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Chambira in a Changing Landscape

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Abstract

Amazonian peoples have traditionally relied on natural resources for their livelihoods. Within this context, Astrocaryum chambira is an important palm species. However, modernization and development of the Amazon have led to changes in community social relations, traditional livelihoods and use of natural resources. Few studies have analyzed the present dynamics of chambira use in areas of transition. To study shifts in the use of the chambira palm, I reviewed the literature on traditional uses, conducted semi-structured interviews, and made field observations at two sites in the Peruvian Amazon: Sucusari, a native Maijuna community and rural villages La Habana, Doce de Abril and Cahuide along the Iquitos-Nauta road. The goal of this study was to investigate how modernization and infrastructure development of the Amazon are influencing the use of chambira. I found that Amazonian peoples still use the chambira palm, but current use does not mirror traditional use. The expansion of markets and the availability of cheap goods has led to the replacement of certain products previously made with chambira. In some areas, growing tourism in the Amazon has increased demand for chambira handicrafts. Native communities seem to have maintained a sophisticated knowledge of chambira and preserved its cultural significance, while in more urbanized areas knowledge and value are being lost. In modern society, use and importance of the chambira palm are decreasing, but in traditional communities of the Peruvian Amazon it remains a highly utilized resource.

Introduction

Palms are one of the most important plant groups in the Amazon because they provide food, fiber, building materials, fuel, and medicine. They have been especially vital for the livelihoods of indigenous communities of the Amazon. The use of Astrocaryum chambira, the chambira palm, by indigenous communities of the Amazon is well documented. A. chambira is a solitary canopy palm up to 30 m tall and between 19 and 40 cm in diameter (Jensen & Balslev 1995, Henderson et al. 1995). It has a funnel-shaped crown with generally eight to 20 leaves around around 8 m in length (García 2015). The trunk of the palm is covered in black spines of up to 20 m in length (Coomes 2004). The fruits are green turning yellow at maturity and grow in large clusters. On average, fruits are six to seven cm long and four to five cm wide (Mejía 2000). The species is especially common in secondary growth forests that have undergone a disturbance event. Its distribution is restricted to the Amazon Basin, specifically northern Brazil, Peru, Ecuador, and Colombia (Henderson et al. 1995).

The chambira palm is known for several useful components including its edible fruit and

strong, flexible fiber (Jensen & Balslev 1995, Vormisto 2002). The fibers obtained from its leaf spear, known as the cogollo, have been traditionally used to make a wide variety of products including hammocks, bags, and fishing nets (Jensen & Balslev 1995, Vormisto 2002, Coomes 2004). Handicrafts like baskets, bracelets, and animal figurines were also woven from the chambira fiber. A more recent study done in the upper Tahuayo River Basin, Peru, documents local concern over the destructive harvest of the chambira palm and loss of the resource over time, but the species is not categorized as endangered. That study found that more tourists coming to the area provided economic incentive to harvest an increasing amount of chambira, which called for new dedication to chambira management (Guel & Penn 2015).

Non-timber forest products including chambira are beginning to serve as more prominent sources of income for native communities (e.g Gilmore 2010). In this study, I investigated how the changing landscape of the Peruvian Amazon is influencing the use and perceived importance of chambira. I reviewed literature on the chambira palm and documented the current use of the chambira palm at two sites through semi-structured interviews and field observations. I surveyed two populations archetypical of the Peruvian Amazon: Sucusari, a native Maijuna community and roadside villages on the Iquitos-Nauta road. These populations are arechtyical because they represent the two dominant lifestyles in the Peruvian Amazon. In the interviews, I asked questions about current knowledge and use of chambira to get ideas about the importance of chambira and changes in its use relative to existing literature. My goal in asking these questions was to develop a narrative surrounding the relationship of Amazonian peoples with chambira and identify factors driving use and management patterns in each community. I expected that various factors are influencing the utilization of chambira in each of these locations. This research comes at a time when the effects of modernization of the region are not well understood. Change is happening quicker than effects can be studied.

To present my results, I first detail traditional uses of chambira, citing literature on the topic. I then discuss the changing landscape of the Peruvian Amazon, mentioning factors at each site that may have contributed to people's relationship or lack of with chambira. The section on current uses of chambira contains the main body of information collected in the field. I present narratives that provide a rich description of the current knowledge, use, and management of chambira. I conclude with thoughts on how the chambira palm will likely be used in the Amazon in the future, informed by responses of interviewees.

