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Gender, Conservation, and Community Participation: The Case of the Jaú National Park, Brazil

Regina Oliveira and Elza Suely Anderson

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The following are the first case studies of the Series:

1. **Conceptual Framework for Gender and Community-Based Conservation**, by Marianne Schmink, 1999
2. **Gender, Conservation and Community Participation: The Case of Jaú National Park, Brazil**, by Regina Oliveira and Suely Anderson, 1999

**Case Studies Series on Gender, Community Participation
and Natural Resource Management, No. 2**

**Gender, Conservation, and Community
Participation: The Case of the Jaú
National Park, Brazil**

Regina Oliveira & Elza Suely Anderson

Translated by Marianne Schmink

June, 1999

Gender, Conservation, and Community Participation: The Case of the Jaú National Park, Brazil

Regina Oliveira & Elza Suely Anderson

1. Introduction

This document is the result of a joint effort of the Fundação Vitória Amazônica (FVA) and MERGE (Managing Resources and Ecosystems with Gender Emphasis) to try to describe the experience of FVA in including gender, community participation and partnerships in their conservation activities in the Jaú National Park (PNJ). One of its objectives is to serve as an example of how gender as a variable can contribute to research, management plans, community participation, and other basic activities in the consolidation of conservation areas such as the PNJ. This document is aimed at an audience of environmental and social non-governmental organization (NGOs), government environmental agencies, the scientific community, and grass-roots organizations.

FVA is a NGO based in Manaus, whose mission is to work towards biodiversity conservation and the development of the riverside-dwelling populations, in order to consolidate the Conservation Units (CU) of the Rio Negro basin. The PNJ was chosen as an example of conservation and gender issues due to the pioneering work carried out by FVA in the Park, in collaboration with governmental institutions and national and international NGOs. Moreover, FVA is one of the few local organizations in the Amazon region that incorporated gender issues at the level of the institutions, using this knowledge in its activities in the Park.

The MERGE program, coordinated by the University of Florida, includes four countries: Brazil, Ecuador, Peru and the United States. MERGE developed in Brazil, in part, based on the former GENESYS project (Gender in Economic and Social Systems), both of which were supported by USAID with the principal objective of assisting the projects in the USAID/Brazil environment program. MERGE seeks to address the challenge

of promoting participative strategies and deepening the understanding of gender and natural resource management in tropical areas.

The thread of the text is based on the questions outlined in the MERGE conceptual framework, listed in Box 1 (Schmink, 1999).

1.1 The Jaú National Park

The PNJ is located in the state of Amazonas, in the municipalities of Novo Airão and Barcelos. With an area of 2,272,000 hectares, it is the largest National Park in Brazil, and the largest protected area of tropical forest in the world. The apparent biological value of the region where the PNJ is located first aroused the interest of naturalists in the late 1960s, when Haffer (1969), studying the distribution of birds, identified a small Pleistocene

Box 1: MERGE conceptual framework.

1. *How is the potential for community-based conservation projects constrained or enhanced by historical, ecological, cultural, socioeconomic and political factors at diverse scales? [Political Ecology analysis]*
2. *Who are the multiple stakeholder groups involved in direct or indirect negotiation for resources? In what ways are their interests complementary and/or in conflict? How do their different levels of power and resources affect the outcomes of negotiations? [Stakeholder analysis]*
3. *How can participation by local communities contribute to goals of achieving conservation with improved livelihoods? [Stakeholder analysis within the community]*
4. *In what ways do gender relations differentiate people's connections with natural resources and ecological systems? (including knowledge, use, access, control, and impact on natural resources, and attitudes towards resources and conservation) [Gender relations and resources analysis]*
5. *Does stakeholder participation in gender-focused learning processes improve the ability of local actors to negotiate their interests in conservation? [Project analysis]*
6. *How are changes in resource use and management by local communities linked to biodiversity conservation? [Sustainability analysis]*
7. *How can stakeholder learning contribute to conservation success in the long run? How can it be incorporated into a broader strategy for institutional change and partnership that provides continuity in research, exchange, technical assistance and other participatory activities with local communities? [Institutional analysis]*

refuge –hypothesized to have remained as a humid refuge for plants and animals during drier climate conditions of the Pleistocene period - in the lower Jaú and Unini rivers. The lower Jaú area later was also included in the Pleistocene refuge defined in an area north of Manaus, based on the distribution of plants (Prance, 1973). Today the evidence for the refuges is questioned (Salo, 1987), but the fact is that these two studies provided the basis for the proposal to create a reserve in the area (Schubart et al., 1977), with the objective of conserving a black-water basin from the source to the mouth, from interfluvium to interfluvium.

Conservation Units occupy a central role in biodiversity conservation, because they are considered to be the best way to preserve wildlife, rare species, scenic ecosystems, genetic resources, beautiful landscapes, water sources, and historic and archaeological patrimony (Pádua, 1986). However, traditional conservationists tend to see only the aesthetic and biological values of the forest, but not the people who are there (Rebello, 1995).

1.2 The History of Human Activity in the PNJ

The area surrounding the PNJ has a history of human occupation which predates the colonial period. Upon arrival in the 17th century, the Portuguese recorded the presence of the Cauari Indians, the oldest known residents. The Cauari belong to the Arawak linguistic group and represented an important branch of the commercial route, trading products with the Yurimaguas of the Japurá and Solimões rivers, and with the Guaranaguas of Rio Branco, who themselves traded products with the Dutch of Rupununi (Porro, 1992).

