

2009

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Zanotti, Laura C.. "Economic Diversification and Sustainable Development: The Role Non-timber Forest Products Play in the Monetization of Kayapó Livelihoods ." *Journal of Ecological Anthropology* 13, no. 1 (2009): 26-41.

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Economic Diversification and Sustainable Development: The Role Non-timber Forest Products Play in the Monetization of Kayapó Livelihoods

LAURA C. ZANOTTI

Abstract

This paper analyzes the level of market integration of a relatively isolated Kayapó community. The goal is to understand how the commercial networks devoted to non-timber forest products are affecting one community by including cash-income into the economic life of communities previously dominated by non-monetary transactions but currently dominated by a mix of monetary and non-monetary practices. Non-timber forest product projects are a much lauded and much criticized form of sustainable forestry management. This case study analyses different non-timber forest product projects in Aukre, a village that is part of the Kayapó Indigenous Territories, Brazil. This article identifies ten criteria that the villagers use to evaluate cash-income opportunities and, considering these criteria, why community members consider non-timber forest product projects desirable. Desirable projects should provide maximum participation, offer alternative markets to intense extractive networks, and build long-term partnerships based on a common interest in maintaining the territorial integrity of the Kayapó's homeland. The evaluation of non-timber forest product projects is accompanied by an analysis of other types of cash income in the community, and a comparison of past and present economic opportunities to future possibilities. The results indicate the community of Aukre still values non-timber development projects within their community, despite a varied experience with timber and non-timber markets. However, their participation within these markets is based on several criteria, which community members perceive to be integral to project success.

Introduction: Non-Timber Forest Products and Kayapó Economies

During the last quarter of the 20th century the Kayapó from the Central Brazilian Amazon have been increasingly involved with commercial markets and cash-income opportunities, some of which entail the export of non-timber forest products. The case of the Kayapó is a local manifestation of a global phenomenon where forest management 1) increasingly relies on local institutions for good forest governance, and 2) employs multiple-use forestry strategies. Worldwide forestry management over the last ten to thirty years has followed a basic

trend where forest policies devolved away from the state to municipal and community rule (Charnley and Poe 2007; Morsello 2006). Brazil, as one of the most biologically diverse countries, has modified its forestry policy to mirror international trends in an effort to engage with the growing international interest in conservation and sustainable forestry (Toni 2003), thus fueling new opportunities for alliances, partnerships and markets among the growing number of actors in the Amazon region (Ros-Tonen et al. 2008).

Accordingly, non-timber forest products have emerged as a major commodity in sustainable forestry markets and are considered a solution to a two-pronged problem of poverty and deforestation (Nepstad and Schwartzman 1992; Peters et al. 1989; Wolleberg and Ingles 1998). The example of the Chico Mendes Rubber Extractive Reserve, Brazil, is a case in point where economic activities have been incorporated into conservation measures (Cardoso 2002; Fearnside 1989; Hecht 2007). On the other hand, scholars have approached non-timber forest product projects with caution, and documented several case studies where non-timber forest product markets have mixed social, ecological, and economic consequences (Boot and Gullison 1997; Sheil and Wunder 2002; Wollenberg 1998). Nevertheless, community-based resource management schemes that incorporate non-timber forest products have the possibility of coupling local users and market activities in a way that the local community is empowered, rather than fractured, by their market participation (Anderson and Ioris 1992; Dove 1993; Vaccaro et al. 2009).

This article examines the varied experiences the Kayapó community of Aukre has had with non-timber forest product markets and analyzes the positive and negative consequences of such projects. Non-timber forest product markets have been available to the community of Aukre through commercial venues, individual sales and community-NGO partnerships. Almost all of these projects have been based on Brazil nut (*Bertholletia excelsa*) markets. In addition to Brazil nut markets, the community of Aukre has a suite of economic activities that are available to community members. Because of Aukre's history with several markets, this case study also considers how non-timber forest product markets fit regarding other cash income opportunities. Despite several mixed experiences with markets and willingness to participate in many different types of economic activities, community members in Aukre still insist that non-timber forest product projects provide for sustainable development.

This article also considers why villagers of Aukre perceive non-timber forest product projects as highly desirable sources of cash-income. Community

members cite several reasons for their preference for non-timber forest product projects and have their own indicators for what constitutes a valuable market endeavor. These indicators of a viable market endeavor for community members are that it: (i) generates a long-term source of income; (ii) enables villagers to continue with their subsistence livelihoods; (iii) provides the maximum level of participation within the community; (iv) capitalizes on local land use and subsistence practices; (v) coordinates with social institutions already in place; (vi) promotes intervillage collaboration and cooperation; (vii) builds upon or further solidifies community-outsider partnerships; (viii) minimally alters the village landscape; (ix) trains community members so no outsiders need to live or reside in the village for long periods of time; and the (x) environmental impact does not interfere with subsistence and ceremonial needs. These indicators, when examined as a collection, indicate that community members are invested in cash-income opportunities that maintain the production and reproduction of ceremonial, subsistence and political life (Gordon 2006). However, Aukre faces many challenges to implement and maintain non-timber forest product projects. Non-timber forest product projects also can have unintentional consequences that affect intra-village and inter-village relationships. Regardless of non-timber forest product project shortcomings, communities indicate that the projects offer them several opportunities to engage with markets, outside institutions and other villages in meaningful ways.