Study Area

The Amazon rainforest covers most of northwestern Brazil and extends into Colombia, Peru, and other small parts of South American countries. The population of the Amazon basin is around 30 million people; with around 4 million self-recognized indigenous peoples and several million more with indigenous heritage (Gilmore 2010). I conducted research for within the Peruvian Amazon. The primary languages of this region are Spanish and Portuguese, but around 400 native languages are still spoken.

This study focused on two sites in the

northeastern Peruvian Amazon Department of Loreto. The first site is a group of rural villages between km 54 and km 57 of the Iquitos-Nauta road, including La Habana, 12 de Abril, and Cahuide, which were established in the 1980s. This 110-km asphalt road connects Iquitos and Nauta, the two largest urban centers in the Department of Loreto. Construction of the road was completed in 2005. The roadside is lined with the permanent homes of rural settlers and lodges and recreation centers constructed by urban migrants. Along the road, people primarily identify as *mestizo*, descendants of indigenous and Spanish union. Some of these people have retained the traditions that reflect their indigenous heritage, but many have not. This small stretch of the road is representative of the entire road since it includes a population affected by modernization through a direct connection to the only major cities of the region.

The other site in Loreto is Sucusari, which is one of four Maijuna communities in Peru. The Maijuna are one of Peru's ethnic groups. Sucusari is situated along the Napo River, a few hours by boat from Iquitos. Sucusari was founded in 1978 and today is a community of about 34 families. The community consists of raised thatch-roof houses, communal meeting spaces, a kindergarten and elementary school, a soccer field, and a cultural history museum built by an NGO, Nature and Culture International (NCI). The central area is bordered by the Sucusari River and surrounded by chacras, small agricultural plots managed by individuals or families. All community members interviewed reported having naturally growing chambira in their chacras with varying abundance. The community lies just outside of the 4,470-hectare Maijuna-Kichwa Regional Conservation Area (RCA) established in 2014, which protects part of the ancestral territory of the Maijuna. I chose Sucusari as a study site because it is representative of native populations throughout the Amazon.

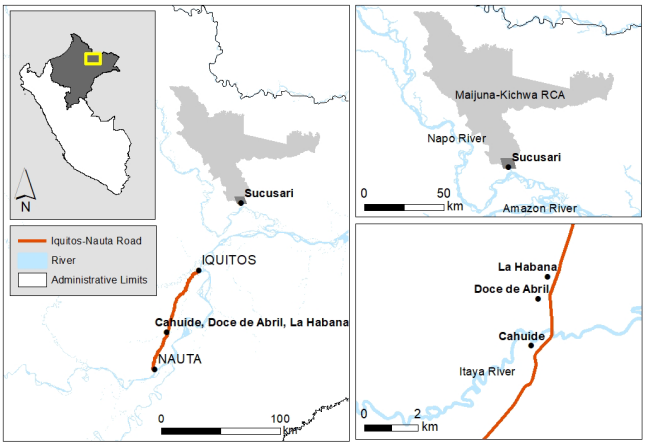

Figure 1. Study area. Sites: Sucusari, Iquitos-Nauta Road. Villages: Sucusari, La Habana, Doce de Abril, Cahuide. Department of Loreto, Peru.

Methods

I conducted semi-structured interviews and field observations to document the current use of A. chambira at two sites in the northeastern Peruvian Amazon Department of Loreto. Sites surveyed included villages along a stretch of the Iquitos-Nauta road and Sucusari, a native Maijuna community. These populations are considered archetypical of the region. I used the same research techniques with populations at both sites. I collected data in the field during daytime hours. I conducted four formal interviews along the road and seven formal interviews in Sucusari. Before each formal interview, I read participants an oral consent form (Appendix A). I only recruited

adults over the age of 18 to formally participate in the study, but in addition to the formal interviews I spoke informally with youth at both sites. I recorded each interview using the voice memos application of iPhone model A1453. I conducted all interviews in Spanish and asked questions about knowledge and use of the chambira palm (Appendix B). In the narratives that follow names have been changed to protect the identity of the participants. When conducting research along the road, I was based out of the Center for Amazon Studies (CAS) located within walking distance of the study site. When collecting data in Sucusari, I traveled by both foot and boat, spending nights at ExplorNAPO Lodge.

