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Nature and domestic life in the Valle del Cuñapirú (Misiones, Argentina): Reflections on Mbyá-Guaraní ethnoecology

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Abstract. Through the ethnographic record of the subsistence activities partially or completely performed in the domestic sphere in two *Mbyá-Guaraní* settlements in Misiones (Argentina), we outline factors important in describing the local natural environment. Data was collected through systematic observation and also through semi-structured interviews. Analysis indicates that the natural environment of the area is characterized by the indigenous community in several different ways. Thus, local people view the environment as made up of different “micro-environments,” and they consequently think of the elements that compose these “micro-environments” as having different, distinct characteristics. In the context of their daily activities, both these “micro-environments” and the elements that compose them are regarded as resources, in that they are viewed in terms of what is in them relevant to the subsistence of these groups in the rainforest. It is the intention of this study to initiate the systematic recording and processing of information on how these indigenous communities know and manage the natural resources available to them in their daily life.

Key words: Environmental units, Ethnoecology, Household activities, *Mbyá-Guaraní*, Misiones (Argentina)

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Introduction

Area of research

This study has been carried out in the Reserve called *Reserva Privada Valle del Arroyo Cuña Pirú*, which

belongs to the *Universidad Nacional de La Plata*. The Reserve is an area of 6144 hectares located to the west of the Sierra de Misiones, a basin of small hills, ravines, and valleys, flowing toward the Cuña Pirú River, with laterite soil and basaltic outcrop of the Jurassic/Cretaceous periods. The area falls



Figure 1. Location of *Ka'a guy Poty* and *Yvy Pytã* communities.

under the jurisdiction of the Departments of *Liberador General San Martín* (Municipality of *Ruiz de Montoya*) and *Caingua's* (Municipality of *Aristóbulo del Valle*) (Figure 1).

From a biogeographical point of view, this area is characteristic of the Mixed Forest District, *Paranaense* Phytogeographical Province, an area of transition between the Brazilian “*planalto*” and the District of the “*Campos*.” The area is comprised of various ecotones, indicative of different soil conditions and also different ways in which the land has been used. The semi-

deciduous tropical rainforest that is characteristic of the region, with a canopy 20–30 meters high varies in makeup according to its location (along high or low gradients and proximity to streams). These ecological communities have been exploited to different degrees: while some are now secondary tropical rainforests with a 10–40 year period of regrowth, others have been replaced by “*capueras*”¹ along trails, next to old semi-abandoned forest plantations, or next to small lots cleared for aboriginal cultivation. Forests of “*urunday*” (*Astrocarium Balansae*) can also be found in this area



Figure 2. Houses in clearings in the “*monte*.”

(Cabrera, 1971: 12–13). The local climatic pattern is typical of general subtropical areas. Annual rainfall ranges between 1800 and 2000 mm, but there is no distinct rainy season, and the average temperature is around 20 °C all year round with a high of 40 °C. The daily range of temperature tends to be higher due to effects of altitude and topography.

According to official records, around 700 *Mbyá* families currently live in the Province of Misiones, which amounts to about 3,500 people. This ethnic group belongs to the *Tupí Guaraní* linguistic family. *Mbyá-Guaraní* settlements are found throughout the province of Misiones, and can also be found in the neighboring countries of Paraguay and Brazil. The constant displacement of members of indigenous communities from one site to another has the effect of linking settlements. Different settlements share basic strategies of environmental management along with a common language, even if it is true that they have different population density and show different degrees of acculturation.

Studies about this ethnic group have revealed important changes in the ways the *Mbyá* now relate to their environment and manage its resources (Cadogan, 1960: 133). Unlike the quasi-nomadic practices of the past, the growing sedentary practices of the *Mbyá* in the present have brought about their intensive use of an already depleted ecosystem – the rainforest. The difference between the past and present practices of the *Mbyá* is the result of changes in social, historical, and economic conditions (Chase Sardi, 1989: 41). Even if it is not unlikely to find small family groups moving constantly around, it is between permanent settlements that they migrate, while they seldom settle in “new” territories. In the past, the migration patterns within the ecosystem used to involve the whole of the group’s

population moving out of the old area of settlement to an area of the rainforest that was new, which meant that the old areas could be left to recover. This current tendency of the *Mbyá* to remain in permanent settlements has had the effect of altering the former balance of their relationship with their environment.

