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Natural Resource Use and Cultural Change: Nipa Hut Shingle Processing with Nypa fruticans, Arecaceae, in Palawan, Philippines.

Maria Fadiman
Department of Geosciences
Florida Atlantic University

Geographers have long been interested in how people utilize resources (e.g. Denevan 1992; Sayre 2008). This study looks at the nipa palm (*Nypa fruticans* Wurmb.; Arecaceae), a unique palm in that it is the only species in the Arecaceae family considered a mangrove. This palm is important for communities throughout South and Southeast Asia, and now grows in parts of Africa. In all of these areas, nipa plays a central role for coastal and riverine people as part of maintaining a healthy coastal ecosystem, and for the goods that people make from the palm material (Hamilton and Murphy 1988; Havemann 2003). This study will focus on how women are connected to, and depend upon, the nipa palm.

In numerous areas of the Philippines nipa is the predominant mangrove species, growing at the interface between land and sea. Mangroves help to minimize erosion by providing protection from wind, waves and storms (Davies and Magsalay1990: Green and Alexander 2002). Mangroves also provide a spawning and feeding ground for fish, crustaceans and birds (Pons and Fiselier 1991; Green and Alexander 2002). Additionally, these ecosystems provide a habitat for economically important species, such as mud crabs (*Scylla serrata*) (Macintosh 1996). Scientists have also discovered that nipa palms can absorb metals and thus can help detoxify water (Wankasi et al. 2005). Thus, the ecological usefulness of the plant is well documented.

In addition to the ecological role nipa plays by protecting coastline and providing an ecosystem in which marketable organisms live, people also rely on items made from the palm itself. This paper concentrates on nipa shingles (Figure 1) made for roofing (Figure 2). Additionally, the palm provides material for brooms, food, alcohol, vinegar, basketry and perfume (Hamilton and Murphy 1988; Honculada Primavera 1995).

Despite its economic and cultural importance, two situations threaten the nipa shingle industry. One issue is environmental and the other relates to gender and socioeconomics. In terms of ecological pressure, despite mangrove's economic and social importance, deforestation threatens nipa. The Philippines has one of the highest rates of deforestation in the world, including mangrove forests (Laarman et al. 1995). In the 1920s there were at least 450,000 hectares of mangroves throughout the Philippines (Courtney and White 2000). However, by 1998 mangrove coverage had decreased to less than 123,000 hectares (Green and Alexander 2002), and the numbers continue to decline (Macintosh 1996). One of the main reasons for the decline is aquaculture pond construction. Fishing is an important industry in the Philippines and in an effort to increase the food supply and export earnings, Filipinos are constructing controlled pond systems in which to raise fish. Most often these ponds are on the natural coastline, where mangroves

Figure 1. Nipa shingles ready for sale, San Jose, Philippines.

Source: Author.

Figure 2. Nipa hut in San Jose, Philippines roofed with nipa shingles.

Source: Author.

grow. Thus, the mangroves areas are converted into aquaculture ponds (Havemann 2003; Honculada Primavera 1995: Kelly 1996).

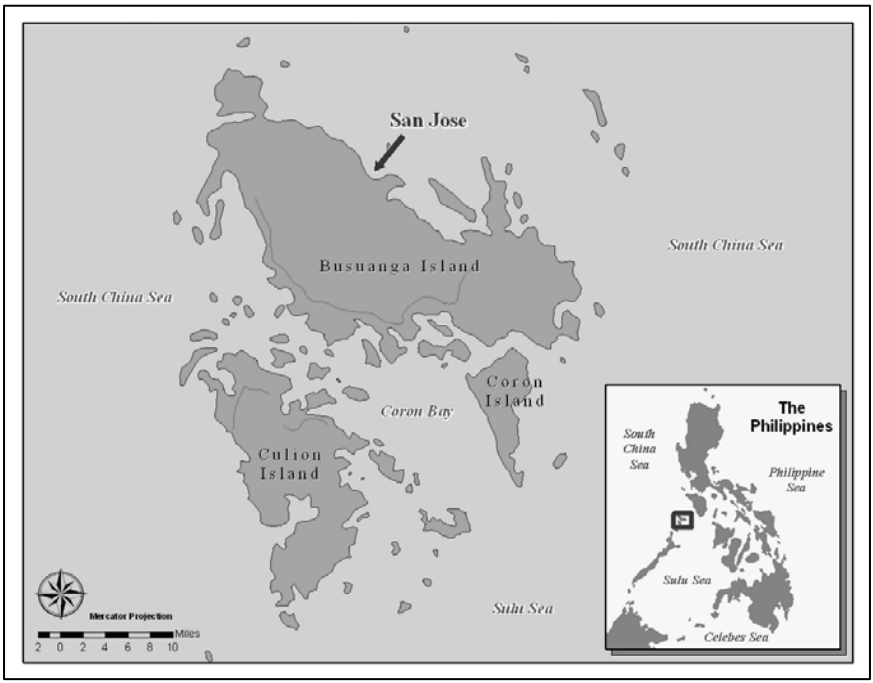
This case study in San Jose, adds to the body of literature discussing the importance of nipa, while contributing a new angle by looking at the indirect effect that tourism is having on shingle production, and the individuals who produce the product: village women. In the Philippines, tourism is an important industry (Honculada Primavera 1995**)** upon which the economy relies heavily. This paper explores how tourism affects men and women differently, and thus the gender based specialization of shingle production. In this case, men's earnings become more important, thus their social capital rises, while women's social capital falls. Social capital in this study is defined as mutual trust and reciprocity within a group, as discussed by Helliwell and Putnam (2007). Through looking at nipa hut roof shingles, we gain