Various limitations impacted this study. Several practical problems complicated data collection. I did not conduct interviews in my native language, but rather in Spanish, the predominant language of the region. The regional Spanish accent and the fact that Spanish is the second language for some Maijuna people increased the potential for error. My conclusions are based on only one month of fieldwork at only two sites in the region. These were not adequate conditions to read all relevant literature on the subject or have a completely systematic study. Time constraints limited the number of sites and individuals within chosen sites that I was able to survey. Additionally, it is important to recognize that it often takes time for people to trust strangers. As an outsider, the time frame limited my ability to develop close relationships with the selected populations and collect rich personal narratives to provide a more comprehensive understanding of the topic. The study sites, though archetypical of the population of the Peruvian Amazon, are not necessarily a representative sample for the entire Amazon.

I conducted this research under thesupervision of The School for Field Studies (SFS), an environmental study abroad program for college undergraduate students. I completed the study as part of the directed research course SFS 4910. For the duration of the study, I lived in the Center for Amazon Studies, south of Iquitos. The study received the necessary Institutional Review Board (IRB) approval.

Traditional Uses of the Chambria Palm

The chambira palm is one of many natural resources that has an extensive history of utilization in the Amazon. A study by Guel & Penn (2015) found a description by Hardenburg (1910) of hammocks woven from chambira fiber by Huitoto natives living in the upper Putumayo River along the Peru-Colombian border. According to Voormisto (2002), the first journal description of chambira was published in German in 1934.

Beyond having a striking appearance and usefulness noted by early explorers of the Amazon, this palm species has carried immense value for the inhabitants of the Amazon Basin. Differences in the leaf anatomy and physiochemical properties make the fiber of the chambira palm easier to extract and more utile than other fibrous palm species (Marín et al. 2012). Chambira work is an old tradition for indigenous people living in the Ecuadorian, Peruvian, and Brazilian Amazon, mostly due to the variety of useful products that could be made (Jensen & Balslev 1995). In the Colombian Amazon, chambira fiber was traditionally used to make strings, ropes, tensioners for bows, dart ropes, fishing line and nets, hammocks, brooms, and baskets (Mesa & Galeano 2013). In the Peruvian Amazon, the palm has been used similarly, primarily for subsistence and commercial uses (Henderson et al. 1995 Guel & Penn 2015). Recognizing its value, the Waorani in the Ecuadorian

Amazon domesticate their landscape by planting chambira seeds along trails (Smith 2014). The chambira palm is known to carry cultural and medicinal significance as well, but these uses were not very prevalent in the literature. In Eastern Peru, there are three rivers and three villages named for the chambira palm (Burret 1934). At least one indigenous group was known to use the chambira palm medicinally. The Yagua treat colds by drinking small doses of fluids from inside the palm mixed with water (Chaumeil 1998). Other works have found that the leaves of the palm can be boiled in water to treat rheumatism (Mejía 2000).

Changing Landscapes

In the 18th century, Nauta was the main town of the Peruvian Amazon, even after the founding of Iquitos (Figure 1). The city of Iquitos was recognized as the capital of the region in the 1860s and soon after became the main port of the region, pushing Nauta to the periphery (Rafael Mendoza, Personal Communication, 2018). Eager for increased connectivity, during the 1980s Nauta people campaigned for the construction of a road to Iquitos. Since the start of the construction of the Iquitos-Nauta road, the 110-km stretch has experienced significant population growth. The prospect of economic and social integration fueled migration to the area (Harvey & Knox 2015). Families may have started settling along the route even before construction began, knowing that the road would eventually be built. Families previously living in remote areas or near rivers, most of which were of indigenous descent, resettled along the road. Over time, villages began to form. Basic human services and products arrived locally, and land value rose (Harvey & Knox 2015). A roadside villager, Maria, and her husband had moved from a more remote area 15 years ago seeking state infrastructure. Specifically, they sought access to school for their children. Migrants came from urban centers as well. Sandra, a woman in her early 80s, had spent her entire life in Iquitos until relocating to be close to her sons, who had found work near Cahuide. Over the last two decades, there has been especially significant population growth in the region. In 1990 only four to five families lived in Cahuide. Now it is estimated that there are about 500 houses and 2,000 people. Whether coming from a native community, rural village or the city, migrants brought their own values and customs, which have influenced the eclectic nature of life along the road. The road revolutionized transportation and helped provide access to imported goods and more professional services offered in the city of Iquitos. Among all inhabitants, there was more reliance on natural resources for economic activity than for subsistence, which was contrary to the traditional livelihoods of Amazonian peoples.

