

# Extractive traditional rural communities from Atlantic rainforest: an approach on families who live in the territory of the environmental Protection Area of Guaratuba in Paraná Coast – Brazil

## Comunidades rurais extrativistas tradicionais de Floresta Atlântica: uma abordagem sobre as famílias que vivem no território da Área de Proteção Ambiental de Guaratuba no litoral do Paraná – Brasil

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### Content

- [1. Introduction](#)
- [2. Methodology](#)
- [3. Guaratuba EPA \(APA\) Territory](#)
- [4. Results and discussion](#)
- [5. Final considerations](#)

### References

#### ABSTRACT:

The territory of the Environmental Protection Area of Guaratuba it has high level of extraction pressure with the collection of non-wood forest products for commercial purposes. This study aimed to present a prospect of the extraction with it respective implications to the families that live in that territory, and having as reference two study cases about explored resources: black vine and bromeliads. It was conducted a descriptive-exploratory research, with the voluntary participation of 51 extractors. The communities are poor because they have hard access to the markets, inadequate human capital, insufficient productive capital

#### RESUMO:

O território da Área de Proteção Ambiental de Guaratuba sofre pressão do extrativismo de Produtos florestais não madeiráveis com finalidade comercial. Este estudo objetivou apresentar um panorama do extrativismo com respectivas implicações para famílias que vivem neste território, tendo como referência dois estudos de caso sobre recursos explorados: cipó-preto e bromélia. Realizou-se pesquisa descritivo-exploratória com a participação voluntária de 51 extratores. As comunidades são pobres porque têm precário acesso a mercados, insuficiente capital humano, insuficiente capital produtivo e, fraco poder de barganha. Os

and weak bargaining power. The intervention systems should be offered from an interdisciplinary design approaching the ecological, social, political and market dimensions, with community participation.

**Key words:** Non-wood Forest products, Ornamental plants, Sustainable development.

sistemas de intervenção devem ser propostos a partir de delineamento interdisciplinar abrangendo as dimensões ecológica, social, institucional, política e de mercado, com a participação comunitária.

**Palavras-chave:** Produtos florestais não madeiráveis. Plantas ornamentais. Desenvolvimento sustentável.

## 1. Introduction

The NWFPs (non-wood forest products) are used by millions of families around the world who depend on them for their survival and as an important source of income. They are defined as non-wood forest products, subsistence goods for human consumption and they include all other biological materials that are not wood, extracted from the forest for human use being considered as a good alternative to promote the conservation and poverty alleviation in traditional communities' residents in territories near protected areas (MARSHALL et al., 2006; SCHRECKENBERG et al., 2006). That includes food, medicines, vines, ornamental plants, hunting and services related to conservation and recreation (FAO, 1992). And according to Wickens (1991), and besides the economic importance of the NWFPs, they can have social, religious or cultural significance for those communities.

In Brazil, the history of NWFPs utilization is usually associated to remaining natural ecosystems of the country and they are in territories inhabited by traditional populations (indians, *caiçaras*, maroon, *caboclos* and *ribeirinhos*, *faxinais* and extractors) as well as peoples and family farmers (small farmers, rural family entrepreneur and fishermen), being common the extraction of these forest products as an alternative of income. The Atlantic Rainforest, in particular, has been identified as one of these areas of strong pressure for extraction of NWFPs. At the same time, this ecosystem is recognized as a hotspot, ie, a top priority for biodiversity conservation as well as social diversity in Brazil, given the drastic reduction of its forest cover, now reduced to 7.6% of its original area. (IAP, 2006).

The practice of extraction was intensified in this region for decades, fueled by the increasing flow of tourists seeking varieties of flowers and exotic products to take as souvenirs when they return from holiday and vacation. (NEGRELLE; ANACLETO, 2012). This new relationship with the extractive marketing purposes resulted in dependence on the local population of this alternative source of income, especially in this territory currently recognized as the Environmental Protection Area (EPA) of Guaratuba.

It is understood that EPA is a conservation unit (CU) under state supervision, that promotes the preservation of forest areas and these areas have their own disciplinary law, with the main objective of protecting the local ecosystems and promoting economic and social development. According to the National System of Conservation Units (SNUC - Sistema Nacional de Unidades de Conservação) this type of CU is classified as sustainable use, which means that the direct economic use of natural resources is disciplined and not prohibited. In other words, the extraction is allowed since it meet certain criteria set out in the management plan, which aim to guide participatory management in line with the interests of present and future populations. Therefore the knowledge of traditional management systems, natural stocks and dynamic of replacement of the extracted resources is essential for the regulation in accordance with the decree of Federal Law 11.428, December 22nd 2006, which regulates among other factors, the extraction and transportation of subproducts from Atlantic Rainforest. However, this does not always occur. As it was observed in the case of APA (EPA) Guaratuba, the legal disciplinary character and the population's lack of clarity associated to the lack of data on the social and ecological sustainability of forest resources often become the barriers of legalized use of these resources. The rural reality is shaped by a community that generally does not have the legal ownership of the land where they live and work. The grounds are generally small, with an area of less than 1 ha and soils with inadequate conditions for the practice of formal agriculture. These factors linked to the low capacity of social organization what usually occurs in these places (BALZON, 2005), result in the difficulty of survival and the permanence of these

traditional communities in the forest. (FERREIRA; NEGRELLE, 2007).