The colonial occupation of the region began in 1658 with a Jesuit expedition, departing from Maranhão, which founded the Tarumãs Mission (IBGE, 1957). In 1694, the Carmelites founded the settlement of Santo Elias do Jaú, at the mouth of the Jaú river. In 1786, now elevated to the category of village and named Airão, the region was home to Arawak, Manaus, Baré and Tucun Indians, as well as merchants of European descent, and the priests. All together there were 148 people in 22 houses (Ferreira, n/d). The area was the site of great commercial activity involving products such as: different varieties of rubber (*seringa*, *sorva*, and

balata), animal pelts (jaguar, alligator and otter), tortoises, and vegetable fibers. During the beginning of the twentieth century, the region's commerce was controlled by the Vianna family. Beginning in 1955, a patron from the rubber boom period named Francisco Bezerra de Vasconcelos called himself owner of the recently-created municipality of Airão. After a long period of economic decline and political fights between the local bosses and politicians appointed from the state capital, there was a shift in settlement to the locality called Tauapessassu (100 km. downriver), today known as Novo Airão.

As happens in almost all the protected areas decreed in Brazil, the creation of the PNJ did not take into consideration the presence of people residing in the Park. Within the borders of 86% of the protected areas in South America, live people who for decades have occupied the locale and used the natural resources available there.

1.3 The Creation of the PNJ

The PNJ was created by decree no. 85,200, on September 24, 1980. As the goal of a co-management agreement between the Brazilian Institute for Environment and Renewable Natural Resources (IBAMA) and the FVA, a management plan was elaborated for the Park under the responsibility of the latter.

As happens in almost all the protected areas decreed in Brazil, the creation of the PNJ did not take into consideration the presence of people residing in the Park. Current legislation does not permit the presence of residents in protected areas. The general practice is for the state to expropriate and indemnify the residents, in an attempt to consolidate the conservation of the area. Within the borders of 86% of the protected areas in South America, live people who for decades have occupied the locale and used the natural resources available there.

During the first phase of Brazil's Plan for the System of Conservation Units, in 1979, the Jaú area was proposed as a Biological Reserve, one of the most restrictive management categories with regard to exploitation of natural resources and human presence. In 1982, however, during the Plan's second phase, the unit was reconfigured as a National Park. The criteria that guided the creation of the Park were: "proximity to Manaus, center of great touristic concentration, the scenic beauty of the region, and facility of access to the region" (BRASIL. MA-IBDF/FBCN, 1982: 58).

The question of whether or not residents can stay in the PNJ is a subject of much discussion lately, due to the impasse between the legislation and reality. Most of the residents (73%) know that they live in a National Park, but they do not know all objectives of a Park. Among 29 residents who said they did know,

22 mentioned only preserving nature, and none mentioned the other three objectives listed in the 1965 Forest Code, which specifies that National Parks should have “educational, recreational, and scientific objectives” (art. 5^a). The current legislation does not permit the presence of residents in the Park, but the reality is that they continue to reside there, seventeen years after the Park’s creation. For this reason, contrary to IBAMA’s rules, the FVA took a position in favor of allowing the residents to stay in the Park, and of their participation in the Management Plan. The FVA understands that participation in a co-management agreement does not mean simply executing a set of rules, but rather is principally a process of negotiating and proposing more appropriate solutions, derived from the knowledge of and direct actions in the Park. From the perspective of FVA, the question of whether or not residents remain in protected areas must be treated in different ways depending on each Conservation Unit.

2. FVA Negotiation with Stakeholders

Consolidation of a protected area in the Amazon region involves various segments of civil society, principally scientists, politicians, financial interests, and residents of the area. It is a difficult task. There are many conflicts in protected areas. In the PNJ, conflicts occur mostly due to diverse interests in the use of resources (timber, tortoises, and tropical fish). Some residents believe that “outsiders” should not be permitted to enter the Park to extract resources. The administrative tasks of enforcing such rules, and the laws prohibiting residents within the Park also are problems.

Different groups currently are involved in the consolidation of the PNJ, either directly or indirectly. We identify as groups with a direct interest the FVA, IBAMA, and the Park residents. Those with indirect interests include local governments, politicians, fishing tourists, tropical fish merchants, and loggers. Even less directly involved are the Brazilian legislature and civil society at large, which also have interests in the management and control of the Amazon region.

Various strategies and actions continue to be undertaken by FVA in order to integrate the different groups and act in a multi-institutional way to consolidate the Park. First, FVA worked jointly in

the PNJ with the National Health Service (FNS), with the objective of getting to know the area and its residents. An initial socioeconomic survey carried out among a sample population in 1990 indicated the need to develop a deeper study of the area. As a result, FVA proposed and carried out the first Action Plan for the Park in April of 1992, with the participation of researchers from local and national institutions such as IBAMA, the National Institute of Amazon Research (INPA), and the Federal University of Minas Gerais (UFMG), who identified the principal problems facing the Park.

FVA’s participation in cultural activities in the municipalities to which the Park belongs contributed to closer ties with the local governments and other local social groups (schools, associations). The result was a joint effort in environmental education for children and youth, which sought to raise their consciousness about the importance of protected areas.

