicaragua? ¿O vende a algún otro que las vende fuera de Nicaragua?

#### **INFORMACIÓN DE LOS INGRESOS DE LA CASA**

28. ¿El tramo es la primera fuente de ingreso (para su familia)?
29. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
30. ¿Qué actividades hacen las mujeres, los varones, y los niños (en su familia)?
31. ¿Quién maneja los ingresos del tramo? ¿De las otras actividades?
32. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?

### **Los intermediarios de las canastas de coco**

1. Nombre (seudónimo):

#### **INFORMACIÓN DEMOGRÁFICA**

2. ¿Dónde vive usted?
3. ¿Cuántos años tiene usted?
4. ¿Está casado / juntado?
5. ¿Tiene hijos? ¿Cuántos?
6. Género:

**INFORMACIÓN DE LA ADQUISICIÓN DE LAS CANASTAS DE COCO**

7. ¿De quién compra las canastas? (¿Por ejemplo, directamente de los productores de canastas?)
8. ¿Obtiene usted canastas de su casa – hay gente en su familia que se hace canastas?
9. ¿Dónde viven? ¿Son mujeres o varones?
10. ¿Compra las canastas en el mercado, de una casa, en la calle?
11. ¿De cuánto productores (o vendedores) compra las canastas?
12. ¿A qué precio compra las canastas? (por docena y/o unidad)
13. ¿Quién determina el precio de canastas?
14. ¿Hay contratos entre los productores de canastas y usted (los intermediarios)?
15. ¿Hay diferencia en el precio de las canastas por estación de tiempo?
16. ¿Hay diferencia en el precio de las canastas depende de quién compra las canastas? ¿Y por lugar?
17. ¿Cuál es el mejor tiempo para comprar las canastas?
18. ¿Cuántas veces compra las canastas? (por mes, por semana)
19. ¿Cuánto compra cada vez? (cantidad)
20. ¿Trabaja con una cooperativa u otra organización?

**INFORMACIÓN DE LA VENTA DE LAS CANASTAS DE COCO**

21. ¿Dónde vende las canastas? (p.ej. en el mercado, en la calle, etc.)
22. ¿A quién vende las canastas? (¿P.ej. a pulperías, puestos en el mercado, etc.?)
23. ¿Vende a los otros intermediarios?
24. ¿Hay contratos entre usted (los intermediarios) y la gente que compra las canastas?
25. ¿A qué precio vende las canastas? (p.ej. por docena)
26. ¿Quién determina el precio de canastas?
27. ¿Hay diferencia en el precio de las canastas por estación de tiempo?
28. ¿Hay diferencia en el precio de las canastas depende de quién compra las canastas?
29. ¿Cuál es el mejor tiempo para vender las canastas?
30. ¿Vende las canastas fuera de Nicaragua? ¿O vende a algún otro que las vende fuera de Nicaragua?

**INFORMACIÓN DE LOS INGRESOS DE LA CASA**

31. ¿Las canastas son la primera fuente de ingreso (para su familia)?
32. ¿Las canastas son uno de los principales fuentes de ingreso (para su familia)?
33. ¿Cuáles son las otras actividades que producen ingresos principales para su familia? ¿Y los ingresos suplementarios?
34. ¿Qué actividades hacen las mujeres en su familia para hacer ingresos? ¿Los varones? ¿Los niños?
35. ¿Quién maneja los ingresos de las canastas? ¿De las otras actividades?

**B. Translated Survey – English****Extractors of fern vines, and coco palm leaves**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**EXTRACTION INFORMATION**

7. Do you extract vine in the Reserve? Where in the Reserve?
8. What type of vine do you extract – what is the name of the vine used to make baskets?
9. Who in your household extracts vines?
10. How close is your house from the Reserve – what distance do you have to go to where you extract vines?
11. How many times a week do you extract vines? For other products, such as firewood?
12. How much do you obtain each time? (Quantity)
13. The vines that you extract, do they grow naturally in the forest or do people cultivate them as well?
14. How do you harvest the vines – do you pull them from the roots or cut them?
15. If you pull the whole roots out, how does it affect the growth of the vines – i.e. does it kill them?

16. What is the best time of year to collect vines? What about the coconut palm leaves?
17. Where do you obtain the coconut palm leaves?
18. Do the coconut palms grow naturally in the forest, or are they planted?
19. Do you extract the vines and coconut palm leaves at the same time?
20. Who in your family extracts coconut palm leaves?
21. How do you harvest the leaves?
22. Are there times when you have to purchase/pay for the coconut palm leaves?
23. Who do you buy them from and where?
24. Do you ever sell the vines and/or coconut palm leaves?
25. Are there other uses for the vines and coconut palm leaves?
26. Do you belong to a cooperative or other organization?