an understanding of gender and empowerment within the rural Philippine family. We also see how this is being threatened, because of environmental pressures on the palm itself and social and economic factors which draw men away from their contribution to the industry. When the men leave, this compromises the women's industry.

Study Site

The case study takes place in the *barangay* (village) of San Jose, on the island of Busuanga, in the Calamian group of Islands in northern Palawan, Philippines (Figure 3). The island of Busuanga has a population of 16,287 with 3,047 households (Reyes-Boquiren 2000). The Republic of the Philippines has over 7,000 islands located in the eastern part of Southeast Asia. Because the Philippines is an archipelago

Figure 3. Map of Busuanga island with San Jose highlighted and insert of the Philippines.



Source: FAU GIS Center.

bordered by 260 million hectares of coastal waters, two important livelihoods are fishing and tourism (Honculada Primavera 1995). The climate is hot, humid and tropical, with the average temperature around 79 degrees Fahrenheit. This region has a monsoon climate with marked dry and wet seasons. Most of the mountainous islands are volcanic and originally covered in rainforest. Given that the Philippines is a series of islands, the country has extensive coastline (Laarman et al. 1995).

Methods

The purpose of the research is to understand how people use nipa and the environmental and gender issues that are related to this utilization. Furthermore, the research looks at the effects on society, where external factors influence traditional labor forces. I conducted interviews with 15 families in San Jose from April-May, 2004. Criteria for choosing San Jose, include the rural location in which people live in nipa huts and make and sell shingles, and choosing the interviewees involved finding families who lived in and produce nipa huts, living in locations that were accessible, and who expressed an interest in working on the project. My informants were purposefully non-random, choosing families that had at least one active shingle producer. Some of the main informants were also nipa plantation owners. Most interviews were semidirective, with my asking each informant similar questions in a conversation format that did not involve a structured set of questions, a method described by Bernard (2005).

Each discussion began with outlining the objectives and procedures of the interview, as recommended by Fraser et al (2006). Topics covered included: how they use nipa, who made the shingles, how they collect and prepare the materials, who performs which task in nipa shingle production, what the resource availability is, and from where they collect. The research was principally with the weavers within the families. However, as many people are involved in a certain amount of the work, or at least are usually present when the activity takes place, whoever was present frequently joined in the interview. These multiple informants aided in assessing the reliability of information, and giving consensus to the data recorded.

Interviews could last from 1-3 hours, or could informally last a whole day as I accompanied informants throughout their daily activities. Additionally, I helped with the weaving and processing of material, and accompanied informants on collecting trips, engaging in aspects of participant observation, a technique described by Bernard (2005). Interviews were carried out in English, and using interpreters only with a few informants who spoke only Bisaya, Tabganwa or Tagalog. All interviews were conducted with informed consent.

Results

Nipa (*N. fruticans)* as mentioned, is the one member of the palm family (Arecaceae) that is considered a mangrove (Tomlinson 1986). A mangrove is a woody tree or shrub that grows in coastal habitats, and occurs in shallow water and intertidal zones in tropical and subtropical regions. Following the criteria of Tomlinson (1986) 14 families, 16

Figure 4. Male harvester removing leaflets from nipa frond.