Research Methods

This study is based on ethnographic research with the Kayapó and a selection of existing literature about the Kayapó's involvement with non-timber forest products. The Kayapó are an indigenous group in the Central Brazilian Amazon that command a set of federally demarcated protected areas collectively identified as the Kayapó Indigenous Territories that are located in the states of Pará and Mato Grosso. The Kayapó territory covers more than 10 million hectares of neotropical forest and naturally occurring, but sometimes anthropogenically modified, savannah and is roughly the size of Austria (Zimmerman

et al. 2001). I conducted field research from 2006 to 2007 in the Kayapó village of Aukre, a mid-size village in the Kayapó Indigenous Territories located on the Riozinho River. Ethnographic research that consisted of qualitative and quantitative methods constitutes the basis of my data sample. Qualitative methods including participant observation, spot observations, and unstructured interviews were complemented by household surveys, which incorporated semi-structured interviews alongside a questionnaire. Combined, these methods documented the impact of non-timber forest products on household economies, political institutions and daily livelihood activities.

At the time of the research, Aukre had a population of approximately 334 residents in 38 households. Households in the village are multi-family dwellings with a minimum of four persons within one building unit (one family) and the maximum of no more than ten persons per house. Participant observation focused on people of age 18 and over identified social behaviors associated with different market activities, exchange patterns among households, and daily conversations concerning subsistence and monetary resource distribution. I worked with a representative from 26 households in order to better understand the livelihood activities of the village. I participated in and observed: clearing, planting, weeding, harvesting agricultural fields, savannah treks, fishing, forest fruit harvests, Brazil nut collection, food processing and cooking, female handicraft production, male handicraft production, basket-weaving, market-related meetings, household requests for goods from the city, ceremonial preparations, and several large naming ceremonies as well as smaller ritual events. I also observed two opportunistic hunts. During these events, when applicable, I asked consultants to talk about their experiences and opinions about cash economies within the community. Casual conversations revealed the perceived consequences of past market and trade relationships and preferences for future ones.

To cross-check informal conversations, I conducted formal face-to-face surveys. Household surveys consisted of questions about household demographics, past and present participation in customary subsistence activities, past and present participation in

economic activities by type, items purchased with cash earned, and what types of cooperative resource sharing activities the household had participated in the past week. These surveys generated a profile of household wealth, resource sharing patterns, work experience, social obligations and other relevant information necessary to investigating the complexities of village life. I completed 43 surveys (for a total of 26 out of 38 households). In several households I interviewed more than one family residing in the same house, which accounts for the larger number of surveys completed than households visited. I used non-probability sampling methods, and households were given the choice to not participate in the surveys.

Finally, unstructured interviews followed-up on data collected from participant observation and household surveys. In addition to household surveys, I completed 58 unstructured interviews with key community members selected based on their previous and current participation, or lack of, with different types of economic activities within the village. This data is compared to results published by previous researchers within the Kayapó area—particularly Morsello's (2006) work with Aukre, and Fisher's (1991, 2000) research with the Xikrin Kayapó.

Kayapó Social and Political Life

Today, the Kayapó live in approximately fifteen villages with populations ranging from 100 to 1,000 inhabitants staggered across their area. Access to communities remains difficult and restricts market participation. Only two communities can be reached by road and all others are only accessible by lengthy riverine travel or chartered plane flights. Each village is politically and economically autonomous and is generally governed by at least two chiefs (Verswijver 1992). This means, with the exception of the federally mandated relationship between each village and the National Indian Foundation (FUNAI), each village decides its own alliances and market engagements. However, leadership beyond the village level—including inter-village political and economic cooperation—is becoming increasingly common via community partnerships with external organizations, and via encroaching transportation and communication networks.