#### **HOUSEHOLD INCOME INFORMATION**

27. Are baskets the primary source of income for your household?
28. Are they among the main sources of income or are they supplementary?
29. What are the main sources (the primary sources) of income for your household? The supplementary sources?
30. What activities (those above) do the women carry out that produce income for the household? The men? Children?
31. Who manages the income from baskets? The other activities?

#### **Basket Producers**

1. Name (Pseudonym):

#### **DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

#### **INFORMATION ON THE PRODUCTION OF BASKETS**

7. Where do you produce the baskets – in your home or another location?
8. Who in your family produces/makes the baskets? Are there people outside of your family who produce baskets with you?
9. What parts of the production process does each family/non-family member perform?
10. Do you produce baskets everyday? How often – per week, per month?
11. Do you produce baskets all year or only certain times of the year? What is the best time to produce baskets?
12. How many types of baskets do you produce? What are they used for?
13. What type do you produce most?
14. How much time is needed to produce a basket?
15. How many baskets do you normally produce in one day of work?
16. What is needed to prepare the material to make the baskets? (What do you have to do to the coconut palm leaves and the vines to make them ready for use?)
17. How long does one basket usually last (one month, one year, etc)?
18. Who in your household sells the baskets? Is it always the same person or are there more than one person in your household you sell them?
19. Where do they sell the baskets – out of the home or in the market? Or both?

#### **HOUSEHOLD INCOME INFORMATION**

20. Are baskets the primary source of income for your household?
21. Are they among the main sources of income or are they supplementary?
22. What are the main sources (the primary sources) of income for your household? The supplementary sources?
23. What activities (those above) do the women carry out that produce income for the household? The men? Children?
24. Who manages the income from baskets? The other activities?

**Basket Traders**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**INFORMATION ON THE SALE (TRADING) OF BASKETS**

7. Where do you sell the baskets? In your house, on the street, in the markets?
8. Do you ever buy baskets from other basket producers to sell? If so, who do you buy from and where?
9. How many times a week do you sell baskets?
10. Do you sell the baskets by the dozen (bunch) or individually?
11. What price do you sell the baskets at – dozen? Individual? How does it differ per basket type?
12. Who do you sell the baskets to – market stalls, intermediaries, and/or consumers? Who do you sell to most?
13. Are they usually men or women?
14. Is there a difference in the price of baskets depending on whom you sell them to and the quantity? What is the difference?
15. Is there a difference in price depending on the season?
16. What is the best time to sell baskets?
17. Who determines the price of the baskets?
18. Where is the best place to sell baskets?
19. Where so intermediaries sell the baskets after they buy them from you? Other locations in Nicaragua? At what price?
20. Are the baskets sold outside of Nicaragua? Where and by who?
21. Do you buy and sell other products alongside the baskets?

**HOUSEHOLD INCOME INFORMATION**

22. Are baskets the primary source of income for your household?
23. Are they among the main sources of income or are they supplementary?
24. What are the main sources (the primary sources) of income for your household? The supplementary sources?
25. What activities (those above) do the women carry out that produce income for the household? The men? Children?
26. Who manages the income from baskets? The other activities?

**Retail Vendors**

1. Name (Pseudonym):

**DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

**INFORMATION ON THE ACQUISITION OF BASKETS**

7. Who do you buy baskets from? Directly from producers or intermediaries?
8. Where do the sellers live – from whom you purchase baskets? Are the usually men or women?
9. Do you buy the baskets in the market (at your stall), in your house, or on the street?
10. How many people do you normally purchase baskets from?
11. At what price do you buy the baskets? Dozen and individual?
12. Who determines the price of baskets?
13. Are there any contracts between yourself and the basket sellers (spoken or written)?
14. Is there a difference in price per season?
15. Is there a difference in price depending on whom you buy from?

16. What is the best time to buy baskets (seasonally)?
17. How many times (a week, month, year) do you purchase baskets?
18. How many baskets do you purchase each time? (Quantity)

#### **INFORMATION OF THE SALE OF BASKETS**

19. Where do you sell the baskets – only in your stall?
20. Who do you sell your baskets to? Intermediaries, consumers, other stalls?
21. Do you sell to any intermediaries?
22. At what price do you sell the baskets? (by dozen and/or individual)
23. Who determines the price of the baskets?
24. Is there a difference in the sale price per season?
25. Is there a difference in the price of baskets depending on who buys the baskets?
26. What is the best time to sell the baskets?
27. Do you sell the baskets outside of Nicaragua, or to anyone who sells them outside the country?