Source: Author.

genera and 26 species of major and minor mangroves are found in the Philippines. Nipa stems grow horizontally under the ground, sending up pinnate leaves and flower stalks above the surface. The bases of the fronds have air filled cavities, which keep the fronds upright in wet growing areas. Leaves can extend up to 9m tall. The flowers are globular inflorescence producing a woody seed arranged in a cluster. The ripe seeds separate from the ball and float, sometimes germinating while still in the water (Corner 1966; Uhl, 1972; Uhl and Moore 1977; Whitmore 1973)

In terms of nipa shingle production, men harvest the palm material. They remove the oldest fronds, cutting the base a few inches above the water. Harvesters make a point to leave at least two new fronds, so that the plant continues to grow and photosynthesize. The men then cut the leaflets from the frond (Figure 4). Although men do the majority of the harvesting, women will sometimes cut off the leaflets.

Figure 5. Sewing nipa leaflet over bamboo.

Source: Author.

Figure 6. Nipa shingle drying.

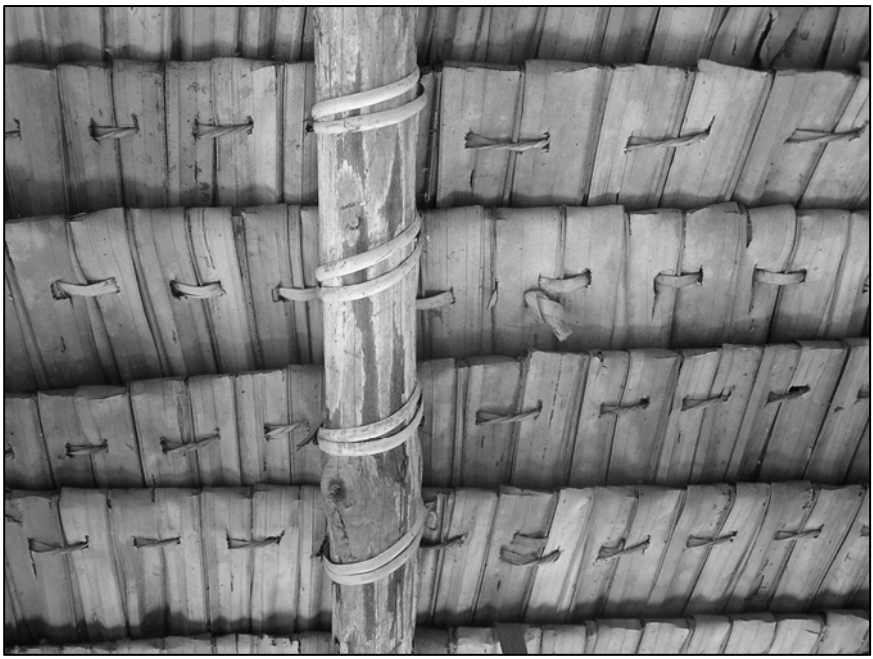
Source: Author.

The men also harvest the bamboo that serves as the base for each shingle.

As with the findings of Shields et al. (1996) on the Philippine islands of Siquijor and Leyte, although many homes in San Jose are now roofed with metal, nipa shingles are still widely used for houses, livestock shelters, community buildings and sheds. Many families make their own shingles, but those families who need to buy shingles, purchase them from families in their community. Both neighbors and surrounding villages buy the product. Unlike in Siquijor and Leyte where the women weave the shingles with vines (Shields et al. 1996), in San Jose the women use strips from the outer layer of bamboo for both weaving and lashing the shingles to the roofing beams**.**

While men do the harvesting, women do the weaving or sewing. After stripping a piece of bamboo to use as 'thread', the weaver folds the

Figure 7. Underside of nipa roof, showing shingles lashed to beam.



Source: Author.

nipa leaflet over a stiff piece of bamboo, and sews it closed (Figure 5). Each nipa leaf is lined up next to one another, slightly overlapping and sewed onto the bamboo, which is then hung to dry (Figure 6). It takes about 65-70 leaflets for one shingle, which is about 2-3 fronds. After they make enough shingles, the family will lash them onto bamboo beams to make the roof (Figure 7). Where people live in nipa huts, a steady market exists. Not only do individuals purchase shingles for their new homes or community buildings, but because the shingles last for only about 5-6 years (Hamilton and Murphy 1988; Shields et al.1996), people are constantly patching existing roofs.

Wild palms are the main source for most nipa hut construction. However, in San Jose, because of a scarcity of materials, some individuals have palm plantations (Figure 8). Nipa plantations have been noted as being planted as early as the1920s (Brown and Fischer

Figure 8. Nipa palm plantation. The short palms with only the leaves growing above the surface in the foreground of the photo are the nipa palms.

Source: Author.