The two communities studied – the *Kaaguy Poty* and the *Yvy Pytã* – are settled in the *Reserve* and are made up by a total of 281 people, according to a population census carried out in 1998. The *Kaaguy Poty* community has a population of 159 people distributed in 28 domestic units while the *Yvy Pytã* has a population of 122 people in 22 domestic units (Figure 2). The settlements are located along the border of *Ruta Provincial 7*, a province highway that connects these communities with other towns. This highway has the characteristics of all other roads in Misiones – winding and crossing hills, the green of the valleys and the forest contrasting with the red soil of the region.

As from 1995, different research teams from the *Facultad de Ciencias Naturales y Museo, UNLP*, have been carrying out a survey of the local fauna and flora. The results of this research have been published in scientific reports and made known at different national as well as international meetings (*Informe Técnico UNLP – 1995/97 – Grupo Interdisciplinario; Miquelarena and Protogino, 1996; Cirignoli et al., 1998; Navone et al., 1999, 2000a, b, 2001; Navone and Notarnicola, 2000; Notarnicola and Navone, 2002; Notarnicola et al., 2002; Williams et al., 2000*). Alongside with this, an ethnographic survey of the *Mbyá-Guaraní* communities in the area has also been carried out, with a view to characterizing and describing their lifestyle by systematically studying the use they make of natural resources in activities such as hunting

and fishing, gathering, and horticulture (Crivos and Martínez, 2000a, b; Crivos et al., 2000; Pochettino et al., 2002; Teves et al., 2000). In this context, the subsistence strategies found in the *Mbyá-Guaraní* communities studied can be seen as an area where the implementation of technical resources and the problems associated with conservation of the environment meet. It is necessary to have interdisciplinary research groups of anthropologists and biologists to study these strategies, so as to approach them in a holistic and comparative way.

Environmental studies and ethnography

One of the contemporary challenges of anthropology concerns the revitalization of the field to now focus on the relationship human communities have with their natural environment. Studies were carried out by anthropologists in the early 20th. century that pioneered such a view, but today the perspectives of natural scientists, biologists, ecologists, and other scientists must be integrated into current research, in order to effectively address issues to do with global change, threats to cultural diversity, and the loss of knowledge of the local environment.

It is in this context that ethnographic studies can be fully appreciated. Indeed, today studies must be carried out that take the domestic sphere into account, thus encouraging the conservation of knowledge and the conservation of those practices that are the result of human adaptation to different ecosystems. This has to be done by resorting to new modalities of productive processes, which has been the favored approach in the last decades (Arizpe, 1993: 13).

While a macro-analytical approach will overlook certain aspects and dimensions of the relationship between a community and its environment, an in-depth, careful study of the everyday activities of this community will allow scientists to gain better insight into such a relationship. Integrated with other disciplines in the field of natural sciences, ethnography constitutes a heuristic practice to study the contexts in which communities determine, characterize, process and use the elements of their environment.

While ecology is generally understood as the study of the relationship between a community of living organisms and their environment (Déscola, 1996: 21), ethnecology, since it was defined by Conklin in 1954, has been understood as the study of the relationship between a given society and its environment (Bye, 1981; Hunn, 1982, 1989; Johnson, 1974; Nazarea, 1999). It is in this sense that we agree with Toledo (2002: 512–513) when he says that:

[...] ethnecology should be a holistic discipline integrating both intellectual and practical aspects in

its approach [...]. In other words, it is essential to explore the connections between the entire range of symbols, concepts and perceptions on nature and the set of practical operations through which the material appropriation of nature takes place. Therefore, the concrete processes of production should be the starting point of any ethnecological research.

Ethnecological information can be best seen in two key concepts: subsistence strategies and social space. The concept of “subsistence strategies” is defined as the interaction of methodologies on levels that are technical, natural, and spiritual – the meeting of the ethnecological knowledge that underlies technical methods with the matrix of problems presented by the natural environment. The concept of “social space” is defined as the space occupied by the system of interactions that is characteristic of a given group (Anonymous, 1997).

In our past research, we have already outlined subsistence strategies in peasant communities of the North West area of Argentina (Crivos and Martínez, 1997: 139–140), using as an empirical-analytical reference unit those activities² that are performed, either partially or totally, within the limits of the domestic unit (DU),³ and that involve natural resources. In this paper, we will focus on the use and management of natural resources in the two *Mbyá-Guaraní* communities mentioned.