Like many Amazonian indigenous groups, the Maijuna have been culturally influenced and changed through over 300 years of contact with missionaries, exploitative industries, the Peruvian government, mestizos, regional society and the formal education system, among others (Gilmore 2010). Though more geographically and culturally separated from the influence of the state than the roadside villages, the Maijuna people have also been impacted by recently changing landscapes. Many of the same factors that contributed to changes along the road are also affecting life in Sucusari. The community's composition, culture, and reliance on modern society differ from the past. Today, up to 40% of the population are not Maijuna by birth. It is common for older adolescents to temporarily leave the community for study or work. The expansion of markets and greater accessibility of cheap goods revolutionized aspects of the traditional livelihoods of rural

Amazonian peoples, even in more remote communities like Sucusari. Importable goods replaced items traditionally crafted from natural resources. The first synthetic, nylon fishing nets arrived about 40 years ago, replacing nets made from the chambira palm fiber. Newer, more durable synthetic nets arrived within the last 20 years. Handicrafts evolved as artificial dyes and accessories to adorn the crafts such as keychain rings became available for purchase. Despite differences from previous livelihoods, the Maijuna still rely on the land for their subsistence. The fate of the forest and of the Maijuna are still strongly linked. Management plans for the area are created with aims to maintain the Maijuna culture, preserve biodiversity, and organize communally. The territory is divided into designated subsistence and refugia areas, where exploitation of the environment is not permitted. The RCA has allowed environmental and cultural recovery in the previously exploited region (Gilmore 2010).

Sustainability is a concept that has been introduced in Sucusari through interactions with external partners. Sustainability can be defined as resource use that ensures the health of an environment for future generations. In recent years, the Maijuna community has worked with the Peruvian government, research groups, and NGOs to implement management practices on their territory and engage with external groups. There is agreement among the Maijuna that these partnerships have helped develop stronger conservation programs and sustainability efforts within the community, especially related to use and management of the chambira palm. For the last five to 10 years, the community has received tourists. Originally, visitors came every few months, but these visits have become more frequent in the last one to two years and now each week there are new visitors. The Maijuna have been working with Nature and Culture International (NCI) since 2008, about the time tourism to the community began (NCI 2015). It is not clear what led to the relationship of NCI with the Maijuna people in particular. NCI has helped implement internal agreements and community regulations for sustainable projects (NCI n.d.). In the last two to five years NCI has brought chambira artisanry projects to the community due to the increased utilization of chambira by the Maijuna to make handicrafts to sell to tourists. This project included the planting of chambira palm seedlings around the community as well as workshops that provided training on using chambira palm fiber and improving the quality of handicrafts. In the past, the Maijuna had cut down the trunk to harvest the leaf spear of the chambira palm, but NCI taught the native community more sustainable harvesting techniques (NCI n.d.). This organization helped stress careful management of chambira, emphasizing how essential this resource is to artisanry, which can provide a significant source of income for families. It is important to recognize that because of the presence of this type of intervention, Sucusari is not representative of all native communities in the Amazon.

Current Use of Chambria

The current uses of the chambira palm at the surveyed sites varies. Along the Iquitos-Nauta stretch, the chambira palm is well known, but varying degrees of knowledge exist. Most people know what chambira is and what products are made with it but have little knowledge of harvesting practices and weaving techniques. Households in the roadside villages have few if any items made from chambira. Sandra had a hammock woven with chambira fiber and some of the families with restaurants in Cahuide use fans made

from chambira to fan the smoke created from cooking with wood. Upon inquiry about these fans at a restaurant in Cahuide, I was introduced to Maria, who has a relationship with chambira because of her mother, who makes these types of fans. Maria is a resident of Nuevo Miraflores, a town about an hour's walk east of the road. She

Figure 2. Fans made from A. chambira leaves (Mendoza, R.).