1920; Gonzales 1979; Honculada Primavera 1995). Once an area has been planted, the villagers can continue to collect from that same plantation without having to clear new areas. As mentioned, the harvesters leave at least two growing fronds on each plant. Thus plantations can continue to produce (Melana 1980). The plantations to which they brought me in San Jose were all owned by the grandmothers of the families. This is uniquefor land ownership in the Philippines, because although legally men and women have equal access to land, men are the main landholders for rice and other farming activities (Klasen and Wink 2003; Lindio-McGovern 1997). It appears that women's land ownership in San Jose is limited for the most part to those

areas on which nipa plantations grow. It is my assumption that women own these plots, because they provide the material for an industry that is predominantly in the female sphere of the village. Thus, the ownership of the weaving industry, the profit made, and the palms themselves, belong to women. This has been an important source of revenue for a long time throughout the rural Philippines (Hamilton and Murphy 1988; Vincent 1957).

Two issues threaten the nipa shingle industry: the destruction of the ecosystem in which the palm grows, and the tourist industry. As mentioned, the implementation of aquaculture has displaced mangrove ecosystems. Thus, without the necessary materials, women cannot continue this cottage industry, as has happened in Siquor and Leyte (Shields et al. 1996). However, in San Jose, the situation is threatened for a different reason: tourism. Next to Busuanga is the Island, Dimakya. On this island the resort, Club Paradise, provides jobs for people who are traditionally subsistence fishermen and farmers.

The jobs with Club Paradise tend to be gender specific, and result in men and women coming from different geographical locations and socioeconomic situations. Many of the employment opportunities for females in the resort involve direct interaction with guests. Women work as greeters, concierges, and activity coordinators. In order to do these jobs, they must speak at least one non-native language, such as English. In order to find women with this level of education, the resort tends to hire from urban areas. On the other hand, the male jobs usually are driving boats, cleaning rooms, cooking and carrying luggage. These skills do not require English, but do require local knowledge and skills. Thus, usually people from the neighboring island of Busuanga fill these jobs. As a result, the men leave the village for weeks at a time to work at the resort. Because the men are absent from the village, the women lose their nipa harvesters, a crucial step in the process of the nipa shingle industry.

Discussion and Conclusions

The role of women within the family structure is shifting, because of what is occurring in the nipa shingle industry (Shields et al. 1996). Women have traditionally earned income from making roof shingles. Now, with both mangrove destruction for aquaculture reducing available material, and increased tourism drawing men away, there is an economic shift in terms of empowerment. With men working at the resort, there is still family income which comes predominantly from the men. The women's shingle industry is considered a less efficient way to use men's labor, thus fewer men cut the fronds. In the Shields et al. (1996) study, as men left the village, often for commercial fishing jobs, the women, like in San Jose, needed to come up with money to hire others to harvest their nipa. Although it would seem that physically women are capable of harvesting their own fronds, because of social and cultural traditions this is generally not considered women's work. The women's increased investment reduces the income that they bring into the household.

When earning power is lessened, so is that person's standing within the family and the community (Katz and Monk 1993). Marston et al. (2005) write: **"** In general, women have more power in Southeast Asian families and societies than in many other world regions" (p. 457). Part of the reasoning behind this statement is that women have traditionally had economic earning opportunities in this part of the world. Now, with women earning less money, this can result in familial restructuring in which women lose previously empowered positions.

Furthermore, with more income coming into the village through tourism, many families choose to purchase metal roofs instead of buying nipa shingles. This reduces the market in which women can sell their product. Moreover, the shift in social structure can affect the environment as well. If villagers have less incentive to protect the nipa mangrove areas, because they do not have the same economic benefit for keeping them intact, this can result in environmental degradation. Without these protective nipa palm systems, either wild or as plantations, the result can be a loss of coastline protection, and a reduction of the ecosystem that provides a habitat for wildlife. The wildlife loss reduces environmental stability, and the opportunity to

harvest economic products. In order to benefit all members of the community and the environment on which they depend, a balance should be reached between taking advantage of new economic opportunities, while still maintaining an environmentally sustainable and socially empowering industry, such as nipa shingles.

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References

Bernard, H. R. 2005. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 4th Edition. Walnut Creek: Altamira press.

Brown, W. and Fischer A. 1920. Philippine mangrove swamps. In W.h. Brown (ed), *Minor products of Philippine Forests, 1*. Manila: Bureau of Printing: 9-126.

Corner, E. 1966. *The Natural History of Palms*. London:Weidenfeld and Nicholson.

Courtney, C. and White, T. 2000. Integrated coastal management in the Philippines: testing new paradigms. *Coastal management* 28: 39-53.