As a starting point, we will define domestic activities in both communities by considering two interdependent elements. The first element will be the identification of natural resources used in practices of subsistence strategies; the second, the consideration of both the internal and external dynamics of resource management – in other words, the continuous adjustment of a community to its natural surroundings.

We propose to establish and evaluate the relative importance of these domestic activities in the strategies of subsistence of the group. These strategies of subsistence are implemented in an environment that is increasingly and rapidly undergoing transformation, so we propose to approach the issue with a view to contributing to preserve both the biological resources of the environment and the traditional knowledge the community has of this environment.

Methodology

Since 1996, subsequent field studies have been carried out in the area of research, totaling 11 field trips made at different times of the year. In the course of these field studies, it was possible for researchers to have access to relevant information concerning the characterization of spaces where activities to obtain and process natural resources are performed. In order to

describe natural resources used in domestic practices, social practices have been studied that are related to the appropriation, keeping, conservation, processing, distribution, and consumption of resources.

The qualitative information on which this study is primarily based comes from interviews. The interviews were semi-structured and open-ended, and they were carried out among adults of both sexes in 11 DU of *Kaaguay Poty* community and in 10 DU of *Yvy Pytã* community. The information also comes from systematic observation in spaces where the communities perform activities of their daily routine. The individuals interviewed were regarded in the community as having ample experience and a solid knowledge of each activity in question, and this was taken into account in our choice of subjects. The study also includes individuals who can be said to be representative of different local variants of the same activity, as regards differences in the use and management of natural resources. It was essential to have individuals who were willing to be interviewed. Interviews and observation techniques were used as sources of complementary data; and using both interviews and observation enabled the researchers to broaden, deepen and cross-check the information gathered from verbal and non verbal sources. Besides this, and in order to estimate the number of people involved in the different steps of subsistence activities, a survey of social networks was also carried out in the *Kaaguay Poty* community. Out of a recorded total of 28 DU, the survey was carried out among 24 DU, which is practically the whole of the community, bearing in mind that the remaining 4 households were vacant when the study was conducted. As long as possible, researchers were also present during trips that members of the community made to perform activities of different kinds. The informal nature of the interaction with our informants on these expeditions made it possible for the researchers to gather spontaneous information from occasional guides. This information took the form of comments and observations as regards what was considered by our informants to be the most outstanding aspects of the places visited during the trips. In this sense, the trips ended up being a privileged strategy for the recording of information as regards the conceptions the *Mbyá* have of their environment, and as regards their interventions in this environment, which is domesticated through their everyday practices. Natural resources used in community activities were analyzed with respect to the environment to which they belong. Locally recognized environments, whether natural or anthropogenic, were defined according to both local and scientific criteria.

Results

Making a living: The wild and the domesticated

The two *Mbyá-Guaraní* communities studied, the *Kaaguay Poty* and the *Yvy Pytã*, are very homogeneous in terms of their way of life. Among these subsistence practices, horticulture is present in the two communities, where “slash-and-burn” techniques are used. The main crops grown are different varieties of corn, sweet potato, cassava, peanut, squash, watermelon, and kidney bean (scientific names in Table 1). Some fruit trees – peach and citrus, for example – have also been introduced recently. Farming practices involve a series of tasks that require the participation of different members of a DU – adults and occasionally also children. Assigning responsibilities and directly involving members of other DU are key aspects of the organization of farming practices. The *Mbyá* practice hunting, fishing, and gathering, as well, while they also manufacture and trade handcrafts, and work seasonally in the “*Colonias*”⁴ – among other things doing clearing, tilling, and weeding work in plantations of “*yerba mate*” (*Ilex paraguariensis*).

Hunting is an activity exclusively practiced by the male members of the community. At the age of 11 or 12, boys begin to accompany their fathers on hunting trips into the “*monte*.”⁵ They capture birds by imitating bird noises and by using traps (which they call “*mondepi*”) with corn and beans for bait. They also hunt a small wild boar called *pecarí* (“*ta’y tetu*” or “*tateto*”), armadillo (“*tatú*”), coati (“*koachi*”), and a local type of deer (“*guazu pitai*”) (Table 2). Hunting techniques include the use of bow and arrow (although this is becoming rare) and firearms (whose use is gradually becoming more widespread). Nowadays, wild animals are found 10 km or farther away from the settlements.