Another problem of this situation is the shortage of technicians and government authorities who deeply know the natural ecosystems ecology and the reality of the people who live in these areas. Still harder is to find who analyzes the facts in a participatory manner and listening to the perspective of these communities for which sustainable development actions are directed, as Viana (1999) says, as an action appropriate strategy. However, generally, this reality is not considered, and the social origins, the form of organization, cultural systems and the relations with the forest resources, so distinct among these communities, are not highlighted by the technicians and advocates of forest management. In this sense, the diversity of socio-cultural systems as well as the diversity of the forests, require approaches adapted to each particular situation.

In this perspective, this study aims to present an overview of the extraction with its implications for the families who live in the territory of EPA (APA) Guaratuba, having as reference the two cases about explored resources: black vine and bromeliad.

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## **2. Methodology**

In order to identify the existence of extraction of bromeliads and black vine it was held a visit to Emater-Paraná in Guaratuba, Paraná. At the same time, it was consulted the SERFLOR / IAP register and the list of the members of the extinguished Association of Flower Producers in Paraná Coast. As the study got to identify some elements of this study population, those indicated another, in a process called "snow-ball" or self-generated sample (NEGRELLE; ANACLETO, 2012; ANACLETO; NEGRELLE, 2013).

Initially, it was performed the technique of participant observation, with the accompaniment of the researchers in the respondents' routine (VALENTE; NEGRELLE, 2011), it was chosen the participant observation because it is an important tool in studies that focus the human being, as it allows to increase the knowledge about these people's stories and it allows to occur a greater interaction between respondents and researchers.

During the participant observation period, the researchers experienced the extraction processes and management following the community's members in the collection of NWFPs, by noting all relevant aspects observed related to the form of employee management, including the selection criteria of the individuals, the extraction technique, quantity extracted per day, how long the black vine was extracted in the territory, if the natural stock of NWFPs was decreasing, the daily working time, the tools used in each stage of the work, commercialization forms and values and which were the main difficulties in extraction.

The survey was designed by a qualitative research with social and historical approach (VERGARA, 2005), covering the exploratory phases, field work, formal analysis and interpretation of the information obtained. According to Gil (2008) it was accomplished a descriptive and exploratory research encompassing literature, documentary and participatory field work (VERGARA, 2005), which was applied the RPD techniques (rural participatory diagnosis) as proposed by Verdejo (2006) and Negrelle and Anacleto (2012).

The incursions in order to conclude the study happened from May to July 2016, and the first phase of the RPD was guided to collect data and information related to the bromeliads extractors, with voluntary participation of 25 extractors, and the second phase was to collect data and information with the black vine extractors and it had the voluntary participation of 26 extractors.

The use of RPD in data building using information from the residents of extractors' communities allowed to the participants with low levels of literacy, share experiences, giving more attention to their knowledge. The method had been adapted to the conditions and possibilities of the participants, with the appreciation of their concepts, explanation criteria and respect to their linguistic and symbolic universes.

The results were validated by a panel with photos, charts and diagrams during the RPD phase. This panel was exposed to the participants who analyzed and discussed in a guided manner about the different usage models, the NWFPs processes and marketing chain.

In addition, to complement the data, it was carried out semi-structured interviews with 46 extractors.

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### 3. Guaratuba Epa (Apa) Territory

The process of Paraná Coast colonization was similar to the pattern of the Brazilian Coast colonization which was permeated by racial mix of European and black people with native indigenous originating the so-called traditional communities also called *caiçara* communities, based on the Tupi term '*caá-içara*', the man from the coast, characterized by subsistence farming and artisanal fishing. (DIEGUES, 1983). In these *caiçara* communities were practiced fishing and subsistence agriculture with cultivation of cassava, pineapple, coffee, sugarcane and rice often associated to a home fruit garden. The daily life was characterized by rude and austere conditions. Part of the time was employed in making handcraft, usually objects such as baskets and hampers to carry firewood and cassava, "waists baskets" that were intended to transport fish or shrimp or "hand baskets" used for the coffee harvest and to store *tatuíralure*, without any artistic or decorative concern. A short time was destined to social activities that, as a rule, were promoted by the church (BIGARELLA, 2009).