With the Emergency Action Plan, in 1995, FVA sought to bring different groups together to discuss, plan, and carry out a series of activities in order to identify and minimize the impacts on natural resources and, as a consequence, contribute to the conservation of the PNJ. The work was productive, and resulted in the elaboration of a document that reflected the consensus of the various stakeholders, and served as a guide for actions in the Park, while the Management Plan was produced.

Throughout the process, from the first action plan to the elaboration of the Management Plan, FVA’s strategy involved multi-faceted actions. Alongside the political work with institutions concerned with research, health, and management of the PNJ, an effort was undertaken to involve the population that lived in the Park. Park residents were invited to participate in the discussions and elaboration of the Management Plan, and the socio-environmental research activities related to resource use and gender. FVA understood that direct participation in decisions by the population of the Park would help guarantee the consolidation of the PNJ and, consequently, biodiversity conservation. Significant difficulties were encountered in creating a network of elected park residents committed to participating in management activities. For example, when a representative of the residents participated in the Emergency Action Plan discussions, we could see that he had great difficulty understanding and participating in the issues discussed during the meeting, and even more trouble passing on this

Consolidation of a protected area in the Amazon region involves various segments of civil society, principally scientists, politicians, financial interests, and residents of the area.

information to the other residents. After this experience, FVA initiated a training and learning process with the PNJ residents.

Another strategy for collaboration among stakeholders was the suggestion to establish a Technical Board for the Conservation Unit, to be convened by the IBAMA Superintendent in Manaus. The Board would bring together representatives of governmental institutions and NGOs, with the basic purpose of uniting the diverse stakeholder groups to seek common solutions to problems involving CUs in the state of Amazonas. The Superintendency finally acted on this suggestion two years after negotiations began. The delay in making the Technical Board a reality undermined the actions of the stakeholders, who depended on official convocation of the meetings where decisions would be made about monitoring of the area. With no means to get together and discuss these issues, stakeholders ended up drifting apart and losing contact, which made the process more difficult since IBAMA, the management entity, was also in sole charge of actions to be taken. Distanced from the discussion process, due to the lack of any form of representative organization and because of the complexity of the process, the residents of PNJ were left out of the initial discussion, with no concrete way to negotiate their needs and interests.

To involve the diverse stakeholders and guarantee the effective participation of the population in the discussions, FVA sought to promote meetings and informal gatherings within the Park, on topics that had to do with priority questions for the conservation of the PNJ and that were of interest to the various groups. One example was the meeting on conservation and management of tortoises, which took place in July of 1995 in a place called Seringalzinho. Participative methods (group dynamics) used during the meeting helped to lay out the issues for the residents and, as a result, solutions were suggested with broad local participation.

This experience led FVA to plan other meetings with quite specific related themes, in order to avoid difficulties of understanding and to increase the potential for information to be passed on between residents. Even this method, of holding meetings, is difficult when the work team is not armed with all the necessary information and well-prepared in advance.

The FVA also held several meetings with small groups of residents in different areas of the Park, related to the mapping of areas used by the

residents for subsistence and commercial activities. These meetings focused on mapping of areas of natural resource use were part of a strategy that also included a permanent field team, with the purpose of training residents, learning to communicate effectively with them, and working with them to identify problems and solutions. Another strategy which yielded good results was to hold meetings with leaders indicated by the residents of the Park. These meetings were held outside the Park in order to prepare the leaders to act in other fora for debate. Dynamic, participatory activities and group work led to profound discussions about the understanding of the role of each resident in the process of elaboration of the Management Plan (FVA 1998a, 1998b).

3. Methodological approaches to understanding gender and natural resources

3.1 *Gender-specific Questionnaires*

Before going to the field to carry out the census and socio-economic survey of 1992, an FVA team spent eight days in the PNJ pre-testing the questionnaire. When we arrived in the houses we were received by the family, and the questions, although heard by all, generally were answered only by the head of the family, usually men, with little or no participation by women in the responses. We observed that for the census questions (name and number of children, documents, and schooling), the women were consulted by the men. The men, on the other hand, insisted on answering the questions about consumption of natural resources, principally hunting and collecting of turtles and turtle-eggs.

In separate conversations with the women, we noticed that they felt more comfortable answering questions that were formulated by the women on the team. One of these questions came to be about cooking, and ways of preparing certain dishes consumed by the family. In this way we were able to get an estimate of the consumption of game with this question: "When was the last time you cooked....?" followed by a list of possible game animals. Since they were responsible for preparing meals and managing the household's food, women's information about game consumption was more complete than that provided by the men,

In separate conversations with local women, we noticed that they felt more comfortable answering questions formulated by the women on the team.

who feared reprisals (thinking we were from IBAMA) and therefore omitted much data related to game.

Whenever we began to ask questions about fertility and mortality, leisure activities, migration, and consumption, the male heads of household called on their wives to respond. In houses where women were heads of the family (principally widows or single women), women also answered the questions about marketing, essentially a masculine activity, which they had taken on. We therefore concluded from the pre-testing of the questionnaire that if we used questionnaires differentiated by gender in the full survey, along with other instruments such as the 24-hour recall and activities profile, we would be better able to understand the way of living of the residents of the Park.