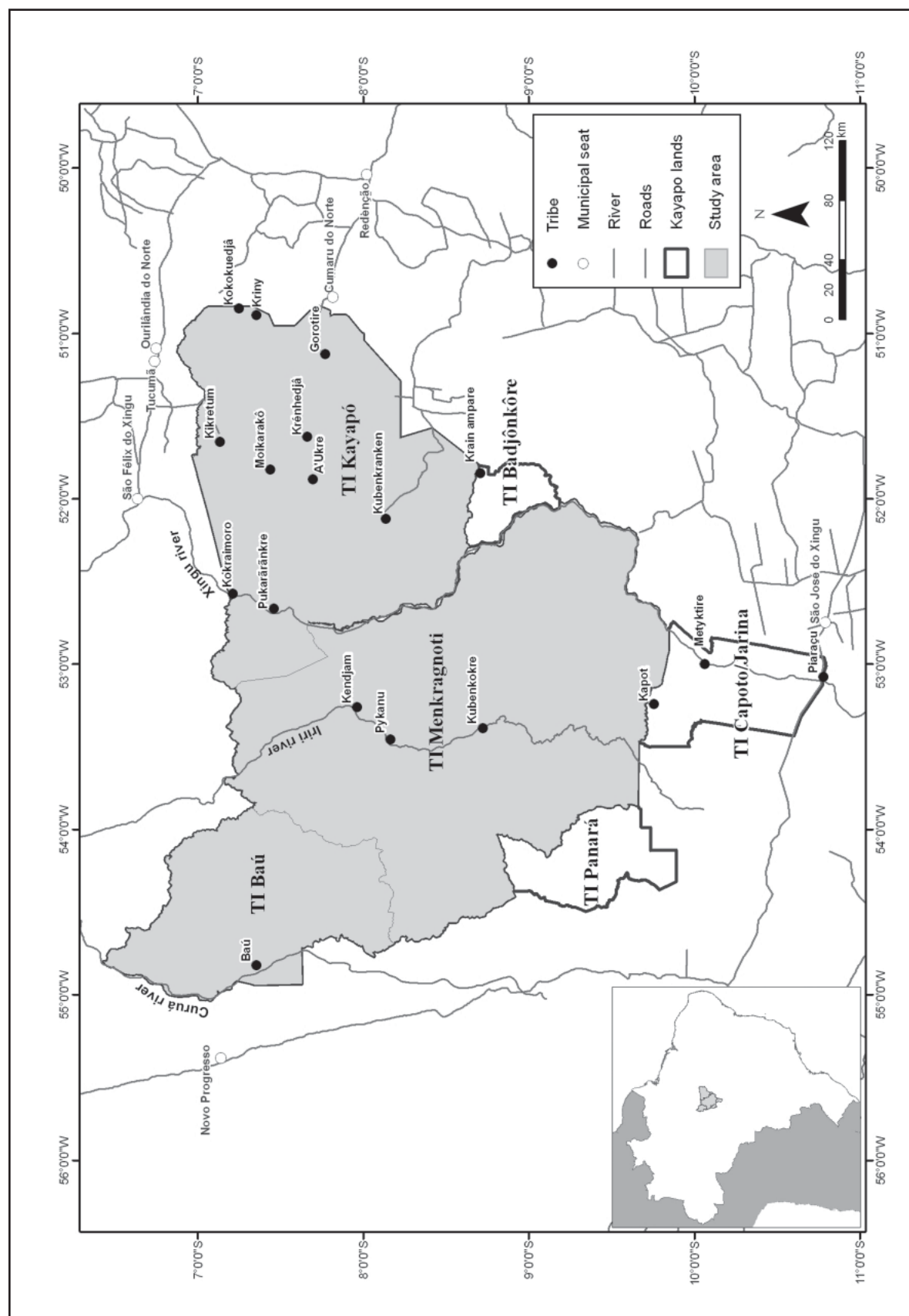


Figure 1. Terra Indígena Kayapós (TIKs) and major villages. This map excludes the non-continuous Xikrin Kayapó areas. Source: Courtesy of Luis Barbosa, Conservation International

All Kayapó subsistence activities involve different levels of cooperation among matri-uxorilocal households, age grades, men's societies, and kin-based relationships thus constantly reinforcing different social geometries. The chiefs serve as the main, but not only, link to the political and economic decisions that are made with external groups. Male community members are primarily responsible for resolving political matters, especially extra-local political and economic agendas. In a typical community-wide

meeting, politically active male members in the community will deliberate until they reach a consensus on the matter at hand and meetings can last for several days. Inter-village decision making occurs in a similar manner. A large part of leadership within the community rests upon village chiefs.

Aukre residents rely on a combination of swidden agriculture, hunting, fishing, gathering and raising chickens. Subsistence activities are divided along gendered lines (Table 1). Women gather fruits

Table 1. Community participation in subsistence activities.

Activity	Male	Female	Family group
Agriculture			
Field clearing and weeding	X		
Planting and harvesting		X	X
Hunting			
	X		
Fishing			
Close to village		X	X
Beyond village port area	X		
Harvesting			
Fruits	X	X	
Brazil Nuts	X	X	X
River turtle eggs	X		

and nuts, carry out most agricultural activities, help with in-village fishing, and are responsible for food processing and cooking on a daily basis. Women perform these activities either in age grades (gathering and firewood collection) or kin-based groups (gardening and fishing). Men have a more extensive subsistence range with hunting and fishing, although they also clear and weed agricultural fields and collect some nuts and a minimal amount of fruit. With a few exceptions, villagers still spend the majority of their day involved in ceremonial, subsistence, or leisure activities and only 5 percent of their time on cash-related activities. In addition, productive practices play a large part in how the Kayapó organize their social and spatial lives. As one consultant informed me after a long day in the agricultural fields, "We are not ruining our culture. We are still strong and grow and gather our own foods like we did in the past." In recent years, Aukre's subsistence base has extended to include various types of market activities including the sale of Brazil nuts.