According to the *Mbyá*, a skillful hunter must know the habitat of his prey, must be able to tell the tracks and trails of one animal from another, and must also know that snares have to be set near the animal’s water and food sources. The hunter must be able to set about ten armadillo (“*tatú*”) snares in a day. Every two or three days, he must be able to catch between four and five animals. In some cases, dogs help capture the prey. Different statements of our informants are presented here to illustrate different aspects of the subsistence activities of the communities:

We have dogs which run armadillos. There are dogs that know how to hunt just like us, just like humans. Some humans don’t know how to hunt and don’t go to the “*monte*.” Dogs are just like humans. (M.G., *Kaaguay Poty*) The snare is set with “*güembé*” and left where there are wild boars Catching

Table 1. Resources involved in horticulture.

Resource	Scientific name and family	Use	Purpose	Involved people	Techniques	Environment
Maíz Temprano Tardío Colorado Hí brido Santa Fe Blanco	<i>Zea mays</i> (Poaceae)	Food	Direct consumption Exchange Distribution Occasional selling	The whole familiar group	Digging stick "Machete" Hoe	"Chacra"
Mandioca	<i>Manihot esculenta</i> (Euphorbiaceae)	Food	Direct consumption Exchange Distribution Occasional selling	The whole familiar group	Digging stick "Machete" Hoe	"Chacra"
Sandía	<i>Citrullus lanatus</i> (Cucurbitaceae)	Food	Direct consumption	The whole familiar group	"Machete" Hoe	"Chacra"
Poroto	<i>Phaseolus vulgaris</i> (Fabaceae)	Food	Direct consumption Exchange Distribution	The whole familiar group	Digging stick "Machete" Hoe	"Chacra"
Batata	<i>Ipomoea violacea</i> (Convolvulaceae)	Food	Direct consumption Exchange Distribution	The whole familiar group	Digging stick "Machete" Hoe	"Chacra"
Melón	<i>Cucumis melo</i> (Cucurbitaceae)	Food	Direct consumption	The whole familiar group	"Machete" Hoe	"Chacra"
Zapallo Grande Chico	<i>Cucurbita pepo</i> (Cucurbitaceae)	Food	Direct consumption	The whole familiar group	"Machete" Hoe	"Chacra"
Calabaza	<i>Cucurbita moschata</i> (Cucurbitaceae)	Food	Direct consumption	The whole familiar group		"Chacra"
Arroz	<i>Oryza sativa</i> (Poaceae)	Food	Direct consumption	The whole familiar group		"Chacra"
Tomate	<i>Lycopersicon esculentum</i> (Solanaceae)	Food	Direct consumption	The whole familiar group		"Chacra"
Maní	<i>Arachys hypogaea</i> (Fabaceae)	Food	Direct consumption	The whole familiar group		"Chacra"
Papa	<i>Solanum tuberosum</i> (Solanaceae)	Food	Direct consumption	The whole familiar group		"Chacra"
Tabaco	<i>Nicotiana tabacum</i> (Solanaceae)	Stimulant	Direct consumption	The whole familiar group		"Chacra"

Direct consumption refers to the consumption in the horticulturist's DU.

Distribution refers to share the resource with members of other DUs.

Exchange refers to the exchange of the resource for another one with members of the DU.

Table 2. Resources involved in hunting.

Resource	Scientific name and order	Use	Purpose	Involved people	Techniques	Environment
Tatú	<i>Dasypus novemcinctus</i> – Cingulata	Food	Direct consumption Distribution	Men (alone or in group)	Traps ("mondé"; "ñuá" o cimbra) "Machete" Dogs	Monte
Coatí	<i>Nasua nasua</i> – Carnivora	Food Pet	Direct consumption Commerce	Men (in group)	Fire arms Dogs Traps ("cimbra") "Machete"	Monte
Jabalí Kochi		Food Ritual	Communal consumption	Men (in group)	Traps ("ñuá" o cimbra) Fire arms	Monte
Tateto	<i>Pecari tajacu</i> – Artiodactyla	Food	Direct consumption Distribution	Men (in group)	Traps (cimbra) Dogs	Monte
Agutí Cutia "copa"	<i>Dasypsecta azarae</i> Rodentia	Food		Men (in group)		Monte
Venado	<i>Mazama</i> sp. – Artiodactyla	Food		Men (in group)	Bow and arrows Traps (cimbra)	Monte
Carpincho	<i>Hydrochoerus hydrochaeris</i> Rodentia	Food		Men (in group)	Traps ("ñuá" o cimbra) Dogs	Monte
Yaguareté	<i>Panthera onca</i> – Carnivora					Monte
Pájaros		Food				Monte
Ratón con cola larga	<i>Oryzomys</i> sp. – Rodentia				Traps ("monde pí")	Monte

Direct consumption refers to the consumption in the hunter's DU.