Although this methodology of applying separate questionnaires to men and women can run the risk of reinforcing traditional spheres of knowledge, we decided that this would serve as an initial step in valuing women's knowledge and in drawing them into the larger dialogue about the park. To carry out the work of applying the final questionnaire to all households in the Park, the field team was composed of four women and four men,

researchers with different backgrounds (biologists, engineers, agronomists and health specialists). Questionnaires differentiated by gender were prepared and applied nearly simultaneously by pairs of interviewers consisting of a man and a woman. Interviews with the male and female heads of household were held in separate locations by male and female interviewers, respectively, to try to avoid the contamination of answers of one by the other, and using reinforcing questions. The interviews were done in the most informal way possible, with one person interviewing (guided by the questionnaire) and the other alongside writing down the answers. There were times when it wasn't possible to follow this methodology, principally when we were in communal spaces. We needed to avoid making the questions known in advance because sometimes people who were yet to be interviewed gathered in the houses where we were carrying out interviews. Each interview lasted around two hours, or even longer when it was with residents who were merchants or who were considered to be leaders. In thirty days we interviewed all the residents in the Park, 167 domestic groups distributed along the rivers and streams that make up the PNJ (see Figure 1).

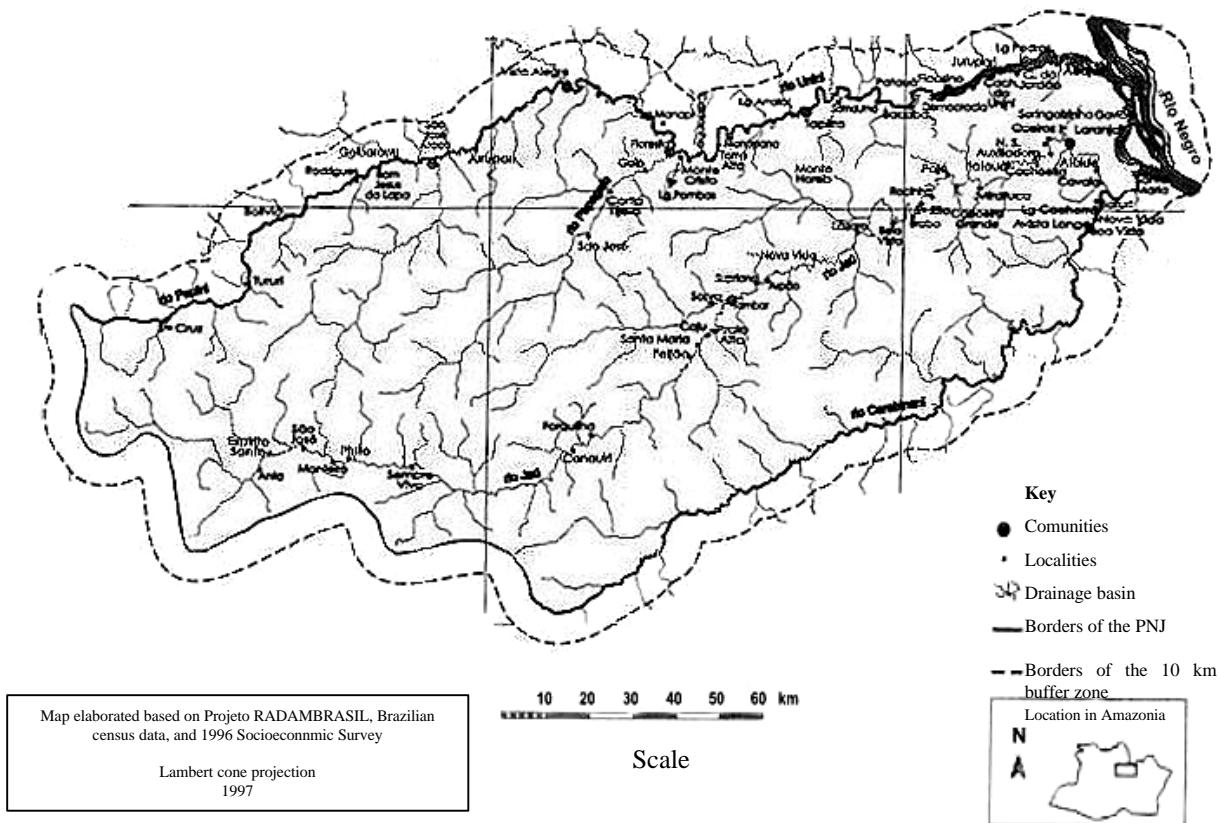


Figure 1: Map of localities in the Jaú National Park

Interviewing men and women separately resulted in a more complete picture of the situation of the residents of the Park, because the same problems were contemplated from different points of view. One of the results from the socio-economic survey is that the use of natural resources in the Park is directly linked to the seasonality of the region, and that gender differentiates both consumption and production. The organization of family labor, described in the 24-hour recall of a Jaú family (see Box 2), and also in the profile of subsistence and commercial activities, demonstrates well this differentiation. In addition to results from the census and the socio-economic survey, the experience of living with some families and participating actively with them in their day-to-day life also served as a way to understand this differentiation. In general the families are large, and the children over eight years old already participate in some activity directly related to work outside the home such as agriculture and extractivism.

3.2 Mapping of Natural Resource Use

Another method we used with great success to obtain information on the use of natural resources was mapping along with the residents of the PNJ. This research and extension work consists of two stages: first, a team of researchers visits each family unit, where they talk about their daily life, agricultural work, and production, and together with the family they draw a map of their area of use, locating the house, agricultural fields, and areas for hunting, fishing and extractivism (Figure 2).