Brazil nut (*Bertholletia excelsa*) gathering is the sole activity in which men, women *and* family groups participate. There are over twenty isolated Brazil nut trees and/or Brazil nut groves within walking or canoeing distance of the village (Carmargo and Mekaru 2006). Posey (1985) observed that the Kayapó (Gorotire village) planted Brazil nut trees in agricultural fields and trails to increase the availability of other key resources. The village of Aukre was founded in 1978 and, even though some villagers have planted Brazil nut trees in their garden area, the agricultural area does not contain many nut-bearing Brazil nut trees. Villagers rely on Brazil nut trees found in forested areas, and community members can choose from many spots for a Brazil nut harvest for subsistence or commercial purposes. Male age-grade groups are more likely to go to the Brazil nut areas farther away from the village, and female groups and family groups tend to trek more to the Brazil nut trees close to the village. These trees are part of the forested landscape beyond the agriculture fields, and are possibly the result of plantings by previous inhabitants of the area (e.g., Balée 1989, 1992).

Aukre's Cash Economies

Past Market Engagements

The 1990s brought unprecedented wealth to many Kayapó villages, including Aukre. Aukre engaged in three dominant market activities during this period. These activities included illegal timber extraction, a fair-trade Brazil nut oil project, and a conservation-community alliance that brought in external researchers and revenue into the area.

Aukre was among the many Kayapó villages that engaged in the extraction and sale of Broadleaf mahogany (*Swietenia macrophylla*). During the logging years, roughly from the 1980s to the early 2000s, neighboring villages found themselves in explosive disputes concerning common pool resources. Since each village remains politically and economically separate, communities and village chiefs were responsible for making deals with Brazilian logging companies. Typically, areas in use around communities do not overlap (Murphy 2004; Zimmerman, personal communication, 2006). However, because of the particular nature of logging on the reserve, villages began heated debates concerning their village territorial space since villages wanted monetary compensation for specific trees loggers found in the area. Villages attempted to resolve this issue by agreeing upon their own village-territorial zone, which was under that village's exclusive control (Zimmerman et al. 2001). However, this did not deter loggers from entering zones where they were unwelcome. Thus, timber extraction in the Kayapó Indigenous Territories highly disrupted pre-logging inter-village political and social relationships. The tense relationships among villages slightly waned when logging stopped in the Kayapó area in 2001, and diminished more in 2003 when the Brazilian government imposed further restrictions on mahogany logging (Zimmerman et al. 2001).

In addition to logging, Aukre and Pukanu villages participated in the United Kingdom-based Body Shop's now-defunct Brazil nut oil project (for a fair trade-conscious cosmetic line). The Body Shop built structures within the communities to dry and process the Brazil nuts into oil; bought boats and planes for the transportation of the nuts and for scouting ventures to locate Brazil nut trees;

employed community members for the harvest; and paid a subsidized price for the oil. Morsello (2006) estimates that in Aukre, adult villagers were earning around US \$277 per person per month while the Body Shop project was active. Morsello (2006) also notes that the Body Shop project revitalized Brazil nut collecting in Aukre and provided income opportunities for female members in the community—something that other cash-income projects had failed to do. However, even though 70 percent of community members over the age of 15 in Aukre were able to earn income from the project, age and gender did play a role in the distribution of income (Ros-Tonen et al. 2008). Females were excluded from some aspects of the project and the male household heads, who are elders within the community, received “payments in the gathering phase” only (Ros-Tonen et al. 2008:1487).

The project ended for complex reasons. The Body Shop subsidized price of US \$35 per liter was reduced after a couple of years to US \$11 per liter. Also, international watchdog organizations argued that the Body Shop used images of Kayapó leaders to boost sales of the “trade not aide program” without Kayapó consent or compensation (Zimmerman, personal communication, 2008). These accusations resulted in the Kayapó bringing one of the first intellectual property rights cases against the Body Shop, although it was settled before it went to trial. The Body Shop was unable to recover from the attacks on misuse of photographs of indigenous people and pulled out of the community as a result (Zimmerman, personal communication, 2008).

During this time period, community members in Aukre also formulated a partnership with Conservation International (Zimmerman et al. 2001). The Conservation International-Kayapó partnership is part of a wider trend in the conservation community that began in the 1980s, which allied conservation organizations with local, indigenous groups through their low-intensity use of natural resources (Arts 1998; Bryant and Bailey 1997; West et al. 2006). Community members in Aukre favorably reviewed their partnership with Conservation International, which formally began in 1992 (Zimmerman et al. 2001). Community members

placed value on the longevity and transparency in their relationship with Conservation International administrators and researchers. For instance one community member noted, “This researcher has been with us for a long time; she is real kin” and, another, “that researcher is good because he speaks the truth. He does not lie to us.”