Distribution refers to share the resource with members of other DUs.

Exchange refers to the exchange of the resource for another one with members of the DU.

the wild boar is more difficult than catching other animals. The "tateto" roams nearby because there is a very big fruit plant bearing "caraguatá." The "tatetos" go there and eat, and I set the snare. (M.G., Kaaguy Poty)

Fishing is practiced by the male members of the community between November and April. Even though fishing is also almost exclusively performed by the men, women and children take part in the activity due to the fact that they tend to gather around water in the summer months. Certain plant species are used to poison the fish, plants that cause paralysis in fish when placed in the water – the fish rise to the surface to die of asphyxiation. The said plant species used are bitter stick (or "yvyra-ro") and the bark of the "timbó":

There is another stick – a tree that also kills fish. The bark must be scraped. It can no longer be found near here. It's called "yvyra ro." It's processed just like this one, but it kills more quickly. You can't find it any more because we have used all there was, we have cut it all down. There used to be a lot around here, but not any more. There is almost none of these trees left here. Some can be found far away, in the hills. It doesn't smell. It's used to kill the fish. It's "yvyra ro." We fell it, and we bring it along to where the water is. (M. G., Kaaguy Poty)

The use of fish poisons is considered appropriate only for narrow streams. In wider streams, dams are used to catch fish. Harpoons are also used that are made of "guayubira." The fish thus caught – "bagre,"

Table 3. Resources involved in fishing.

Resource	Scientific name and order	Use	Purpose	Involved people	Techniques	Environment
Boga	<i>Leporinus</i> sp.; <i>Schizodon</i> sp.	Food	Direct consumption Distribution	Men (alone or in group) Women (occasionally)	Hook-arrow Traps Fish poisons	Monte (stream)
Bagre	<i>Rhamdella</i> sp.; <i>Rhamdia quelen</i> ; <i>Heptapterus mustelinus</i> -Pimelodidae	Food	Direct consumption Distribution	Men (alone or in group) Women (occasionally)	Hook-arrow Traps Fish poisons	Monte (stream)
Mojarrita-Lambarí	<i>Astyanax</i> spp.; <i>Characidium zebra</i> – Characidae	Food	Direct consumption	Men (alone or in group) Women (occasionally)	Hook-arrow Traps Fish poisons	Monte (stream)
Changó	Indet.	Food	Direct consumption		Traps Fish poisons	Monte (stream)
Charumbé	Indet.	Food	Direct consumption		Traps Fish poisons	Monte (stream)
Dorado	<i>Salminus</i> sp.	Food	Direct Consumption		Traps Fish poisons	Monte (stream)
Sabalo	Indet.	Food	Direct consumption		Traps Fish poisons	Monte (stream)
Atara	Indet.	Food	Direct consumption		Traps Fish poisons	Monte (stream)
Naitiraí	Indet.	Food	Direct consumption		Traps Fish poisons	Monte (stream)

Direct consumption refers to the consumption in the fisher's DU.

Distribution refers to share the resource with members of other DUs.

Exchange refers to the exchange of the resource for another one with members of the DU.

“mojarra,” and “boga” – are then collected in bags and cooked over embers. Fishing this way at any one time will feed over 20 people for approximately three days (Table 3). The Mbyá lately estimate that fishing is scarce compared to what used to be the case in the past, and they blame this on the building of dams by the white people.

Gathering is an activity performed all year round in different areas (Figure 3). However, summer is the season when there are plenty of forest resources such as honey and wild fruits, which the children love. Gathering is performed by either men or women, and the children also take an active part. However, some resources like honey and *güembé* (found on top of tall trees) are more difficult to get, and therefore it is the men who get these. Firewood, wood bark and different fibers, leaves and roots, as well as fruits are also gathered and used for reasons other than to serve as part of the diet of the community – they are employed in medicinal practices; in handcraft making;

in the manufacturing of weapons and of snares or traps; in the making of fishing poisons; in building fires, and also in the building and setting up of different types of shelters (Table 4).

The making of handicrafts, for example, centers on basketry, the making of necklaces, and the carving of figurines in wood. The skill of some artisans to reproduce the grace of movement and posture of some wild animals in the wood is remarkable. The animals most frequently represented are the tiger (“*yaguareté*”), the owl, the *tucan*, the local alligator (“*yacaré*”), the *coati*, the *monkey*, the *armadillo* (“*tatú*”), and the anteater (“*tamandúá*”).