#### **HOUSEHOLD INCOME INFORMATION**

28. Are baskets the primary source of income for your household?
29. Are they among the main sources of income or are they supplementary?
30. What are the main sources (the primary sources) of income for your household? The supplementary sources?
31. What activities (those above) do the women carry out that produce income for the household? The men? Children?
32. Who manages the income from baskets? The other activities?

#### **Intermediaries – Baskets**

1. Name (Pseudonym):

#### **DEMOGRAPHIC INFORMATION**

2. Where do you live?
3. What is your age?
4. Are you married? Common law?
5. Do you have any children? How many?
6. Sex:

#### **INFORMATION ON THE ACQUISITION OF BASKETS**

7. From who do you buy baskets (directly from the producers/traders, from stall vendors, etc)?
8. Do you obtain baskets from your household – are there people in your household that make baskets?
9. Where do the people live from whom you purchase baskets? Are the women or men?
10. Do you buy the baskets on the streets, in the market, or in your house?
11. From how many producers/traders do you purchase baskets?
12. At what price do you purchase baskets? (by the dozen and/or individual)
13. Who determined the price of the baskets?
14. Are there contracts between you and the people you purchase baskets from?
15. Is there a difference in the price per season?
16. Are there differences in price depending on whom you purchase baskets from and by location?
17. What is the best time to purchase baskets?
18. How many times do you purchase baskets per week, month, and/or year?
19. How many do you purchase at each time?
20. Do you work with a cooperative or other organization?

#### **INFORMATION ON THE SALE OF BASKETS**

21. Where do you sell the baskets?
22. To whom do you sell the baskets? (Stores, stalls, consumers)
23. Do you sell to other intermediaries?
24. Are there contracts between yourself and the people you sell to?
25. At what price do you sell the baskets (dozen and/or individual)?
26. Who determines the price of the baskets?
27. Is there a difference in the price of baskets by season?
28. Is there a difference in the sale price of baskets depending on whom you sell to?
29. What is the best time of year to sell baskets?

30. Do you sell the baskets outside of Nicaragua?

**HOUSEHOLD INCOME INFORMATION**

33. Are baskets the primary source of income for your household?

34. Are they among the main sources of income or are they supplementary?

35. What are the main sources (the primary sources) of income for your household? The supplementary sources?

36. What activities (those above) do the women carry out that produce income for the household? The men? Children?

37. Who manages the income from baskets? The other activities?

# Appendix D Institutional Review Board Approval

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## Institutional Review Board

VIRGINIA POLYTECHNIC INSTITUTE  
AND STATE UNIVERSITY

Dr. David M. Moore  
IRB (Human Subjects) Chair  
Assistant Vice Provost for Research Compliance  
CVM Phase II - Duckpond Dr., Blacksburg, VA 24061-0442  
Office: 540/231-4991; FAX: 540/231-7736  
e-mail: moored@vt.edu

## MEMORANDUM

**TO:** Laura Shillington  
Wood Science and Forest Products 0323  
**FROM:** David M. Moore  
**DATE:** 2 July 2001

**SUBJECT:** **Expedited Approval** – “Gendered Access: Commodity Chain Analysis and Non-Timbered Forest Products in Nicaragua” – IRB #01-329

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of (12) months, effective today.

Approval of your research by the IRB provides the appropriate review as required by federal and state laws regarding human subject research. It is your responsibility to report to the IRB any adverse reactions that can be attributed to this study.

To continue the project past the 12-month approval period, a continuing review application must be submitted (30) days prior to the anniversary of the original approval date and a summary of the project to date must be provided. My office will send you a reminder of this (60) days prior to the anniversary date.

cc: File  
Faculty Advisor: A. L. Hammett  
Departmental Reviewer: Paul M. Winistorfer

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## Appendix E Statisical Calculations