As part of this partnership, the community along with conservation biology researchers built an ecological research station (Pinkaiti) 12 kilometers upriver from Aukre in the early 1990s. Pinkaiti is now in a period of inactivity based on changing bureaucratic requirements necessary for researchers to enter the area, although its functionality might be reinstated. During its active period, researchers supplied wage work to field assistants from Aukre as well as paid an entrance fee to the entire community to undertake research in the area. In male-dominated community meetings, the community would decide what to purchase with the entrance fee as well as pick out male field assistants for researchers. Since the founding of the station, Conservation International’s involvement in the area has escalated beyond the village of Aukre, and Aukre’s longstanding relationship with Conservation International personnel has continued. The ongoing relationship with Conservation International will be further explored below in the discussion of current economies in the village.

After their three main monetary sources of the past decade were no longer a possibility – the Body Shop Project, timber extraction, and wage work available at Pinkaiti research station – the community has relied on a mixture of other economic activities. These previous market relationships are important experiences to draw upon to evaluate current and potential cash economies in the village and the role non-timber forest products play in that economy.

Present Income Opportunities

As most small-scale communities, Kayapó households currently struggle to engage in a diversified mix of economic activities to maintain the level of cash flow they think necessary for their quality of life (Brush 1986; Salisbury and Schmink 2007; Toledo et al. 2003). Today, only a handful of opportunities exist for households to earn cash-income. A

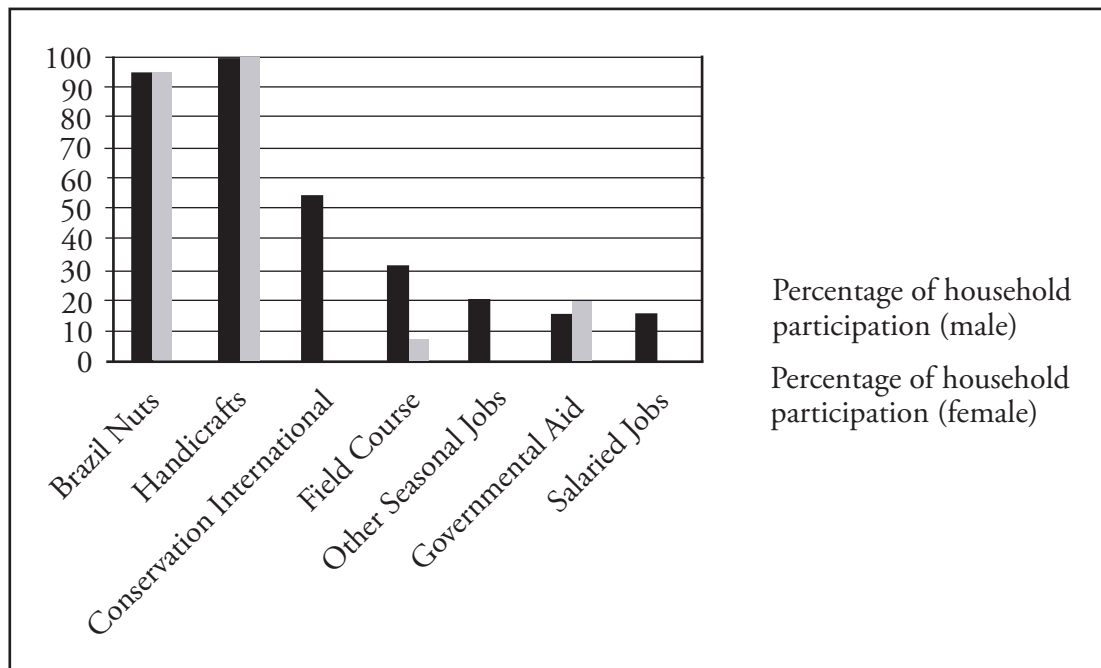


Figure 2. Percentage of household participation in cash economies.

typical household combines a blend of governmental aid, salaried work, seasonal work and opportunistic encounters to generate cash (Figure 2).

There are six, year-round, much-desired salaried jobs in the village, which include employment as a National Indian Foundation agent, two school teacher positions, and three people employed by a local health NGO. Another source of steady income for 29.7 percent of households comes from government pensions provided to elders. Other elders are eligible for these pensions, but the process to receive a pension is complicated, and bureaucratic hurdles prevent several families from completing it. Finally, some women are enrolled in a federal child welfare program—*Bolsa Família*—that provides financial assistance to mothers who are in certain income brackets and who have children three years of age or less.

Seasonal work, which is not stable nor secure, is an additional option. Eight out of 73 adult men in the community reported leaving for seasonal work in other Kayapó villages during ceremonial lulls or in the dry months when travel is easier. Men would

often temporarily relocate to Xikrin villages, which have financial resources from mining concessions from the Companhia Vale do Rio Doce (CVRD) (See Fisher 2000 and Gordon 2006 for a description of the Xikrin-CVRD relationship). Xikrin chiefs would offer employment to other Kayapó community members to clear agricultural fields or patrol the borders of their reserve. A typical stay would not exceed one or two months and the men would then return to Aukre.