frequents Cahuide town to sell the chickens that she raises. In her home the only items from chambira she owns are fans made by her mother that she helps sell (Figure 2). Because of her mother's involvement, Maria had knowledge about chambira that I was unable to gather from others living along the Iquitos-Nauta road. The chambira palm has a long leaf spear, called a cogollo. This is the part of the palm that is harvested because its leaves contain the fiber that is used in artisanry. The cogollo of the chambira can be up to five meters long. Maria's mother uses a hook to harvest it, but she believes there are people that cut the entire trunk of the palm to harvest the cogollo. After being harvested, a new cogollo grows in about four

months. Maria, though she has an understanding of the use and management of the chambira palm, never had an interest in learning the art, emphasizing that it's an activity that requires a lot of patience and dedication. Maria feels that in the past there were not as many business options, but in the current landscape, there are many other options and types of businesses to be dedicated to. She believes this has resulted in decreased prominence of use and less knowledge being passed between generations.

Maria doesn't know of anyone other than her mother that markets products made from chambira in the area. There are still people that are dedicated to working with chambira, but less now than in the past due in part to the low consumption of chambira products along the road and in neighboring communities. No one relies on artisanry for their entire income. The income of her mother from the sale of her crafts depends entirely on the orders she receives. She sells each fan she makes for two to three nuevos soles, the Peruvian currency. It is common for her to receive one to two orders a month. The types of items she makes are durable, so the probability that someone would need to replace the product is low.

From other conversations along the road, which were consistent with the beliefs of Maria, it is apparent that the amount of people making chambira crafts is declining, especially on this stretch of the Iquitos-Nauta road. One woman said there used to be a vendor of chambira products that lived near the river in Cahuide and another down the road around km 64, but both have died and no one in this stretch has emerged to take their place. Though it is not

entirely clear why this is, it is likely that knowledge surrounding chambira has been lost and that the art is not as profitable in this area. It is possible to buy the chambira fiber pre-dried and dyed, allowing the art to emerge as a hobby in urban areas and reducing the need for an understanding of how to harvest the fiber. Chambira may be more widely used in Nauta, where tourists are more common and there are better-attended markets to sell handicrafts. The commercial town of Nauta has a larger population and the river makes the town more accessible to distant communities and native peoples. It was reported that some arrive by boat to sell their handicrafts in that town. This is not the case in the communities I surveyed that are located along the road near the Itaya River.

Some people along the road harvest the chambira fruit. It is occasionally marketed in Cahuide, but more frequently found closer to and within Iquitos. The price is generally 1 nuevo sol for five chambira fruits, called huayos. Though historical uses of the chambira palm have been documented, no medicinal properties of the fruit were reported in any interviews. Migration to the road and access to Iquitos brought health posts and modern medicine to the region, decreasing the need for medicinal plants that were traditionally used in the area, which may have included the chambira fruit. This may explain the lack of related findings.

Andrea, a middle-aged woman living in Cahuide, has chambira growing naturally in her chacra, but does not harvest it. She doesn't know how to extract the fiber or weave and doesn't know anyone in the community who does. Her children do not know about chambira. She associates the use of chambira with native communities. These responses are consistent with other interviews and conversations I had in the roadside villages. Through informal conversations with children, it became clear that the youngest generation associates chambira with the knowledge of their elders. They do not view artisanry as something that they will learn, and many don't want to learn because they see other activities as being more worth their time. Some admit that they would not have the patience for the work.

The many businesses along the road dedicated to the construction of roofs with leaves of a palm called irapay suggest that work with other palms is more profitable. One Cahuide resident explained that chambira could be used but was not as good because of the spines on the trunk and leaves. At present, other palm species may be at a greater risk of unsustainable harvest than the chambira palm, but chambira is at risk of a loss of practical and cultural knowledge.

In Sucusari, the natural environment is important to the culture in a deeper way. In contrast to interviews conducted along the road, the use of the chambira palm in Sucusari was much more prevalent. The primary sources of income for most families in Sucusari are fishing, hunting, small-scale agriculture, and handicrafts. Not all families participate in the making and selling of handicrafts, but it is almost entirely for this purpose that chambira is harvested in the community. Jose estimated that 15-20 of the 34 families participate in artisanry.

On my first day in Sucusari, I spent an entire morning with Azucena, 29, who agreed to explain the process of working with chambira. Azucena normally goes with her husband to their chacra and he helps her harvest the chambira. The harvesting process can be dangerous, and few women do it alone. The trunk of the chambira palm is covered in spines up to 20 meters long. Instead of trekking to her chacra, Azucena took me just behind her house to purma, old chacra land left to regrow, where chambira is abundant and we searched for a small chambira palm.