These locations later are geo-referenced and named in accordance with the information of the residents visited. The data collected are processed (included in maps derived from satellite images), and a similar team returns to the area in a second stage, using these maps as a point of departure for a broader task in collaboration with groups of residents.

The methodology is simple. In the first stage of the individual maps, we use newsprint and pencils (black and colored), as well as a GPS (Geographical Positioning System, used to furnish the geographic coordinates), and the residents participate to the extent of their interest and ability to use

Box 2: One summer day for a family on the Jaú River.

This family has eight members: a man, his pregnant wife, and six children (two boys 11 and 4 years old, and four girls ranging in age from 8 to 2 years old). The family lives on the edge of the Jaú River, with six agricultural plots dating from different years. The 11-year-old boy is responsible for fishing, peeling vines, caring for the agricultural plot, and watching his younger siblings. The 8-year-old girl is responsible for taking care of her younger siblings, as well as making the cooking fire, cleaning fish, peeling vines, weeding the agricultural plot and the homegarden, taking care of the chickens, and other tasks.

At 6:00 a.m. the man leaves to go fishing, along with his older son. The woman goes to the river to wash clothes and the oldest daughter stays behind to take care of the younger boy and three little girls. The woman returns from the laundering, hangs out the clothes and goes to the field with the other children to weed until 11:00, when they go back to the house to wait for the husband and son to return. They eat some fruits from the homegarden and the woman goes to prepare her caieira, a pit for making charcoal: with the help of the children, she collects sticks and trunks scattered around the area near the house, uses the spade to dig a shallow rectangular hole about one by two meters, arranges all the sticks collected, sets them on fire and covers it with earth. Afterwards she goes to weed the homegarden with the children's help. The children stay around the house eating fruit or cassava flour.

Between 2:00 and 3:00 p.m., the man and his son return from fishing, and the woman and her older daughter go to the river to clean the fish and salt those that will not be eaten for lunch. They start preparing the fire in the wood-burning stove. The fish is boiled in a sauce and seasoned with salt and onions from the herb garden. If there is rice or beans, these are prepared too, and the whole family gathers to eat lunch. They usually eat sitting on the floor in the kitchen where the pots and plates are placed. After lunch, the woman and her eldest daughter sweep the floor, gather the dishes in a tub or bucket, and wash them at the river's edge. This often means going up and down slippery ramps carrying full tubs and buckets on their heads.

In the afternoon, the woman, her husband and the older children peel vines or go to weed the field, where they stay until 4:00 p.m. When the sun begins to set they all bathe and carry water to the house (a task carried out by the woman and older children). Between 6:00 and 7:00 p.m. dinner is prepared and served by the women, with her children's help. They all have dinner, and the woman and oldest daughter sweep, gather the dishes that will be washed the next day, and at 8:00 p.m. the children retire to sleep. The man, the woman and the older children peel vines until 10:00 p.m., when they also retire.

pencils. In the second stage FVA created maps of specific regions of Jaú, showing most of the streams and lakes. These maps were taken to specific locations, where groups of residents met together, and information was checked and complemented with their help.



Figure 2: PNJ dweller drawing a map of his area.

In addition to the maps, the FVA team created icons (computer-made graphics) to represent resources or practices like the house, river port, flour-making shed, agricultural fields, hunting, fishing, collection of tropical fish, turtles, rubber, copaiba (an oil palm), vines, etc. (sixteen in all). For each icon we made several small flags (2cm square) on the computer as well, which were cut out and mounted on a large pin. On one side of the flag was the icon, and on the other the color chosen to represent each family or domestic group. The members of the family received a badge with their chosen color, and a small tray (about 10cm. by 25 cm.) full of already-prepared flags. The flags already indicated spaces and uses of resources by gender, since the division of activities had been identified in the interviews of the socio-economic survey.

The work consisted in explaining the icons to the families, demonstrating first on letter-sized paper, and then sitting down with them around the maps, on the ground, so that they could place the flags in the correct places. In this way it was possible to locate the various locations of agricultural fields, hunting, fishing, and other extractive activities of various kinds. The process also stimulated the residents' participation, as well as discussion of complex topics such as the Management Plan, zoning, and community organization.

4. Gender and natural resources in Jaú Park

4.1 The Population of the Jaú National Park

Currently there are approximately 984 residents of the Park (approximately 159 domestic groups), of which 54% are male and 46% female of all ages. The population is distributed unevenly in the PNJ, with the majority living around the border areas (59%), which includes the communities of the Unini River, and the isolated residents of the Paunini River and the Rio Negro. In the interior of the PNJ live 41% of the residents, including residents of the Jaú and Carabinani rivers, and the Papagaio and Guariba streams (see Map 1).

The population that stayed in the PNJ is distributed in a more or less linear fashion along the banks of the principal rivers, living on the high river banks that allow them to use the rivers and streams to fish, and as a means of transport, and the uplands to plant their agricultural plots and carry out extractive activities.

Almost all residents are from the state of Amazonas (97%), many born in the area of the PNJ. The population is predominantly young, with an average age of 18. If we take 15 and 20 years as indicators of youth, 55% and 64% of the population is young, respectively (Figure 3). There are 50% more males than females among the population of young people between 15 and 20 years of age, suggesting an out-migration of young women from the PNJ. Women start having children and building families at 16 years of age, and these families may or may not take up residence where the women were born.