The community also engages in the sale of handicrafts using timber and non-timber forest resources and glass beads. Men produce handicrafts (US \$15-40 per item), including wooden warclubs, woven baskets and woven belts sold intermittently. Items made by women are crafted with store-bought glass beads, and also are sold intermittently (US \$5-15 per item). Prior to contact with outsiders, beads for ritual objects were made from various forest seeds. But since entering into a formal relationship with the National Indian Foundation, beads have been a major trade item and now have become an important component of ritual objects and handicraft production.

Former researchers who worked at Pinkaiti or in the village have informally tried to sell Kayapó bracelets in cities such as Toronto, São Paulo, and Belém. Men and women will also sell handicrafts to individuals who might be passing through the village or when they are visiting towns and cities. Local sales include health officials and other technicians and government workers who are passing through for business meetings or stay for work. The sale of handicrafts is one of the only economic opportunities in which women have control over all aspects of the transaction.

Although currently inactive, the ongoing maintenance of Conservation International's Pikaiti Research Station provides semiannual jobs to community members to clean the area, fix trails and check in on the status of different structures. Conservation International is also partnered with local non-governmental organizations to develop sustainable development projects with different Kayapó villages. The sustainable development initiatives, especially in terms of non-timber forest products, are relatively new in comparison to other activities within the reserve, such as the research station. Furthermore, since 2004, Conservation International, the University of Maryland, and the Kayapó have co-designed and run a short study-abroad course at the Pinkaiti Research Station and the village of Aukre (Zanotti and Chernela 2008). The course provides several different types of income for the community: a community entrance fee, salaries for male Kayapó guides/experts for the duration of the course, and the sale of handicrafts at the end of visit.

Finally, a small, although not dependable, market exists for selling dried, unmodified Brazil nuts in the regional economy. The Kayapó have traded non-timber forest products with the National Indian Foundation, beginning in the 1960s, but possibly since much earlier (Fisher 1991). In these years, Kayapó communities traded Brazil nuts, animal pelts and other products for desired western goods such as beads, machetes and sandals (Fisher 1991). Today, local National Indian Foundation offices no longer only trade for Brazil nuts but pledge to allocate an estimated US \$5000 from their annual budget to the harvest and transportation costs of the nuts (Camargo and Mekaru 2006). The growth of urban towns in

the Amazon region and migration to the area has increased the demand for regional food products in the Amazon, like Brazil nuts (Brondizio et al. 2002; Browder and Godfrey 1997). However, moving the product from the site of collection to the buyer is often the most difficult portion of the transaction for the Kayapó. The sale of these products without a formal project infrastructure remains sporadic, as money for transport is hard to procure. Still, Aukre has found buyers in local or regional urban areas that are willing to purchase 60 kg sacks at competitive prices. Thus, at least for Aukre, individual and village-organized sales of Brazil nuts in nearby markets have been a seasonal option. Villagers in Aukre, however, perceive this type of Brazil nut sale as inferior to conservation and development projects, which, they argue, offer the most viable long-term source of income.

The production and sale of handicrafts and individual and community-wide Brazil nut sales have the highest level of participation within households and among men and women, but are least-desirable forms of cash-income due to being unreliable, seasonal, and opportunistic. The ecotourism project, Conservation International employment opportunities, and seasonal jobs are more desirable since they offer households a burst of income from work done over a longer period of time. Only six salaried positions exist, which are highly desirable, but exclusively male. Finally, governmental aid is a possibility for elderly community members and young mothers, but enrollment in these programs proves difficult. Villagers, when asked to recall as best they could, reported average annual earnings of US \$496, which is approximately US \$42 per month, a striking difference from the Body Shop years, where individuals averaged US \$277 per month. Community members use their cash to buy subsistence tools (e.g., fish hooks), clothing, foodstuffs, tobacco, and other items (e.g., flashlights and solar panels).

Discussion of the Overall Role of Non-Timber Forest Products

This paper has outlined the past experiences and present opportunities for cash-income in Aukre and the role non-timber forest products have played

in this history. Today, there are three main possibilities for non-timber forest product sales in the village of Aukre: individual and community-wide sales to regional towns, community partnerships with the private sector, and community-NGO partnerships. The introduction of each of these commercial, non-timber forest product outlets among the Kayapó has had both positive and negative effects on communities like Aukre. This study shows that community members rely upon subsistence activities to maintain their dietary needs and the “sociality” of everyday life (Overing and Passes 2000). Community members also desire market arrangements that provide the village with an in-flow of cash. Considering the past experiences with market arrangements and present-day options for cash-income, the community prefers to develop long-term, reliable cash-sources ideally based on sustainable development objectives. This section places Aukre’s non-timber forest product experiences in context, discusses the benefits and drawbacks of each possibility, and outlines the indicators, noted in the introduction, that community members described as desirable for future market-related projects.