Nowadays, the remaining *caiçara* population in Paraná Coast is distributed in 35 rural communities encompassing approximately 4,000 people and 600 families. From this total, it is estimated that 18 of these communities, covering about 240 families and just over 1,200 people, are inserted in Guaratuba EPA (ANACLETO et al., 2007). These rural communities are made up of families, mostly squatters, whose members self-identify as farmers or rural producers, especially banana and cassava. Artisanal fishing and vegetable extraction are also important income-generating activities. (FERREIRA; NEGRELLE, 2007).

The Guaratuba EPA was created by State Decree 1,234, March 27th, 1992, in order to reconcile the rational use of environmental resources in the region and the ordered occupation of the soil; protect the water supply, the remaining of Atlantic Rainforest and mangrove, archaeological sites and faunal diversity as well as discipline the tourist use and ensure the quality of life of *Caiçara* communities and local people. (IAP, 2006).

The Guaratuba EPA is formed by a great part of Paraná South-central Coast, *Serra do Mar* region and a portion of the table land. It covers 199,586 ha distributed in the municipalities of Guaratuba (65.61%), São José dos Pinhais (11.25%), Tijucas do Sul (9.24%), Morretes (6.43%), Paranaguá (5.69%) and Matinhos (1.78%). It also includes some islands and inland waters. Part of the Guaratuba Environmental Protection Area (GUARATUBA APA) overlaps the area of Bogachu State Park (Parque Estadual do Bogachu) and Saint Hilaire Lange National Park (Parque Nacional Saint Hilaire Lange). (IAP, 2006).

The use and occupation of the land are also diverse. It includes cities classified as medium-sized and urban (Paranaguá, Sao José dos Pinhais, Guaratuba and Matinhos) with urbanization rate exceeding 75%. Guaratuba and Matinhos are also developing along the coastal line, however with particular aspects related to irregular settlements, invasion of coastal surrounding area and dynamics of floating population in summer seasons.

The incidence of rural land use and occupation is more evident in the three cities with the highest territorial portion in Guaratuba EPA - Guaratuba, Tijucas do Sul and São José dos Pinhais. In this, 28.3% of land is occupied by temporary subsistence crops (corn, beans, cassava, sugarcane, potato, pumpkin, rice, *taiá*, *Jussara* palm) with the surplus harvest commercialized by middlemen and small shops installed the edge of the road. Only 3.5% of the land is occupied by permanent crops, being banana the main commercial product.

Approximately 29% of this region land is covered with native forests where are practiced the plant extraction, in addition to hunting and fishing. The rest of the EPA area corresponds to

planted forests (16.8%), natural pastures (12.7%) and planted pastures (3.7%).

This activity multiplicity situation also creates a framework with social and environmental complexities that includes deforestation for agricultural practices that are not recommended (cattle and buffalo), use of not allowed pesticides and illegal extraction of forest resources, with different degrees of environmental intervention. The influx of tourists in summer time, when the EPA population reaches three times, imposes additional negative strong pressure on the natural resources and on the local infrastructure (IAP, 2006). However, this influx of tourists and environmentally harmful practices has little relieved the precarious socio-economic situation experienced by most of this population who lives in the rural area of EPA. This scenario results in the need for adequate protection of the local ecosystem, as indicated in IAP (2006), as well as measures that help the rural socio-economic development in a sustainable manner.

Specifically regarding to the extraction of NWFPs for commercial purposes, the resources that are explored the communities from Guaratuba EPA communities are the roots of black vine (*Philodendroncorcovadense*Kunth - Araceae) used to produce baskets and the *Guaricana* leaves or straw (*Geonomagamioba*Barb. Rodr. - Arecaceae) used in floral arrangements and funeral wreaths.

The flower market is also related to the great majority of other resources explored in the EPA, as orchids, ferns, moss and mainly the bromeliads.

Bromeliads are often taken by small farmers placed in communities in these areas of environmental protection, who have low income and where soil conditions (steepness) and legislation does not allow other agricultural alternatives, thus, they have these products as an alternative of income. (ANACLETO et al., 2008).

The extraction, as in the case of black vine, is basically done with the use of family labor, and gives to the families involved an average income of U\$ 290 per month, and in most cases, the bromeliad extraction was the only source of family income. (ANACLETO, NEGRELLE, 2015).

The NWFPs commercial extraction in natural environments is not absolutely prohibited in EPA territory. But, it is subject to regulatory requirements and it is dependent on licensing. In order to obtain such license, the applicant must submit a management plan based on scientific and technical information as well as the land possession voucher or authorization to collect in this area. The extraction and illegal trade are considered environmental crimes (Article 46 - Federal Law 9,605/98 and Article 32- Federal Decree 3.170/99), and the penalty may include three months to one year of imprisonment and fines.