<b>hypothesis: more men than women participating</b>											
brooms/95%			male=yes								
<b>brooms at 95%</b>	<b>male</b>	<b>female</b>	<b>N</b>	<b>P</b>	<b>zc (95%)</b>	<b>a/95</b>	<b>b/95</b>	<b>c/95</b>	<b>pmax(95%)</b>	<b>pmin(95%)</b>	<b>at 95% confidence:</b>
<b>Extractors</b>	7	0	7	1.000	1.960	1.274	0.274	1.549	1.000	0.646	more males than females
<b>Cultivators</b>	6	0	6	1.000	1.960	1.320	0.320	1.640	1.000	0.610	more males than females
<b>Producers</b>	9	0	9	1.000	1.960	1.213	0.213	1.427	1.000	0.701	more males than females
<b>Traders</b>	0	7	7	0.000	1.960	0.274	0.274	1.549	0.354	0.000	more females than males
<b>Intermediaries</b>	3	4	7	0.429	1.960	0.703	0.458	1.549	0.750	0.158	no conclusion
<b>Retailers</b>	2	10	12	0.167	1.960	0.327	0.265	1.320	0.448	0.047	more females than males
brooms/99%											
<b>brooms at 99%</b>	<b>male</b>	<b>female</b>	<b>N</b>	<b>P</b>	<b>zc (99%)</b>	<b>a/99</b>	<b>b/99</b>	<b>c/99</b>	<b>pmax(99%)</b>	<b>pmin(99%)</b>	<b>at 99% confidence:</b>
<b>Extractors</b>	7	0	7	1.000	2.580	1.475	0.475	1.951	1.000	0.513	more males than females
<b>Cultivators</b>	6	0	6	1.000	2.580	1.555	0.555	2.109	1.000	0.474	no conclusion
<b>Producers</b>	9	0	9	1.000	2.580	1.370	0.370	1.740	1.000	0.575	more males than females
<b>Traders</b>	0	7	7	0.000	2.580	0.475	0.475	1.951	0.487	0.000	more females than males
<b>Intermediaries</b>	3	4	7	0.429	2.580	0.904	0.677	1.951	0.811	0.116	no conclusion
<b>Retailers</b>	2	10	12	0.167	2.580	0.444	0.392	1.555	0.538	0.033	no conclusion
baskets/95%											
<b>baskets</b>	<b>male</b>	<b>female</b>	<b>N</b>	<b>P</b>	<b>zc (95%)</b>	<b>a/95</b>	<b>b/95</b>	<b>c/95</b>	<b>pmax(95%)</b>	<b>pmin(95%)</b>	<b>at 95% confidence:</b>
<b>Extractors</b>	1	4	5	0.200	1.960	0.584	0.520	1.768	0.624	0.036	no conclusion
<b>Producers</b>	1	4	5	0.200	1.960	0.584	0.520	1.768	0.624	0.036	no conclusion
<b>Traders</b>	1	4	5	0.200	1.960	0.584	0.520	1.768	0.624	0.036	no conclusion
<b>Intermediaries</b>	0	1	1		1.960						
<b>Retailers</b>	2	10	12	0.167	1.960	0.327	0.265	1.320	0.448	0.047	more females than males

<b>hypothesis: more men than women participating</b>											
brooms/95%			male=yes								
brooms at 95%	male	female	N	P	zc (95%)	a/95	b/95	c/95	pmax(95%)	pmin(95%)	at 95% confidence:
Extractors	7	0	7	1.000	1.96	1.274	0.274	1.549	1.000	0.646	more males than females
Cultivators	6	1	7	0.857	1.96	1.132	0.377	1.549	0.974	0.487	no conclusion
Producers	9	7	16	0.563	1.96	0.683	0.271	1.240	0.769	0.332	no conclusion
Traders	0	6	6	0.000	1.96	0.320	0.320	1.640	0.390	0.000	more females than males
Intermediaries	6	5	11	0.545	1.96	0.720	0.342	1.349	0.787	0.280	no conclusion
Retailers	2	10	12	0.167	1.96	0.327	0.265	1.320	0.448	0.047	more females than males
brooms/99%											
brooms at 99%	male	female	N	P	zc (99%)	a/99	b/99	c/99	pmax(99%)	pmin(99%)	at 99% confidence:
Extractors	8	0	8	1.000	2.58	1.416	0.416	1.832	1.000	0.546	more males than females
Cultivators	6	1	7	0.857	2.58	1.333	0.585	1.951	0.983	0.383	no conclusion
Producers	9	7	16	0.563	2.58	0.771	0.382	1.416	0.814	0.275	no conclusion
Traders	0	6	6	0.000	2.58	0.555	0.555	2.109	0.526	0.000	no conclusion
Intermediaries	6	5	11	0.545	2.58	0.848	0.492	1.605	0.835	0.222	no conclusion
Retailers	2	10	12	0.167	2.58	0.444	0.392	1.555	0.538	0.033	no conclusion
baskets/95%											
baskets	male	female	N	P	zc (95%)	a/95	b/95	c/95	pmax(95%)	pmin(95%)	at 95% confidence:
Extractors	3	4	7	0.429	1.96	0.703	0.458	1.549	0.750	0.158	no conclusion
Producers	6	16	16	0.375	1.96	0.495	0.266	1.240	0.614	0.185	no conclusion
Traders	1	4	5	0.200	1.96	0.584	0.520	1.768	0.624	0.036	no conclusion
Intermediaries	0	1	1		1.96						
Retailers	4	10	14	0.286	1.96	0.423	0.274	1.274	0.546	0.117	no conclusion
<b>hypothesis: frequency of women greater in coco than in brooms</b>											
baskets	male	female	N	P	zc (68%)	a/68	b/68	c/68	pmax(68%)	pmin(68%)	sigma
Extractors	3	4	7	0.429	1.00	0.500	0.200	1.143	0.613	0.262	0.184
Producers	4	5	9	0.444	1.00	0.500	0.175	1.111	0.607	0.293	0.163