Local Markets

Aukre has the most experience with the trade and sale of Brazil nuts in individual and community wide sales. The National Indian Foundation initially coordinated this trade, and today the National Indian Foundation partially subsidizes the sale with governmental funds. The nuts sold in this market do not always command a high price, but markets in local towns remain a seasonal option for villagers that are willing to coordinate the transportation of nuts from the village to the urban towns. However, these informal, regional sales of Brazil nuts have the potential to impact intra-village social institutions. On the transaction end, mostly male leaders are involved since nuts are sold in towns and negotiating with local businessmen requires some level of Portuguese fluency.

Communities also organize village sales of nuts where the chiefs receive the monetary benefits of the sale, but the community decides how this money is distributed. In these informal, seasonal sales, fe-

male community members are at risk to receive the least amount of benefits, since they are the furthest removed from the site of transaction. In research conducted in one Xikrin Kayapó village, Fisher (2000) observed that Brazil nut gathering only increased the uneven distribution of monetary wealth within the community. Although females would gather Brazil nuts, males from the same household would get the monetary benefits from those caches.

In my own field research in Aukre, males would often directly receive the cash from regional Brazil nut sales since they served as the liaisons between the village and the urban town (Zanotti 2008). However, a portion of the earnings from the sales was spent on household items like food or clothing for the entire family and on goods that the females desired. Depending on how the monetary wealth is distributed within the community, female community members can end up with some benefits from their harvesting activities whether it is in the form of money, goods or foodstuff, however, this is not guaranteed (Zanotti 2008). So while males might receive the cash, some of the benefits from the sales were distributed within their household and to other households as well. Nevertheless, this Brazil nut economy has a longstanding history in the region as a marketable non-timber forest product, and constant demand, brought about by new migrations to the region, can assure that the Kayapó will almost always have a steady, albeit small, informal market, provided they collect, store and sell these items without depleting the resource or damaging the nuts.

Global Markets

The Body Shop partnership had a slightly different outcome and potential future community-company partnerships might have similar results (Morsello 2006). With the Body Shop project, community members, both male and female, were able to maintain a fairly steady monthly income from the production of the Brazil nut oil, although females received less income than males (Morsello 2006; Ros-Tonen et al. 2008). During the Body Shop project, the village intensified their collection of Brazil nuts, allowing family groups and other

social groups to increase their participation in those activities (Morsello 2006). However, the availability of wage work in the community reduced the amount of time villagers spent on other social and ceremonial activities (Morsello 2006).

Without ecological monitoring, community members could potentially overharvest the resource in question, which has always been abundant and present in their area. The Body Shop project also indicates another trend in community-company partnerships: the cosmetic grade Brazil nut oil market is highly specialized and unless a company decides to base their product line on the oil, it is difficult to find a long-term market (Jennings and Entine 1998). After the Body Shop terminated their partnership with Aukre, only three other villages have attempted to produce Brazil nut oil in the hopes they will find a viable market outlet (Zimmerman, personal communication, 2008).

Conservation and Development Projects

Most appealing to Aukre are non-timber forest product projects coordinated with international and local NGOs such as Conservation International. The goal of future non-timber forest product projects is to provide economic alternatives in the region and to start programs that contribute to the already established ongoing technical and administrative coordination that Conservation International, the National Indian Foundation and the local non-governmental organizations offer to communities (Zimmerman, personal communication, 2008). Conservation International is willing to facilitate non-timber forest product projects provided that the Kayapó continue to protect their territory and use their resources in a way that supports ecosystem services, such as maintaining biodiversity and standing forests (Zimmerman, personal communication, 2008). Conservation International, local NGOs, and the community of Aukre are designing and developing a community-based sustainable development project based on Brazil nuts. The criteria for this project is that it should be a sustainable forestry market that supports community and conservation needs. Whether all those demands can be met remains to be seen.

Aukre community members find the potential for a Brazil nut project coordinated with Conservation International and local NGOs desirable for several reasons. First, the sale of Brazil nuts capitalizes on the communities existing social institutions and subsistence patterns. As stated earlier, Brazil nut collection is one of the few subsistence activities that has a high level of participation among male and female community members. Non-timber forest product projects that are designed to have the maximum possible community participation, in comparison to other economic activities, do not stress economic anxieties among different community members in the same way economic activities that result in cash-income for a few individuals. For instance, during the period of timber extraction, cash in the hands of a few young leaders had negative consequences for several communities (Turner 1995). On a smaller scale, the few salaried positions in the community during this time of economic uncertainty increases intra-village tensions between households with different levels of access to economic capital. Economic activities that tend to concentrate cash in the hands of a few individuals or households lends itself easily to misused funds or a failure to redistribute goods within the many different social networks and social ties that these households have. Consequently, activities that (i) provide a long-term source of cash income; (ii) enable villagers to continue with their subsistence livelihoods; (iii) provide the maximum level of participation within the community; and (iv) capitalize on local land use and subsistence practices, are part of the community's perception of a valuable project.