Different harvesting techniques are used dependingon the height of the palm. For younger, shorter palms where the cogollo is easy to reach, a machete or hook is used. For taller palms, fallen trees are propped up and climbed to reach the young leaf shoot.

Figure 3. Harvesting the cogollo of the chambira palm.

Azucena uses various harvesting techniques to ensure that the palm does not die from the process of harvesting the cogollo. She only harvests from a palm if is at least three years old. She avoids palms that only have three leaves left or those from which she has already harvested the cogollo three times. If you continue to harvest from the same tree it will stop producing these valuable new leaf shoots. After a cogollo is harvested from a palm it takes about three months for a new one to grow that is large enough to be harvested again. Not everyone in the community knew these indicators used by Azucena. Some reported that the cogollo takes four to six months to grow back. Many were not aware that they should not harvest from a palm that only has leaves left. Despite inconsistencies, it is standard practice to not cut the trunk of the chambira palm to harvest the cogollo. Other inconsistencies in the understanding of chambira in the community arose during questions about the chambira fruit. The fruit is consistently described as coconut-like and is harvested with a hook, but there was disagreement about how often it is ripe. Some claimed every four months, while others said every two months. Literature suggests that the leaves and fruit of the chambira palm have medicinal properties, but none were reported during

Figure 4. Weaving a broom out of the chambira palito.

any interviews.

Once we found a tree that Azucena deemed appropriate, she cut the cogollo at the base with a machete and shaved the spines off of the outside using the machete (Figure 3). Back at the house she held the cogollo upright, shook it to loosen the leaves, and pulled them from the main stem of the cogollo. Azucena separates the fiber from the leaf using a knife rather than by hand, which is also common in the community. She generally does this step in the field rather than bringing the cogollo back to the house. Regardless, no part of the cogollo goes to waste during this process. Azucena uses it in its entirety.

After the fiber has been extracted and the leaves are detached from the leaf stem, the remaining stem called the palito can be used without any further processing. This was demonstrated as Azucena began to weave a broom in front of me, a task that can be completed in just 10-15 minutes (Figure 4). To make a fan, there is no need to even extract the fiber. The cogollo leaves are used whole. Other tasks are not as simple. The extracted fiber and leftover leaves are tied into sections, which are then boiled in hot water for about three minutes and left out to dry in the sun for three days (Figure 5). After the fiber and leaves are dry, they can be dyed. The leaves can then be used to make animal figures, like frogs. For the fiber, the next step is twisting it into usable string. Azucena learned the art from her mother and is now already passing the knowledge on to her four-year-old daughter, demonstrating the intergenerational component of the tradition in this community. Children in Sucusari are taught all steps of working with chambira from an early age. Many learn first to twist the fiber into string and to make bracelets. Azucena, consistent with other parents interviewed, believes it's important that children learn how to use

Figure 5. A. chambira hanging out to dry in Sucusari.

chambira so that they can teach others and carry on the tradition. Other interviewees stressed the importance of teaching how to manage, harvest and sustainably use chambira.

I then visited Azucena's mother, Lorena, who was eager to talk about her crafts. She enjoys all parts of the handicraft-making process: going to the chacra to harvest chambira, processing the leaves into a workable fiber, the dying process, weaving chambira fiber, and selling her products. She makes a large assortment of crafts from the chambira leaves and fiber including baskets, purses, dolls, bracelets, key chains and animal figures including birds, frogs, scorpions, and butterflies (Figure 6). Many of her crafts are adorned with seeds or dyed scales of arawana and paiche, culturally and economically important fish in the region. She became interested in artisanry at the age of 13 and through dedication learned on her own. When making birds Lorena mimics species she has seen, adding a meaningful cultural element to her art.

Lorena talked me through the process of coloring the leaves and fiber. Chambira is naturally an off-white color after being boiled and dried, so it dyes well. The fruits of various naturally growing

plants and trees are used to dye the chambira fiber. Plants used include achiote (orange or red), huacamayo caspi (pink), mishkipanga (purple), huito (yellow), and leaves of cocona or santa maria (green) among other plants found in the forest. The fruits and leaves of these plants are often combined to create new colors. Some women interviewed admitted to using very small amounts of artificial coloring purchased in Iquitos to intensify the natural hues. Lorena showed me chambira dyed with achiote both before and after being tinted with an artificial dye. The achiote produced an impressive natural orange color on its own but soaking in a bucket of water with just a small amount of artificial dye made it much more vibrant.