We kill the animal and, before eating it, we look at it real close like this. Afterwards we study (it), and then we work the wood in order to know what the armadillo is like, what the tiger is like, what the deer is like. (M.G., Kaaguy Poty)



Figure 3. Gathering in the “*capuera*.”

The figurines are made by men and women who work around a fire, generally in a squatting position, in open or semi-open spaces around the settlement. Work begins with the gathering of the proper sort of wood by groups of two or three men in the forest. This is done after a few days of dry weather and without any rain have gone by – when the wood is dry enough to be cut. Soft woods are favored, and the one called “*palo leche*” (“*curupi cat*”) is the one most often used.

We cut only one fourth of a branch [palm measurement equivalent to the distance between thumb and little fingers when extended; approximately 20 cm] because this is the perfect size. If the branch is large, then four figurines can be made with this piece of wood; if the branch is not large enough, not more than two figurines can be carved. (BN, Yvy Pytã)

Basketry is currently an activity performed by both women and men. The raw material used in the making of baskets is available in the “*monte*” area all year round. With the exception of the “*güembepi*” and the “*cañas*” (the gathering of which is difficult for the women), the rest of the raw material used is mostly gathered by both the men and the women of the community. After being gathered, materials such as

the “*cañas tacuara*” or “*tacuarembó*” are left to dry for a couple of days to be then sliced into long strips. While still flexible, they are then braided. At a certain point in the process, natural vegetal dyes like the one called “*caatiguá*” are used to give the baskets a specific pattern. Different dyestuff is used to impart darker or lighter shades of color.

We extract a dye, “*caatiguá*,” from the wood. We scrape (the wood); we get (the dye). When it is well dried it becomes reddish. Leave in the sun and afterwards boil it. You have to place the strips – the “*tacuarembó*” – inside, so that it takes on the red color. Only then do you begin to weave the basket. (M.G., Kaaguy Poty)

Pieces of the bark of the tree called “*ñambitá*” or “*ñandipá*” are used to make the basket lids, as this material is regarded as stronger than the “*tacuara*.”

Besides baskets, necklaces are also manufactured, mostly by the women. The necklaces are made of seeds – “*capiy-ã*” and “*iguaiú*” – which are found near the settlements.

The handicrafts thus manufactured are then stored in the so-called “*new houses*” until they are sold (Figures 4 and 5). Stalls at the side of the road are set in order to sell the handicrafts made. They can also be sold in towns in the province, or else taken to Buenos Aires (Capital Federal) and nearby towns to be sold.

The wilderness and the settlement: Where subsistence practices take place

The description of the subsistence activities practiced by the *Mbyá* that resulted from our study made it easier for us to identify three main microenvironments. Their distinct characteristics have been drawn following both local and scientific criteria.

The “*chacras*” or small farms are the center of horticultural activity. Within the settlement, they are distributed around, and usually adjacent to, the dwellings. The “*chacras*” are irregularly shaped and their borders are diffuse and undefined. Their dimensions range between half a hectare and 1 hectare. In the “*chacras*,” the men and the women work on different tasks. Clearing is a job solely carried out by the men. The women help tilling, planting, and harvesting. Even if some jobs do require the participation of members of other DU’s, the maintenance and harvesting of each plot both remain the sole responsibility of that DU that is in charge of that specific plot of land. The “*chacras*” are composed of both cultivated plants and associated weeds. Sowing is done throughout the spring season as well as at the beginning of the summer season, with the result that there will be different stages of growth of the crops at any one given time. In the case of

Table 4. Resources involved in gathering (species directly or indirectly related with feeding).