Second, projects that are co-developed within village-to-village networks are another valued aspect of non-timber forest product endeavors coordinated with non-governmental organizations. Non-timber forest product projects that include many villages increase opportunities for inter-village political participation and involvement. For example, community-wide decisions are made in male-dominated meetings in the men's house at the center of the village—if it is an in-village meeting—or in leader-dominated meetings in local or regional cities and towns. Conservation International facilitates many different types

of meetings within the region and the territory for various parts of their program, and this includes the non-timber forest product projects. These meetings join chiefs and leaders together in ways that were improbable prior to the 1980s. Conservation International meetings focus on governance, surveillance and management of the territory, including market activities. Leaders can strategize about enforcing their territorial borders, commiserate about territorial issues, and request funds to help build non-timber forest product projects. Thus, meetings allow leaders from various villages to work together to maintain a common goal of border enforcement and strengthening the territory.

Because alliances require interaction, they can sometimes generate more disagreements; yet, they can also resolve issues and foster cooperation. At meetings, communities struggle over external resources and access to markets. Because these projects are organized on a village-to-village basis, there is a chance that inter-village tensions arise as to which village is receiving the most benefits (Chernela and Zanotti 2008). The extra-local organization does not always have enough funds to distribute equally among all villages since projects, such as non-timber forest product programs, require time and start-up costs. Tensions can arise as to which villages receive the benefits, when they receive the benefits, and how they receive the benefits. Nonetheless, these projects have the added social value of promoting inter-village communication and cooperation—a key aspect of territorial management and enforcement. Non-timber forest projects, then, have the potential to (v) coordinate with social institutions already in place; (vi) promote inter-village collaboration and cooperation, and (vii) build upon or further solidify community-outsider partnerships.

Third, Brazil nut projects do not require the felling of any trees or produce high impact disturbance to the forested environment, and do not require intensive training on the part of community members. However, even though projects like Brazil nut collection might be attractive to the community, Morsello (2006) observed that community members sacrificed some ceremonial and subsistence activities in favor of participating in the Brazil nut

oil project. Thus, a potential consequence of a non-timber forest product project is that community members will begin to make trade-offs between customary resource use activities in favor of activities based on markets. Non-timber forest product projects have the potential to encourage intense use and perhaps misuse of a single or multiple resources (Arnold and Pérez 2001). Ecological consequences can be unpredictable even with the best available science or built-in ecological monitoring (Guariguata et al. 2008). If a non-timber forest product project is designed without clearly defined user rules and regulations that protects from overharvesting, non-timber forest product projects have questionable sustainability as alternatives to other extractive activities in the region (Wollenberg 1998). Nevertheless, the community considers a non-timber forest product project based on Brazil nuts to have a minimal impact on the forested resources, and they have had no prior experience with the depletion of the resource in question because of market activities. Hence, the final, additional variables that community members sought in a project are: (viii) minimally alters the village landscape; (ix) trains community members so no outsiders need to live or reside in the village for long periods of time; and the (x) environmental impact does not interfere with subsistence and ceremonial needs.

Conclusion

Considering the past and present income opportunities in the community, villagers remain hopeful but skeptical of the success of a future non-timber forest product project. This skepticism is based on their previous experience with many actors in the region, who have started and ended projects in their area with some success. In addition, because of the boom-bust cycle of markets in the Amazon and agricultural export, as well as the inconsistent nature of governmental aid and external actors, community members treat potential future projects with the same skepticism as their present market opportunities, even if they are highly desirable. Even with the success of a non-timber forest product project, it is unlikely that households will rely solely upon Brazil nuts for their cash-income

opportunities. Throughout their market experiences, villagers have relied on a diversified set of cash-income sources, which each present their own opportunities and pitfalls.

The community of Aukre still considers non-timber forest products as a viable option for market-integration even though future possibilities are uncertain. Community members perceive that non-timber forest product projects, particularly those coordinated with external organizations and institutions, are highly desirable sources of income. Community members prefer these types of non-timber forest product projects to other cash-income sources because the projects have the potential to reduce economic uncertainty in a way that supports the community's customary resource use patterns and allows for maximum participation. It is very likely that the village will continue to work with outside organizations, like Conservation International, for other potential future projects that place value on their natural resource management strategies, social institutions, intervillage diplomacy, and ecosystem services if those organizations find activity in Aukre useful to themselves.

The village of Aukre's involvement in many different local, regional, and international markets suggest that the Kayapó are both actively involved in shaping global marketplaces and at the same time structurally restricted by national and international policies and markets. Community members have treated these new markets as they do any part of their subsistence portfolio, as cyclical and opportunistic. However, as the Kayapó attempt to build external partnerships, and as new market-linked conservation projects surface, their previous history of market participation should be taken into account. Even if communities, like Aukre, have experience with a diverse array of cash-income activities, this does not mean that new entrances to the market place with familiar actors (e.g. Conservation International) and goods (e.g. Brazil nuts) will be without entanglements. Non-timber forest product projects are still an option for sustainable forestry management, but present a challenge for communities and other stakeholders invested in their success. The Kayapó experience, in particular,

with non-timber forest product markets illustrates the changing relationships communities have with different kinds of international and national communities and institutions.

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