Figure 6. Handicrafts woven from dyed chambira fiber and leaves.

Some of the differences in knowledge of chambira may be explained by the fact that up to 40% of the community is not Maijuna. Most people I spoke with that grew up in other communities said that they also used chambira, but some had no prior experience. Daniela is learning to extract and weave the fiber from her sister in law, Eunice. She started learning just one month ago. Similar to other women in the community, Eunice makes purses, baskets, and small animals as well as sombreros. Her favorite part is making different spiders, frogs, scorpions, alligators, and birds. She enjoys inventing new designs and sometimes bases these designs off of pictures and drawings she has seen. Daniela is impressed by the creations of her sister-in-law and wants to learn how to make these beautiful crafts. Once she learns, she plans to pass the

Figure 7. Curtains made from dyed chambira fiber. Curtains take Ruth about 5 days to make.

knowledge onto her children. Beyond making beautiful crafts, Daniela and Eunice's dedication to artisanry makes it a source of income for the 10-person household. Daniela and Eunice see it as an

obligation of the women in the house to teach their children to weave, among other household tasks.

The Sucusari community directly sells their products to tourists rather than exports seen in some weaving enterprises. This offers the advantage of not being vulnerable to market changes and economics. Ernesto reported that his family makes about 30 soles per week from the sale of handicrafts, but there is likely variation in the amount received by each family. Artisanal income is largely dependent on demand from visitors. Azucena says that she is always making new products and that there are no times of year that she gets significantly more business. Though the overall economic value of these products is limited, handicrafts are an important source of cash for the people producing them. They provide a relatively stable source of income that was not historically possible. Multiple respondents said the money they receive from the sale of handicrafts is a large part of what they need to support their families and purchase things like school supplies, gas, and medicine. In general, the women in the Sucusari have more complete knowledge of the chambira palm, giving them the potential to provide the primary source of income for the family. Despite this, men in these communities participate in the making and sale of handicrafts too. All men aid in the harvest of the palm's cogollo and some with fiber extraction, but not all know how to weave or twist the fiber into string and very few have a knowledge that matches the caliber of their wives. Some are taught as boys, but many, like Jose, learn after marriage to help aid their wives, recognizing the importance of the art as a source of income for the family. Jose's family just started participating in the art in the last couple of years. In the past, families in the community made handicrafts, but not nearly the same quantities.

Despite the dedication to artisanry in Sucusari, few families have handicrafts made from chambira in their homes. Products made from chambira are mainly crafted for sale rather than household use with the exception of hammocks, curtains, small bread bowls, and brooms (Figure 7). Some products traditionally constructed using chambira for practical use are no longer made or are less common than in the past. Modern items purchased in the city have replaced these products. Many hammocks hanging in Sucusari homes have been purchased in Iquitos for 20-30 soles. Hammocks are still made in the community but are not as common and fewer people know how to weave them. The task requires much time and patience and for some people, it seems that this is not worth the return. Ruth sells her hammocks for 100 soles. I learned from Ruth that six or seven cogollos are needed for a single hammock. She can make one in a week, but others in the community need about a month's time – if they are one of the few that still know how to weave hammocks. In the past, fishing nets were also made from chambira palm fiber, but not anymore in this community. Nylon nets arrived around 40 years ago and now nets of synthetic materials can be easily purchased at a low cost. It seems no one knows how to make chambira nets anymore either.

In Sucusari the chambira palm is being used more, but in different ways than it was traditionally used. The increasing tourism within the community has further incentivized the sale of handicrafts, making it a significant source of income and compelling more families to participate in artisanry. It seems that practical items that were previously crafted using the chambira palm are no longer made because the same products have become easily accessible for only a small cost and are often more functional and durable. In all interviews, chambira was described as

a highly important resource for the community.

The Future of Chambria

Amazonian peoples still use the chambira palm. However, there have been shifts in the ways that chambira is used throughout the Peruvian Amazon. In the Maijuna community there has been increasing use and along the Iquitos-Nauta road knowledge has decreased. An analysis of these shifts can provide insight into how the chambira palm may be used at these sites and in similar areas in the future.