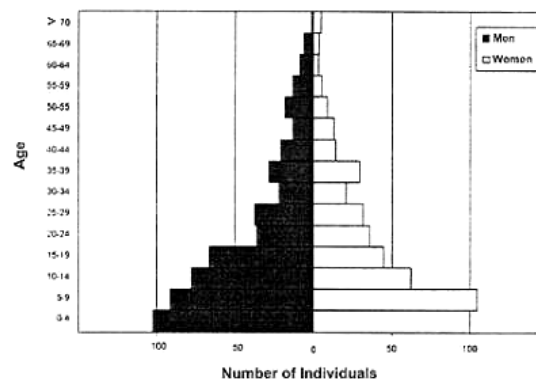


Figure 3: Age pyramid of residents of the Jaú National Park.

Women's mean fertility rate, which corresponds to the number of live births plus the number of stillborn children, is seven children per woman in the Park's population. This is more than twice the overall fertility rate of Brazilian women, which is less than three children (Rebelo, 1995). However, life expectancy is quite limited due to the many risks to which residents are exposed in the Park, and the quite precarious health conditions.

Over the past twenty years, official registries and scientific data indicate a progressive decrease in the population that historically lived in this area, which was declared a Conservation Unit seventeen years ago (Table 1).

The current density of 0.04 inhabitants/km² verified in the PNJ is even smaller than the population density in the municipalities of Novo Airão (0.37 inhab/km²) and Barcelos (0.09 inhab/km²), and much smaller than the population density of the state of Amazonas (1.34 inhab/km²), which is one of the lowest in the country (IBGE, 1993).

Table 1: Evolution of the population density in the area of the Jaú National Park

Year	No. of Families	No. of residents	Density (inhab/km ²)
1977		3536	0,13
1990	225	1530	0,07
1992	167	1019	0,04
1996	159	984	0,04

4.2 Subsistence Natural Resource Use

Many of the activities carried out in the PNJ are directly related to the region's seasonality, the area of use by the residents, and distribution of existing resources in the locale where they live. Thus, there are different techniques for using resources in the PNJ, and diverse gender relations in their use. The roles of men, women and children in natural resource use are differentiated according to needs, concepts, and attitudes. Men and women in the PNJ have varied interests in the Park's natural resources for consumption, medicines, commercial production, or family survival. Ethnobotanical research carried out in the Park in 1995 revealed gender-differentiated interests in the use of medicinal plants by different specialists (traditional healers and midwives).

Data collected by FVA on the principal agricultural and extractive activities contributed to the elaboration of an agricultural calendar for Jaú. For this purpose, we held meetings with residents so they could put together a map of their agricultural plots, with the participation of both men and women. The men generally drew the map, while women indicated the places where crops were planted.

Fishing: In the PNJ, various fishing techniques are practiced for catching fish and turtles, which vary by gender of the fisher. Men usually go out fishing in the morning, when they use fishing lines (*espinhel*) or bow-and-arrow, techniques used during

periods of fish scarcity (when the river is high). They use crickets and grasshoppers as bait for the line, which are collected by the children in their backyard and stored alive. When the men are in the forest occupied with other extractive activities, younger boys and women are responsible for fishing, and prefer to use a pole (*caniço*), with the same kind of bait. Women generally go fishing with their younger children, including babies, when they don't have children old enough to take care of their younger siblings.

During the high water season (May to August), the fishing technique used is *fachio*, which consists of going out at night (usually at nightfall, beginning at about 7:00 p.m.), using a flashlight to blind the prey and a harpoon to capture it. This activity can take up to eight hours, depending on the quantity of fish required. It is practiced more by men, although in some families women also do it. Treating the fish is almost exclusively a feminine task, involving women and daughters as young as 8 years old, who clean and salt the fish to preserve it.

The capture of tortoises is exclusively a male task. However, women and children collect eggs, principally in the dry season (August-September). Cleaning and roasting or boiling the turtle meat is the men's job, although some dishes (*batido* and *guisado*) are prepared by women. Men also are exclusively responsible for preparing the corrals where turtles are kept in reserve.

Hunting: Hunting is more accentuated during the flood season, when a larger area is underwater and therefore fish are less concentrated. The techniques used are traps, tracking and blinds. In trapping, the hunter sets up a loaded shotgun in places where he previously saw traces of an animal. The trap is left for a day and checked later to see if it was successful. Blinds are used to wait for animals in a place where they are likely to pass, such as near trees producing fruit that they eat. Tracking is used to follow animal trails, generally with the help of dogs.

Hunting may be planned as a means to guarantee food during the preparation of the agricultural plot or extractive activities, or it may simply happen by chance, when people go out to fish or to collect forest products, taking their shotguns along. The principal game animals eaten are: paca (*Cuniculus paca*), peccaries (two species of *Tayassu*), and tapir (*Tapirus terrestris*), among others.

This is a male activity, although in some families women hunt too. The work of treating and preparing the game is a task for both men and women.

Agriculture: From clearing the land to the harvest, the whole family participates. It is up to the men, with help from their sons, to cut the smaller trees and clear the underbrush and, with axes, cut down the larger trees, leaving the Brazil nut trees, which are protected by Federal law. Men and their sons 8 years old and higher also pile up the larger trunks and burn them. Many residents of the PNJ make a firebreak, which consists of a two-meter-wide trail around the area to be burned, in order to avoid spreading to other areas.