<b>Traders</b>	0	5	5	0.000	1.00	0.100	0.100	1.200	0.167	0.000	0.167
<b>Intermediaries</b>	0	0	0		1.00						
<b>Retailers</b>	7	9	16	0.438	1.00	0.469	0.128	1.063	0.562	0.321	0.117
<b>1.Extr Plus Prod.</b>	13	1	14	0.929	1.00	0.964	0.078	1.071	0.972	0.828	0.101
<b>2.tradintretail.</b>	7	14	21	0.333	1.00	0.357	0.106	1.048	0.442	0.240	0.093
<b>brooms at 95%</b>	<b>male</b>	<b>female</b>	<b>N</b>	<b>P</b>	<b>zc (68%)</b>	<b>a/68</b>	<b>b/68</b>	<b>c/68</b>	<b>pmax(68%)</b>	<b>pmin(68%)</b>	
<b>Extractors</b>	8	0	8	1.000	1.00	1.063	0.063	1.125	1.000	0.889	0.111
<b>Cultivators</b>	6	1	7	0.857	1.00	0.929	0.150	1.143	0.944	0.681	0.176
<b>Producers</b>	9	7	16	0.563	1.00	0.594	0.128	1.063	0.679	0.438	
<b>Traders</b>	0	6	6	0.000	1.00	0.083	0.083	1.167	0.143	0.000	0.000
<b>Intermediaries</b>	6	5	11	0.545	1.00	0.591	0.157	1.091	0.685	0.398	0.148
<b>Retailers</b>	2	10	12	0.167	1.00	0.208	0.115	1.083	0.299	0.086	0.132
<b>1.Extr Plus Cult</b>	14	1	15	0.933	1.00	0.967	0.073	1.067	0.974	0.838	0.041
<b>2.tradintretail</b>	8	21	29	0.276	1.00	0.293	0.085	1.034	0.365	0.201	0.089

	<b>P2-P1</b>	<b>"p"</b>	<b>sig(P1-P2)</b>	<b>z</b>	
<b>extractors:coco v brooms</b>	-0.571	0.733	0.229	-2.497	more females than males
<b>retailers: coco v. brooms</b>	0.271	0.321	0.178	1.519	difference is not statistically significant
<b>Coco:1-2</b>	0.595	0.714	0.231	2.572	no statistically significant diff.
<b>brooms1-2</b>	0.657	0.500	0.159	4.135	more males then females
<b>producers:coco v. brooms</b>	-0.118	0.520	0.208	-0.567	no statistically significant diff.

### **Laura J. Shillington**

Laura is the second oldest of five children and grew up in Alberta, Canada. She graduated in 1997 from the University of Victoria in Victoria, British Columbia with a Bachelor of Science in Geography and Environmental Studies. Following graduation, she traveled South East Asia and New Zealand, and returned to work with several non-governmental conservation organizations in Canada. In September 1999 she drove from Vancouver to Costa Rica and stayed in Nicaragua for several months to work at an ecological station. Through this position, she was offered the chance to attend Virginia Tech to pursue a Master's degree. Which she did and this thesis is a result of her time spent in Nicaragua both prior to and during her studies at Virginia Tech.

Her future goals are to continue working in the field of gender and development, particularly in Latin America. Eventually she would like to pursue a Ph.D., but wants to gain additional experience outside of academia beforehand.