Resource	Scientific name and order	Use	Purpose	Involved people	Environment
Guembé	<i>Philodendron bipinnatifidum</i> – Araceae	Basketry- Traps Food	Commerce Hunting Direct consumption	Men (alone or in group)	Monte
Miel		Food	Direct consumption Distribution	Men (alone or in group)	Monte
Takuapí	<i>Merostachys clausenii</i> – Poaceae	Basketry- Traps	Commerce Hunting-Fishing	Men and/or women	Monte
Frutos Niños		Food	Direct consumption	Hombres-mujeres-	Monte
Tacuara	<i>Guadua trinitii</i> – Poaceae	Basketry- Traps	Commerce Hunting-Fishing	Men and/or women	Monte
Ñandytá	<i>Genipa americana</i> – Rubiaceae	Basketry-	Commerce	Men and/or women	Monte
Guavyrá	<i>Campomanesia xanthocarpa</i> – Myrtaceae	Food	Direct consumption	Women, men and children	Monte
Kapi-a	<i>Coix lachryma-jobii</i> – Poaceae	Necklaces	Commerce	Women, men and children	Capuera
Guayubira	<i>Patagonula americana</i> – Borraginaceae	Wooden figurines Bows and harpoons	Commerce Hunting-Fishing	Men	Monte
Kurupyka'y o palo leche	<i>Sapium hematospermum</i> – Euphorbiaceae	Wooden figurines	Commerce	Men	Monte
Tacuarembó	<i>Chusquea ramosissima</i> – Poaceae	Basketry- Traps	Commerce Hunting-Fishing	Men and/or women	Monte
Yvaporoití	<i>Myrciaria rivularis</i> – Myrtaceae	Food	Direct consumption	Women, men and children	Monte
Coco	<i>Acrocomia totai</i> – Arecaceae	Food	Direct consumption	Women and men	Monte
Yvyra-ró	<i>Pterogyne nitens</i> – Fabaceae	Fish poison	Fishing	Men	Monte
Ysyπό timbó	<i>Lonchocarpus</i> sp. Fabaceae	Fish poison	Fishing	Men	Monte
Guaviyú	<i>Eugenia pungens</i> – Myrtaceae	Food	Direct consumption	Women, men and children	Monte
Jabotikava	<i>Myrciaria</i> sp. – Myrtaceae	Food	Direct consumption	Children, women and men	Monte
Kaatiguá	<i>Trichilla catigua</i> – Meliaceae	Basketry (deying)	Commerce	Men and/or women	Monte
Yvau	Fam. Sapindaceae	Necklaces	Commerce	Women and men	Capuera
Tacuarembó blanco		Basketry-	Commerce	Men and/or women	Monte

Direct consumption refers to the consumption in the gatherer's DU.

Distribution refers to share the resource with members of other DUs.

Exchange refers to the exchange of the resource for another one with members of the DU.



Figure 4. Handcraft making in the house with resources from the “*monte*.”



Figure 5. Handcraft storing in the “new houses.”

corn, the stalk is left standing even after harvesting⁶ the cobs. Cassava and sweet potato are also peculiar examples, in that they are kept under ground for long periods, even after the plot has been laid bare in the slashing and burning stage. Plots are thus left from the end of the fall until the following sowing season. In other words, throughout the annual cycle, the different crops and weeds found in the “*chacra*” change, and

so does the “*chacra*” general make-up – stages with abundant vegetation and the dominant seasonal crop found during the summer, and bare soil during the winter.

The “*capueras*” is the name given to those areas that, having been cleared, are then characterized by the presence of secondary colonizing flora. Plants are usually shrubby; though small trees can also be found. Disturbance may be the result of activities either inside or outside the group. Activities inside the group may include the interspersing of plots where crops are being grown and plots that are left empty – the “empty” plots functioning either as a form of separation between different sections of the same farm or as a form of boundary between neighboring farms. A typical example of disturbance caused by activities outside the group may be the building of a highway. In such a case, the areas adjacent to the road are abandoned, and vegetation grows with the result of the development of secondary tropical forest. Although this is a space closely related to horticulture, some of the other plant resources – like the seeds employed for making necklaces, for instance – can also be gathered there.

The “*monte*” is the name used for tropical areas where there is a predominance of trees of considerable height and an abundance of vines and epiphytes, as well as a great diversity of animal species. There is a correlation between the biodiversity characteristic of the “*monte*” areas and the environmental diversity recognized by the indigenous communities, which they explore in the course of their subsistence practices of hunting, fishing, and gathering. Although this space is considered pristine, and although it is composed of relatively unmodified flora and fauna, the native species do undergo significant processes of

selective pressure. In the “*monte*” area, for example, activities are also intensively practiced by people other than the *Mbyá* – poaching, or felling of trees for the wood industry, for example. Around the areas of *Mbyá* settlements, the “*chacras*” are found in clearings in the “*monte*,” which is itself thought to guarantee the provision of natural resources. However, the “*monte*” as defined by indigenous communities is a concept that refers to areas further removed from the settlements. Activities of the “white man” – like for example farming and livestock keeping, as well as the exploitation of the forest by the “*colonos*” – are all activities that have significantly reduced the area specifically regarded as the “*monte*” by the *Mbyá*.