After the burning begins the planting of manioc, corn and fruits, with the participation of the whole family. When it is time to prepare the soil, plant, and harvest, both men and women participate. Women plant different varieties of cassava as well as food crops such as sweet potatoes, *cará*, and *ariá*. Men also plant cassava, in addition to commercial crops such as bananas. Women and children generally care for the plot. Young children are taken to the field when there is no one with whom to leave them. These tasks include weeding (with a large knife), usually four times a year. Men, women and children participate in the cassava harvest.

The whole family participates in the process of making cassava flour (Figure 4). Part of the cassava harvested is soaked and the rest is peeled by women, older people and children. In the flour-making shed, the cassava is grated and pressed by women, men and children. Men do the pressing, which requires great physical force to put the mass in the press and squeeze out all the water. After being pressed, the cassava mass is sifted (by the women and young children), and toasted on the oven. Men and women carry the firewood, and also share the task of constantly mixing and turning the flour on the oven.

Women are the ones in charge of preparing other products originated in the making of cassava flour, such as tapioca, *tucupi* sauce (the liquid extracted from bitter manioc and used as a regional seasoning), and *beiju* (a kind of dry pancake), with the help of children of both genders from 8 to 16 years old.

4.3 Commercial Natural Resource Use

Commercial extractivism also is seasonal, varying in accordance with market prices.

Vines: These are a winter product. Men generally go to their "centers" (forest camps), where they stay for a week or more. They try to leave food with their families, generally game meat. They may go alone or in partnership with close neighbors. When they are in the camps, they process the vines with permission from the neighbor closest to the camp (who may belong to a third family). According to one resident, vines are collected principally when men need to pay debts to a merchant, by collecting a large quantity of the product.



Figure 4: Making of cassava flour.

When they collect vines in areas near the house, it is up to the women and children to peel and process them after they return. The peeling is done by hand or with knives. Once they are peeled, the vines are cut in lengths of about 40-50 cm. Women, men and older children then shred the vines in the evening.

The vines are used to make utensils such as *paneiros* (large baskets to carry cassava, or Brazil nuts, from the fields or forest), brooms and baskets. The *paneiros* are made by the men, and brooms and baskets by the women, although some men make these items as well. Men, generally household heads, are exclusively in charge of selling vines as a raw material. Women sell the crafted goods like baskets and brooms to local merchants.

Brazil nuts: This also is a winter product. The whole family participates in the collection of the nuts, sometimes moving to other areas of the Park where Brazil nuts are found, and building small shelters. To go into the forest and collect the nuts is the men's job, using *paneiros* to carry the fruits. Women and older children use a large knife to break

open the nuts. The nuts removed from the outer husk are left in the shell, and are bagged and marketed by the men.

5. Gender analysis and its practical application in the case of Jaú

With the results of the socio-economic survey of 1992, carried out with support from the GENESYS Project, FVA was able to begin the first work with the Park residents. The previous work had focused directly on basic research on the functioning of the ecological system in order to increase knowledge of the area. The 1992 survey allowed us to form interdisciplinary research teams and to make the PNJ a priority with IBAMA. The survey also contributed to helping FVA carry out the PAE, secure resources for its projects and, above all, to opt for allowing the residents to stay in the area and to have them as possible allies in the consolidation and conservation of the Park.

Using a gender-specific questionnaire, FVA learned vital information about the Park's population which helped to define future project activities. In terms of education, through information obtained from the female questionnaire FVA learned that 74% of the population of the Park were illiterate, including adults and school age children. Among the literate population, 61% were men. Another example of the information obtained from the female questionnaire was that the communication system with the residents should be through the widely-heard radio program that broadcast announcements.

Women also are responsible for family health to a great extent. Generally they maintain a small medicinal plant garden that they use when necessary. Information from the women gave us knowledge of ways of using these plants, and also about the people who cared for residents' health, such as prayer healers (men and women), curers (only men) and midwives (only women).

Aside from the household surveys, the FVA team learned a great deal about the social dynamics of people living in the Park through FVA's daily contact with residents. Observations during the process of building the Seringalzinho Community Center, with the participation of men, women, youth and children, showed that it would be possible to plan such future community-based activities with the residents. They collected the thatch to cover the Center, fished in groups to guarantee lunch for all, and collected arumã, a fiber used to weave *tupés* (mats) to make the walls of the Center.

The use of gender analysis for conservation activities of the Park, principally as regards the

Box 3: Building the Seringalzinho Community Center.

The need arose to be able to close temporarily the sides of the Center so that classrooms would not suffer from direct sunlight during certain morning and afternoon hours. Parents and FVA technical staff met to discuss a viable solution for this problem. Some ideas included making walls of thatch, as in their houses. This option was discarded because, when there were meetings or parties, it would be difficult to remove the thatch walls, and their durability was questionable. Finally, one of the participating women suggested using mats of *tupés*. According to D. Joelina, the *tupés* could be removed as long as they were mounted on supports, and immediately the women started identifying other weavers who know how to weave the mats.