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## **4. Results and discussion**

### **4.1. Black vine extraction**

Black vine as is popularly known, the species *Philodendroncorcovadense*Kunth (Araceae) plantahemi-epiphyte, which outstanding roots are used to make several kinds of handcrafts as various types of baskets by traditional coastal communities in Brazil (FONSEKA-KRUEL; PEIXOTO, 2004; VALENTE; NEGRELLE , 2011). In Brazil, as in many other countries, this species is also cultivated as an ornamental plant because of the beauty of their leaves and flowers (SCHNEIDER; MELLO-FILHO, 2001). This plant has high occurrence in Paraná Coast, and its roots are historically used for various other purposes in addition to the baskets, including houses building, replacing the nails, and the manufacture of household items and handcrafts. (IAP, 2006).

The black vine extraction occurs in all cities from Paraná Coast, and in Guaratuba EPA, the community of São Joãozinho was identified as the main pole of black vine exploration. In this community live 26 families, of which 16 survive from the extraction activity and the processing of this resource, arising only from extraction without licensing. According to local residents, this

practice happens since the beginning of the community for several decades, in a domestic context. However, since the 90s it has become a commercial activity, being nowadays the main alternative of income for many families.

The main driving forces of this change were, first, the legal restrictions imposed by the establishment of EPA related to hunting, fishing and agriculture, which determined the search for new alternatives of income. On the other hand, there is the facility to access the resources and the familiarity with the processes together with the market demand for these so-called "natural" and handcraft products. (VALENTE; NEGRELLE, 2011).

In this new dynamic of this resource use, it was detected an important cultural change associated to the manufacturing of black vine artifacts. In other words, what was a traditional *caičara* craft related to the people's daily lives and, therefore, with special added value, turned handwork in series (standard), and then held to meet demand for specific models asked by the intermediate buyer who takes the products to the urban centers. This process transformed the handcraft "manufectcraft" with the rhythm imposed by the intermediate and the production mode that disregards the creativity of these families or their way of working.

The collection usually is held in remnants of Atlantic Rainforest, near to the residence of the extractors. However, given the intensification of collection not always compatible with the natural replenishment of the resource, there is a constant search for new areas of collecting. In this context, it is important to highlight that the most part of the residents is constituted by squatters who live on small farms, less than one hectare, there is constant dependence on landowners authorization leased in the region to access the collection areas. In some cases, there is no agreement between owners and extractors, and being the extraction an unauthorized and risky action and it ends up happening illegally. In other cases there are verbal agreements between the extractors and the owners or agents that allow the extraction only for black vine in these particular areas.

Initially, the process of collecting and processing of black vine involved a clear labor family division, where men were responsible for obtaining and processing the resource and women were the artisans who made the baskets. With the increased demand, nowadays it was observed the presence of extractors that only are concerned with the collection of raw black vine (*in natura*) that are sold to the traditional families for processing and making baskets.

For most families from São Joãozinho Community, the most viable way to work with the black vine was through the intensification of baskets production work in the family unit and does not sale the black vine *in natura*.

Thus, they decided to increase the number of people from these families involved in weaving baskets. So, many men began to add in their daily activities, besides the cassava cultivation, flour production, fishing and extraction, also the work of weaving baskets. This logic was based on the existence of forest resources still available associated to the presence of buyers for this product who always paid in cash when they came to take the baskets.

However, although the most part of the day these people used for the extraction or processing of black vine, the men from São Joãozinho Community do not consider themselves "cipozeiros" or handicraftsmen, but farmers, being the extraction considered only as a supplementary income. The women who process and weave the black vine to the craftwork, see the extraction and processing as an activity that takes time to them, being essential for family survival, introducing themselves proudly as artisans.

According to Valente and Negrelle (2011), an extractor usually collects 100 kg of black vine per day. This amount is enough to prepare approximately 1000 baskets with average size. Considering the total number of families involved in this process, it is estimated that the total annual extracted of black vine should be close to 144 tonnes.

In order to have the final product which is commercialized, it is necessary several steps of family work with great expenditure of energy and time (Table 1). However, this effort is poorly paid, although it is not considered in this process the cost of raw material, since it is collected

from native forests and not through species cultivation.