Davies, J and Magsalay, P. 1990. A directory of Philippine wetlands: a preliminary compilation of information on wetlands of the Philippines. Cebu: Asian Wetland Bureau Philippines Foundation Inc. and Haribon Foundation.

Denevan, W. 1992. The pristine myth: The landscape of the Americas in 1492. *Annals of the Association of American Geographers* 82(3): 369-385.

Fraser, D., Coon, T., Prince, M.R., Dion, R. and Bernatchez, L. (2006). Integrating traditional and evolutionary knowledge in biodiversity conservation: A population level case study. *Ecology and Society*. 11(2):4.[online URL: http//www.ecologyandsociety.org/vol 11/iss2/art4/].

Green, S and Alexander, A. 2002. Bohol Island its coastal environment profile. Cebu: Bohol Environment Mangement Office, and Coastal Resource management Project.

Gonzales, L. 1979. Nipa and its innumerable uses. *Canopy* 5(5):9.

Hamilton, L. and Murphy, D. 1988. Use and management of nipa palm (*Nypa fruticans*, Araceae): a Review. *Economic Botany* 42 (2): 206-213.

Havemann, J. 2003. Community resource management of the nipa palm in Loboc, Philippines. Thesis. New Zealand: International Global Change Institute, University of Waikato.

Helliwell, J, and Putnam, R. 2007. Education and Social Capital. *Eastern Economic Journal,* 33:1-19.

Honculada Primavera, J. 1995. Mangroves and brackishwater pond culture in the Philippines. *Hydrobiologia* 295:303-309.

Katz, C. and Monk, J. (eds.)1993. *Full Circles: Geographies of Women over the Life Course*, London: Routledge.

Kelly, P.1996. Blue revolution or red herring? Fish farming and development discourse in the Philippines. *Asia Pacific Viewpoint* 37 (1):39-57.

Klasen, K and Wink, C. 2003. "Missing women": revisiting the debate. *Feminist Economics* 9 (2): 263-299.

Laarman, J., stewaet, e. and Dugan, P. 1995. The economics of Extraction in Philippine forests: when timber turns to gold. *Mountain Research and Development* 15(2): 153-164.

Lindio-McGovern, L. 1997 *Filipino Peasant Women.* Philidelphia: University of Pennsylvania Press.

Macintosh, D. 1996. Mangroves and coastal aquaculture: doing something positive for the environment. *Aquaculture Asia* 2:3-8.

Marston, A. Knox, P. and Liverman, D. 2008. *World Regions in Global Context: Peoples, Places, and Environments,* 3rd Edition. New Jersey: Pearson, Prentice Hall.

Melana, D.M. 1980. Leaf harvesting and juice extraction techniques of nipa in Alabat Island, Quezon Province. *Canopy* 6(9):6-7.

Pons, L and Fiselier, J. 1991. Sustainable development of mangroves. *Landscapes and Urban Planning* 20:103-109.

Reyes-Boquiren, R. 2003. Social Assessment for the Palawan Corridor:Final Report. Critical Ecosystem Partnership Fund. Puerto Pincesa City: Conservation International, Philippines. University of the Philippines.

Sayre, N. F. The genesis, history and limits of carrying capacity. *Annals of the Association of American Geographers* 98 (1):120-134.

Tomlinson, P. 1986. *The Botany of Mangroves*. Cambridge University Press: Cambridge.

Uhl, N. 1972. Inflorescence and flower structure in *Nypa fruitcans* (Palmae). *American Journal of Botany.* 59 (7): 729-743.

_____and Moore, H. Jr. 1977. Correlations of inflorescence, flower structure, and floral anatomy with pollination in some palms *Biotropica* 9(3):170-190.

Vincent, A. 1957. A study of the growth, stocking and yield of nipah (*Nypa fruticans* Thunb). Res. Pamphlet 21, forest Res.Inst. Kuala Lumpur: Federation of Malaya.

Wankasi, D., Horsfall, M. Jr. and Spiff, A. 2005. Desorption of Pb2+ and Cu 2+ from Nipa Palm (*Nypa fruticans* Wurmb) biomass. *African Journal of Biotechnology* 4(9): 923-927.

Whitmore, T. 1973. *Palms of Malaya*. London: Oxford University Press.

Shields, M. Flora, C. Thomas,-Slayter, B. and Buenavista, G. Developing and dismantling social capital: Gender and resource management in the Philippines. In *Feminists Political Ecology: Global Issues and Local Experiences*. D. Rochelau, B. Thomas-Slayter and E. Wangari, E. (eds.) 166-174. New York: Routledge.