Other issues then arose: Where to collect the arumã fiber to make the mats? Who would collect it, and when? Who would make the mats? And above all, how much would need to be extracted? Sr. Beré, one of the residents, ceded an area near his house, where they had worked previously with arumã and vines. It was then agreed that the following day they would go to the forest to extract the arumã, and then and there begin the work of preparing it for use. Thirty people (ten women and twenty men) left in five wooden canoes, paddling until they reached the spot, then walking for an hour and a half until they reached the *arumanzal* (concentrated grove of arumã in the forest). The men collected the fibers, women and some children extracted the pulp, and others tied them in bunches. Another group of three women and four men stayed at the Center to take care of the fish and prepare lunch. The group stayed in the forest until 4:00 p.m., when we carried all the fibers to the Community Center, and later distributed it among the weavers to make the mats. Some days later the mats were brought and mounted by the residents in the Community Center. **This experience demonstrated the commitment to communal work, the effective participation by women in decisions, donation of resources for the Center, and the community's capacity for planning.**

Management Plan, still is not a constant practice in FVA. We believe that many of the answers regarding differentiated participation by women and men in management and conservation of the PNJ can be better understood as we acquire more confidence in our relationship with residents. We believe that having a team in the field, with more contact and daily participation in residents' activities, can contribute to a more accurate evaluation of the

Box 4: Fibrarte Project.

As an example of the application of gender analysis, FVA developed the Fibrarte Project in the area of influence of the Park, with the objective of support the group of artisans who use vegetable fibers to make their products. Training for these artisans in organization, marketing and management of their products is the goal of this project. The population that lives in the PNJ extracts and markets some of these fibers. The relationship of the Fibrarte Project with the strategy for the Park is in research on the ecological sustainability of one of the fibers (cipó titica) marketed by the residents, and also in strengthening an economic alternative that appears to be ecologically sustainable. During the mapping carried out in the Park, we were able to identify the artisans along the Jaú River by gender, the principal fibers they use, and what they produce. This information was obtained through the open-ended questions directed at the head of household as well as the woman.

varying types of participation by women and men. Currently the team stays a total of eight months of the year in the field, all together, which is insufficient to fully assess this dynamic.

Gender analysis can contribute to the understanding of how natural resources are used in protected areas, to the extent that proposals recognize men's and women's roles. For FVA the question of gender in relation to natural resources is evolving, as the field activities expand, guaranteeing more interest and participation by the local community in questions related to the Management Plan of the Park.

6. A conservation strategy that combines gender-focused training, institutional strengthening, partnerships and community participation

The strategy used by FVA to integrate conservation and gender includes diverse activities, among them training, research, mapping of resource use, institutional strengthening through training of field teams, participatory elaboration of management plans, and monitoring and evaluation.

Beginning with the training received by the FVA team through the GENESYS Project, FVA started its work with the residents. The training included topics like Socio-Economic Research Method, Rapid Rural Appraisal, and Marketing of Non-Timber Forest Products. Among the later training courses carried out jointly by GENESYS and

MERGE, the one that stands out was a course in Rio Branco in 1994 that focused on Gender Analysis Tools, which included training in methods of participatory mapping. This course was very relevant for FVA, and served as the basis for all the mapping work we now carry out. The learning acquired through the GENESYS and MERGE training was used in the Fibrarte Project with residents of the PNJ and in the questionnaires carried out by the environmental education team of FVA, in activities in the town of Novo Airão.

The participation of the local population in FVA projects still is preliminary. Generally the meetings are called by FVA. The population of the Jaú River has participated in activities along with researchers, acting as guides, taking measurements with some instruments, accompanying researchers along the rivers and in the camps. They also participated in infrastructural activities, such as construction of the community center and school lunchroom, and during the mapping activities. The population of the Park, through their representatives, proposed a zoning for the PNJ, participated in the workshops that defined the management programs for the Park, and currently participate in the meetings in Brasília, at IBAMA, to define the proposals for the Management Plan.

It is the institutional policy of FVA to work with partners. The Foundation sees clearly that it will not be possible to reach its objectives alone. Through work strategies that involve and guarantee the participation of the various institutions that work in the area, we believe we can act to assure the conservation of Protected Areas in the Amazon. The organizations with whom we have effective partnerships include: Brazilian Agricultural Research Enterprise (EMBRAPA), National Institute of Amazon Research (INPA), Oswaldo Cruz Foundation (FIOCRUZ), National Health Foundation (FNS), University of Amazonas (UA), Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), and Managing Ecosystems and Resources with Gender Emphasis (MERGE).

The consolidation of the Jaú National Park is the goal of the Foundation. To reach this goal we understand a key factor to be the participation of the residents for full use of the area, guaranteeing biodiversity conservation. This democratic, participatory environmental management should incorporate not only elements of modern science and ethnocultural knowledge, but constitute a process of negotiation that takes into account local aspirations and ways of life, and the historical contribution of traditional populations for conservation and environmental management. The incorporation of

these populations into the democratic process of environmental management will lead to the discovery of strong and constant local allies for conservation, against speculators from outside the reserves, who are the true devastators of biodiversity.

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8. List of Acronyms

CU - Conservation Unit

EMBRAPA - Brazilian Agricultural Research Enterprise

FNS - National Health Foundation

FVA - Fundação Vitória Amazônica

GENESYS - Gender in Economic and Social Systems

IBAMA - Brazilian Institute for Environment and
Renewable Natural Resources

INPA - National Institute of Amazonian Research

MERGE - Managing Ecosystems and Resources with
Gender Emphasis

NGO - Non-Governmental Organization

PAE - Emergency Action Plan

PNJ - Jaú National Park

SUPES - State Superintendency representing IBAMA

UFMG - Federal University of Minas Gerais

USAID - United States Agency for International
Development