**Table 1** - Steps of black vine process in the rural Community of São Joãozinho.

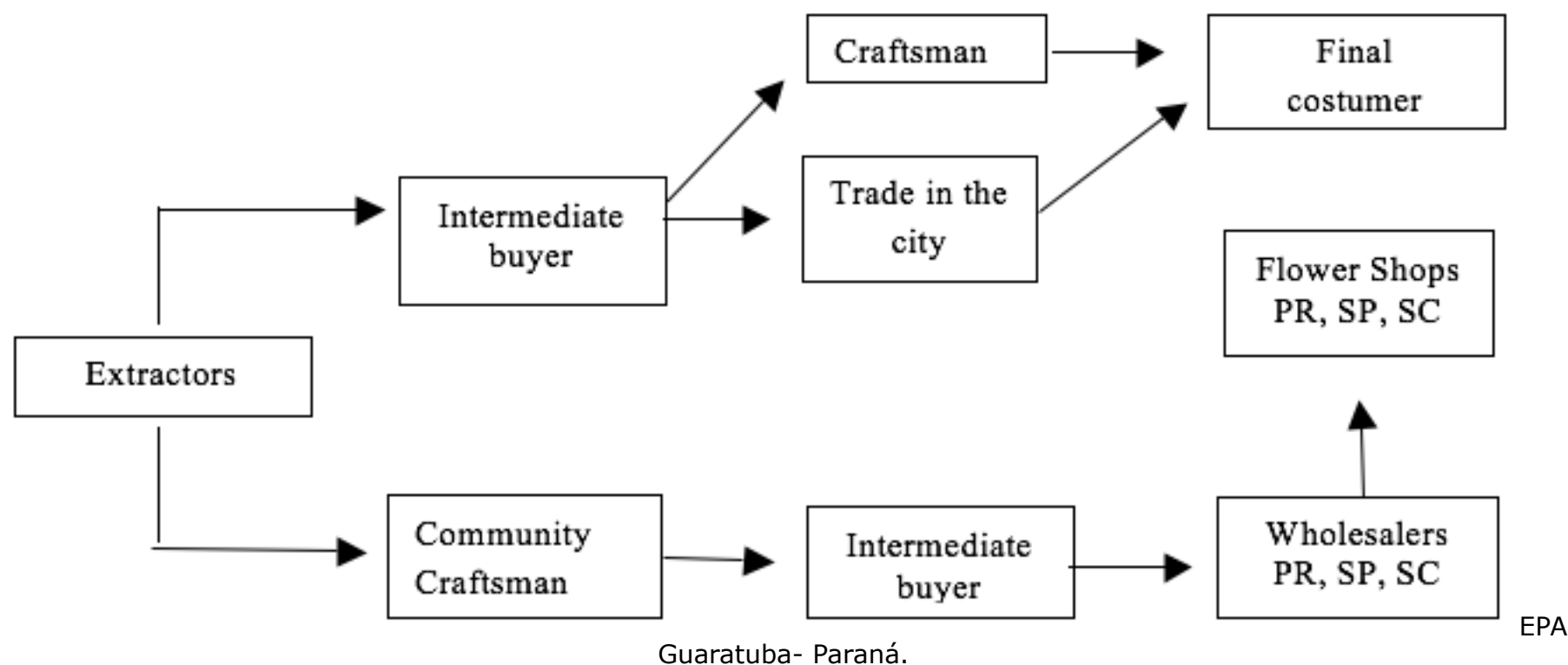
Step	Action	People involved (average)	Material used	Time used (horas)	Unit of measurement	Average of income
1°	Collection of roots in forest	2	Bamboo sticks, machetes, rope	7	80 Kg	
2°	Transportation from the Forest to the houses	2	Bike, boat	3	80	
3°	Processing I (removing the seed coat)	1	Knife to scrape	7	45	
4°	Processing II Use of the scraper and standardization of the circumference	1	Scraping plate with holes	8	45	
5°	Processing III Drying	1	Stove or drying yard	8	45	
6°	Weaving and manufacturing of the handicrafts	3	Qualified family labor	40 hours (5 days)	1000 units	
7°	The delivery of the production to the buyer	1		1 hour	1000 unit X USD 0,069	
Total value of the process						69.7 USD

Source: Field research.

The form of community interaction with buyers is characterized with an "oligopsony" market relationship, ie, few buyers and many sellers of a same product. In the case of oligopsony market (few buyers) or monopsony (a single buyer), who sets the price is the market, resulting in an extremely negative economic relationship, due to the exploitation of the work and time of these families who are dedicated to the activity.

Thus, in the marketing chain of black vine, the intermediate buyer has a fundamental role by setting the prices and the rhythm of production and selling the manufactured products to wholesalers from São Paulo, Santa Catarina and Paraná (Figure 1).

Figure 1 - Flowchart of black vine marketing process of São Joãozinho Rural Community/



Source: Field research.

As a rule, the intermediate buyer/ middleman relationship and extractor/craftsman relationship in this production chain is shown as unfair and unbalanced. Valente and Negrelle (2011), when were researching on the commercialization of NWFPs in Guaratuba EPA, observed that the baskets sold came to the final consumer with an average difference of 638% (Table 2).

**TABLE 2** - Sale price of the baskets by the artisan, intermediate and wholesaler in Curitiba-Paraná

Product	Sale price (USD)		
	Artisan	Intermediate	Wholesaler
"Piolho" Louse	0,04	0,12	0,23
Arrangement of 12	0,06	0,24	0,40
Round arrangement	0,11	0,40	0.63
Tray	0,23	0,98	1,68

Source: Valente e Negrelle (2011).