All Maijuna people in Sucusari were optimistic that the community will continue using the chambira palm in the future. It is expected that future practices will be very similar to current uses, with some people predicting that chambira will be used more given the economic incentive supplied by growing tourism to the community. Making handicrafts to sell to tourists holds great economic potential for the community. Since they are able to earn a living through the sustainable use of this natural resource, they will likely continue to use the chambira palm sustainably. It is important to note that Sucusari has gained an enhanced understanding of sustainable resource management as a result of external partnerships. Their practices are largely informed by conservation plans implemented with the help of organizations like NCI. Other native communities in the Amazon are known to have received similar interventions but in varying intensities. The advanced understanding of sustainability in terms of chambira may make Sucusari a unique case – more indigenous communities in the Amazon should be surveyed to know for sure. Chambira does not appear to be at risk in Sucusari but increasing use may call for more careful inventory and management.

Whether or not the children in the community are interested in learning to work with chambira, they will be taught to some extent. In informal conversations with youth, not all of them expressed interest in learning, but rather see themselves continuing other traditions of the community. Among adults, there was general agreement that people in the community are not losing interest and therefore the tradition will continue.

The continuation of this tradition is contingent on the continued presence and effective management of chambira. The health of the environment is very important to the Maijuna culture. A Maijuna leader said that the greatest future threat to the community is the construction of the proposed road to connect the Putumayo and Napo Rivers (Sebastian Rios, Personal Communication, 2018). This would intersect the Maijuna-Kichwa RCA and pass very close to the Sucusari territory, disrupting the natural environment that the Maijuna so heavily depend on and greatly affecting their traditional livelihoods. This could have cascading effects on how the community uses chambira but based on interviews with Maijuna leaders this is not expected.

At present, there is nothing imminent threatening the current or future use of the chambira palm in Sucusari, but knowledge and use along the Iquitos-Nauta road have been threatened since construction of the road began. In contrast to findings in Sucusari, many people that live along the Iquitos-Nauta road have never had a relationship with chambira and likely never will. Sandra, previously mentioned, spent the majority of her life in Iquitos. Based on the description of her upbringing, her family had no reason to use, let alone rely on this resource. They were well-off and lived in the city where chambira was not abundant or accessible. Though everyone interviewed in the roadside villages knew of

chambira and what products were made from the palm, the number of people in this area actually using chambira is declining. Roadside villages are at risk of a loss of cultural and environmental knowledge. As modernization persists, there will be less of a need for products made with chambira and children in urban areas will likely continue to lose interest in the art. There is still a felt sense of environmental responsibility among children on the road, but adults were skeptical that this responsibility to care for the land has passed onto the next generation. Given the inevitability of new infrastructure in the area, like the road being built at km 58, the use of the chambira palm and general familiarity with it is expected to continue to decline along the Iquitos-Nauta road.

Conclusion

Through this study, I found that Amazonian peoples are still using the chambira palm, but current use does not mirror past use. In the changing landscape of the Peruvian Amazon, various pressures are influencing use patterns. The use and importance of the chambira palm are increasing in indigenous communities and decreasing in developing areas. Across the Amazon, access to markets has allowed synthetic goods to replace practical commodities previously constructed from chambira. In places more directly touched by modern infrastructure and presence of the state, traditional knowledge and use are fading fast.

In Sucusari, an indigenous community, chambira is an important resource both culturally and economically. The use of chambira in Sucusari has been influenced by the expansion of markets, tourism, and external partnerships, which is not necessarily typical for all native communities. As a result, they have been able to replace some products with synthetic goods, commercially market crafts to tourists and receive assistance to aid more sustainable management of chambira.

Changing landscapes are driving shifts in traditional livelihoods and changing the way people relate to natural resources around them. Palm use and management can help us understand this social and ecological change. Future research in the Amazon should continue to monitor the changing landscape and subsequent effects on the use of the chambira palm. Looking at use patterns across a variety of palm species may help uncover what aspects of natural resources hold the most value for Amazonian people in the current landscape. Similar studies would benefit from a longer time frame that allows the development of personal relationships and trust within communities. Additionally, future research should consider more sites in order to gain a more comprehensive understanding of the region and come to conclusions that are representative of all of the Amazon.

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