The type of strategy to obtain income from forest resources, as observed in the São Joãozinho Community can be classified as Belcher; Ruiz-pérez/Achdiawan (2005) define a "copying strategy". In other words, the work with NWFPs is only for survival and, even though it represents more than 50% of family income, it is guided in low-value products, although they have market. In this dynamic, the exploitation of this resource, even representing a significant portion of time and income of these families is not properly valued in the community or family unit.



This lack of work valuing gives opportunity of exploration of this activity by the "middleman"/intermediate buyers, promoting isolated entrepreneurial action guided by the need of these rural families. Anyway, it generates an entrepreneurial scenario for necessity in an informal market and not by the chance in a formal market.

## 4.2. Bromeliad extraction

The bromeliads are also known as *gravatá* and *caraguatá* and are monocots plants from the family Bromeliaceae, native from Americas. There are currently cataloged 50 genera and number greater than 3000 species.

Among the most easily found genera in Paraná are: *Aechmea*, *Billbergia*, *Cryptanthus*, *Dyckia*, *Guzmania*, *Neoregelia*, *Nidularium*, *Tillandsia* and *Vriesea* (NEGRELLE; MITCHELL; ANACLETO, 2011; ANACLETO ; NEGRELLE, 2015).

Bromeliads grow almost exclusively in tropical and subtropical regions of the New World, taking place mainly in the Brazilian Atlantic Rainforest in South America. (ca.1200 species). In recent decades, due to the beautiful shapes and colors of the flowers, low demand for maintenance and easy adaptability to small gardens, the bromeliads have been used worldwide as ornamental plants. In Brazil, however, little investment has been made to establish bromeliads production systems due to the high availability in natural environments and easy access. Thus, much of the bromeliads national trade is anchored in the extraction of native species (NEGRELLE; ANACLETO, 2012). Predatory extractive practices that do not respect the natural dynamic of replacement of this resource, has led to extinction several species of bromeliads.

On Paraná Coast, the extraction of bromeliads has been recorded for several decades (NEGRELLE; ANACLETO, 2012; ANACLETO; NEGRELLE, 2013). In the 50's, driven by the increase of coastal tourism, several families have built bunkers in their properties on the banks of the three roads that connect the Paraná Coast to Curitiba (State Capital), where the bromeliads taken from these forests were sold in large quantities and varieties. The more commercialized species were *Vrieseaincurvata*Gaudich., *Nidulariuminnocentii*Lem., *Vrieseaplatynema*Gaudich., *Tillandsiastricta* Sol., exKerGawl. e *Vrieseacarinata*Wawra. (ANACLETO; NEGRELLE, 2013).

The financial dependence of the extraction and the difficulty of implementing the cultivation due to the long time of the culture up to 4 years, are referenced as the main weaknesses faced by extractors, however the extractors communities in this context generally presented more emphasis in the lack of collective organization in the point view of the extractors, which weakened the local capacity to solve common problems. (ANACLETO; NEGRELLE, 2015).

According to IBRAFLO (2013), Paraná in 2004, recorded production of 229,000 bromeliads in an area of 0.9 ha, representing 20% of national production of bromeliad of that year. However, Negrelle and Anacleto (2012) contest these numbers and show that there is strong evidence of illegal collection, including the small area of production reported in official statistics. It is estimated that about 200,000 bromeliads were illegally taken from the forest areas in Guaratuba, and the commercial value is estimated at US \$ 400,000.00. According to Negrelle; Mitchell and Anacleto (2012) in 2001, about 150,000 units were also removed from conservation areas in Paraná.

As Negrelle; Mitchell and Anacleto (2012) says, that the technical licensing agency (IAP) reported the absence of formal registration management plans related to commercial exploitation of bromeliads, until now. The agency reported that performs monitoring of illegal extraction and occasionally performs seizures, especially if there is commercialization. But they emphasized that this monitoring is weak due to lack of staff to cover the huge area affected by the extractive activities. But, technicians from the State Department of Agriculture (SEAB-PR) declare that they have access and monitor only formal production systems. They emphasize that, in the most of cases, they cannot distinguish the source of the native resource commercialized.

According to Negrelle and Anacleto (2012) and Anacleto and Negrelle (2013), in 1999 there was a contingent of 100 families living at EPA Guaratuba area, registered in SERFLOR by the IAP authorized to sell bromeliads, resulting from the extraction. Since this year, the audit institutions, according to the collective pressure for the preservation of the remaining Atlantic Rainforest existing there, they effected real crusade against the extraction of bromeliads and associated trade. As a result, much of the extractors' families abandoned the activity in order to seek new alternatives of income.

From interviews with experts from IAP, EMATER-PR and SERFLOR report, it was identified, 44 bromeliads extractors and/or producers associated to the coastal region of Paraná. From these, 33 were located and interviewed. The other nine had abandoned the activity and moved to another location, according to local neighborhood. Among the respondents, 24 self-identified as extractors, eight as extractors trying to establish a cultivation system and only one introduced himself as a producer.

Guaratuba was identified as the main pole of extraction and production, comprising 14 extractors, 8 extractors/producers and a producer. The extractive activity in these cases was reported to be held in remaining Atlantic Rainforest located near the residence of the extractors and being from the coastal plain to the top of the Mountain Range called *Serra do Mar* (600 m s.n.m), covering a range of about 80 km width. These extractors have easier access to the consumer market due to the proximity of the highway BR 376 (Curitiba - Garuva); BR 277 (Curitiba- Paranaguá) and PR 508 (Alexandra - Matinhos) which cross the region.

Other extractors were located in Tijucas do Sul (4) and São José dos Pinhais (2), places both with high altitude (600m - 900m s.n.l) where the extraction is performed in remaining Araucaria Forest that eventually are also visited by the extractors mentioned above.

Most of these extractors correspond to subsistence farmers earning less than Brazilian minimum wage. For most of them (n = 19), the extraction of bromeliads represented about 40 to 60% of the total monthly family income and the other ones this contribution came to almost all of the family income. As a rule, these people were squatters occupying areas smaller than one hectare. The extraction effort has been governed by market demand, being driven by the increase of tourism in summer season. A total of 24 species (6 genera) was quoted as commercially attractive for the extractors, being *Vriesiaincurvata*, *V. gigantea* and *V. platynema* the most commonly cited.

Among the respondents, only three reported being formally authorized to extract and/or cultivate and sell native bromeliads without, however, prove such authorization. The three other ones were licensed to cultivate and sell, but also reported practicing extraction illegally. Only one reported having the license for cultivation and commercialization, but due to the insufficient stock, he had not yet begun such activity. The majority (22) reported did not have any kind of authorization or license. From these, 19 reported that they tried unsuccessfully to get such a license.

The IAP technicians interviewed reported that Paraná still does not have normative instruction that point criteria, procedures, levels of competence and premises for granting authorization for the collection and use of NWFPs as well as the administrative step required for licensing. In addition, the gap of technical and scientific knowledge about the natural dynamics of growth and replacement of these resources impedes the development and correct analysis of management plans. Also, the lack of land ownership verification or authorization to use these areas is a deterrent factor to have the license approved.

The license for cropping systems is much easier. However, the actual implementation of these systems has the same limitation with lack of ecological, biological and agronomical knowledge of these resources. The combination of these factors results in a bromeliad marketing scenario arising from extractive activities, but commercialized as if they were cultivated. In other words, native bromeliads are "washed" through small "fronts" of cultivation.

### 4.3. Similarities among the cases of NWFPs use by traditional families in the territory of EPA Guaratuba

a) Vegetable resource available: Both, black vine and bromeliads are still highly available and there is easy access to the natural environment. Thus, the traditional extractors' communities do not care about the cultivation of these species and only the extraction gives opportunity to its commercialization. In this way, they did not consider the cost of the resource or the amount of time devoted to the work involved with the extraction.

b) Pluriactivity: The most families that work with NWFPs (bromeliad or black vine) develop multiple activities concurrently, as the planting of cassava, processing of cassava in flour, fishing and banana cultivation. But the extraction activity has high percentage in the composition of household income.

c) Legal restrictions: Both extractive processes are subject to licensing, but are performed clandestinely, what determines vulnerability in trading and high dependence on intermediaries, which generally maintains a not very favorable business relationship with the extraction community.

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## 5. Final considerations

The families who live in the territory of Guaratuba Environmental Protection Area (APA Guaratuba) face similar development problems to those seen in other traditional communities, known as double lock (ZANONI, 2000). It is considered as the first lock, the challenges posed by restrictions on family farming in general, regardless where it is developed. The second block refers to the restriction of use of natural resources for productive or extraction purposes imposed to families who live in Environmental Protection Areas.

In Guaratuba EPA it is also possible to show a third restriction, i.e. a triple lock: the loss of cultural identity, especially in those communities that exploit the black vine.

In these traditional communities, the making of baskets was a cultural expression that served in a creative way as the need for their domestic and agricultural activities (no mold). Nowadays, these baskets are made to support an external intermediary demand that defines model, size and price of these products, being totally different to the community choices. This disconnection between the economic and symbolic value is very damaging in a humanistic point of view, and it is the result of a technique turned to improve only the quality of products and improve the processes related to work, largely responsible for this cultural loss.

In addition, the historical change of use with the disappearance of the craft as a useful art and its replacement by products intended for sale exclusively may also reflect this disconnection. In a general context, although the extraction is an activity inherent in traditional *Caiçara* culture, the transformation of this territory in a protected area, even with sustainable use, resulted in severe limitations on extractive activities, contributing to the emergence of legal conflicts and the increased migration to urban areas. Another socio-economically important threat in the context of *Caiçara* extraction in Guaratuba EPA refers to the advancement of real estate speculation, especially with the establishment of reforestation with exotic species. This speculation has deprived much of the native population of their possessions in coastal environments, making harder their extractive activities. However, despite the legal environmental restrictions and the limited access to areas of extraction, these *Caiçaras'* communities from Guaratuba EPA are heavily dependent on this activity.

Considering the socio-environmentalist conception, which integrates people and communities with sustainable use of natural resources, urges to promote awareness and action of the Brazilian environmental legislation system in order to better support and speed up the legalization of extractive activity. Environmental policies, in the most part, have been guided by conservationist/preservationist conceptions, which promote the exclusion of families in

Protected Areas with Full Protection. In this perspective of consolidation of sustainable markets for socio-biodiversity products from Atlantic Rainforest, it is observed that a major obstacle is the lack of social and productive organization of rural/extractive communities where they operate. (NEGRELLE; ANACLETO, 2012).

The ECUs (environmental conservation units) with sustainable use still need understanding and more focused actions to the reality of each rural community and with a management plan that reflects this reality. Additionally, technicians and authorities should be more involved with the local reality, listening, learning and respecting the perspective of the forest population. Therefore, when analyzing the possibilities of working with NWFPs, by rural communities and their stay in the protected areas of sustainable use with quality of life, it is recommended to consider the development of a strategic plan systematized from the vision and participation of those involved in the extraction in line and supported by scientific knowledge (study of socioeconomic and ecological sustainability).

From this understanding, it is possible to consider that the result of the synergy between science and community can sustain and bring the rural communities in public policy formulation for these territories. There is need for extensive discussions related to production factors available, focusing mainly on the problems in these communities. The proposition of suggestions for changing the social situation experienced by these families is a necessity, creating a new concept of justice within the approach of (un) sustainable involvement, as indicated in (VIANA, 1999).

Concrete experiences of this reality transformation from the contemplation of the popular knowledge are already recorded on Paraná Coast. In the community of Riozinho (Guaratuba), the burned act for planting were abolished from integrated effort between community and EMATER-Guaratuba, where the community set their organization system, the financial contribution and the rules for profit. In the same participatory process, the Community of flour producers from Morretes and Antonina decided to preserve the tradition of making cassava white flour. The *Candongá* Community (Morretes) has as its main purpose communitarian agro-industrialization of fresh products at its headquarters or in the farmers' own properties. In all these examples, it is clear that the strengthening of social organization with state support promoted an improvement in the productive organization of these families, creating the role of farmers and craftsmen.

The scenarios identified in these two extractive communities reported confirm that although the NWFPs are showed as a great potential to promote better living conditions to extractors communities, transforming this potential into reality is still a big challenge. In the case of Guaratuba EPA, this process has many dimensions, including the urgent need of regulation to permit the extraction activity and then the removal of these populations from this illegal situation.

Another important aspect is related to the demand for convergence of efforts to rescue the self-esteem and dignity of the extractors as a key step to promote the association and improvement of the production process. Therefore, it is also necessary to invest in vocational training of these families for that future organizational processes can have satisfactory results and are perennial. In order to facilitate this process the practice of local culture called Guaxu (task force), which denotes a natural propensity to work in a solidarity economy way. A possible integration of financial resources in the productive or extraction activity of these communities, without investment in the valuation of human resources culminate in investments doomed to failure.

In other words, any prospect of action related to extractive families who live in the territory of Guaratuba EPA should integrate the concept of multi-functionality, which allows to analyze the interaction between families and territories in the dynamics of social reproduction.

The poverty reduction, from the endogenous potential of traditional knowledge, it is important to think about rural development. The dialogue of knowledge from this knowledge, science with

the extension of the government, could result in the promotion of self-management and solidarity economy in these communities with the improvement of physical production implements, skill development, strengthening of knowledge of individuals and structure relationships between people.

The poverty reduction, therefore can result from legalized process of sustainable forest management, but apparently the community does not appear able to self organize, requiring State participation in order to promote active and organized citizenship mainly through association base, participation in national and international social movements, and the involvement of these communities in decision-making processes in the public sphere.

The actions that can improve the lives of these extractive communities must respect their culture, through the recognition of their social practices, in this context the activities with NWFPS can be classified as a contribution to the sustainable means of rural life, since they help rural populations to strengthen their livelihoods due to the extractive action, as they in develop these actions, families become less vulnerable to poverty, allowing them greater access to a range of assets as the natural, economic, human, social and cultural. The greatest access to these assets may enable the expansion of its capabilities to build other resources, in particular the strengthening of the social structure, resulting in the organization of these communities in order to build collective organization and responsible emancipatory action in the search for solutions aware of their reality.

The organization of these communities may result in a greater bargaining power, which may require the State the presence and spaces in the political agendas in order to claim, negotiate and discuss that can strengthen liberating actions of full citizenship, appropriate policies, education, health and especially rural extension for the development of agro-ecological and forestry practices.

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[Índice]

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