Discussion

Do subsistence practices determine micro-environments?

As explained in the introduction, we have used the concept of ethnoecology in the sense of the study of how a society relates with its natural environment. This is broader than an ethnoscientific approach that is focused on the cognitive aspects of how the environment is perceived (Fowler, 1979: 216). Therefore, our research seeks to account for the relationship between human communities and their natural environment, a relationship that is the result of specific “life forms.” It is in the context of those practices designed to solve problems in everyday life that this relationship between the community and its environment can be identified. It has been assumed in our study that the ideas about its environment that a community constructs can be inscribed, modified, and tested precisely in the context of these everyday practices. Far from being fixed and immutable (as defined by some inventories of folk categories and native taxonomies), these ideas a community has of its environment are flexible and open to modification or adjustment as specific chores and tasks are performed (Crivos and Martínez, 1996).

Daily domestic activities are defined by routine, generated by expectations that are developed over time, and performed in settlements that are in turn modified by these same activities. As such, they offer an adequate starting point from which to consider material, social, and symbolic aspects of human ways of life in different contexts (Lave, 1995: 15). In this sense, the strategies of management of the *Mbyá* take on a multidimensional space, where elements of the environment and of different spheres of life – technical, social, and economic – are combined

and adapted to result in a particular way of life. Our research, studying activities that involve the use and management of natural resources in these communities, has allowed us to come up with the first step to define environments in a way that would suit both local and scientific criteria.

Horticultural activity delimits two environments – the “*chacra*” and the “*capuera*.” Farming is solely practiced in the “*chacras*.” The “*capuera*” develops as a consequence of this farming activity, and allows the soil to “recover” while at the same time setting limits to cultivation areas. Horticultural activity is characterized almost exclusively by subsistence farming, cultivation of tobacco being the only exception to this. Production is destined for consumption, mostly as food, by members of the DU and/or other community members. This system involves few intermediate steps between production and actual consumption.

Hunting and fishing are subsistence activities practiced exclusively in the area called “*monte*.” What is obtained from these practices is distributed and consumed in the same manner as agricultural produce.

Gathering is also practiced mainly in the “*monte*” and occasionally practised in the “*capuera*” when it comes down to seeds used in the making of ornaments and in the case of some medicinal plants. The products obtained are put to diverse uses. Honey and forest fruits supplement the diet; some plants are used in healing; while other products (such as certain types of wood, cane, and fibers) are used in the making of handicrafts. This wide range of uses also entails different means of distribution. While food and medicinal products are consumed within the DU or shared with other community members, handicrafts are sold outside the community; any profit from such a sale is used to buy manufactured foods made outside the community, to buy farm animals, clothing, or other goods. The role of the “*monte*” in the development of the different activities discussed in this paper is deserving of further attention. According to the *Mbyá*, the notion of “*monte*,” like that of the waterways that run through it, does not refer to a pristine space, unaltered by humans, nor does it appear as antithetical to the space of communal activity. It is not an amorphous environment unmarked by human activity – rather, it is a space whose natural conditions make such activities possible.

Yet, the “*monte*” is where the community gets most of its primary materials for handicraft activity (like basketry and wood carving), and where most of its experiences such as hunting take place. All these activities, moreover, constitute a significant contribution to the overall economy of the community. Although local resources may be the most important source of food, the indigenous diet is currently supplemented

with products purchased in neighboring towns (as is, for instance, the case of beef and of refined products such as wheat flour, rice, sugar, and “*yerba mate*”) or bought from the “*colonos*” (as is the case of fowl). It is through these activities that the “*monte*” serves as a “bridge” linking the *Mbyá* and other neighboring communities.

We agree with Balée (in Rival, 1998: 233) that, since pre-historic times, indigenous communities of the tropical rainforests have created biotic niches that are true anthropogenic forests. In the case of the *Mbyá*, the subsistence activities of the community have clearly created an anthropogenic forest as a result of the long-standing close relationship human beings have established with certain species. The “*monte*” is a diversified environment whose characteristics (from specific vegetation, to the presence of streams and other bodies of water) will always attract humans, thus lending itself to transformation. In this sense, one of our informants states the following:

Boar have their own space. Where there is a lot of fruit, where there is good, clean water for them to drink – that is where the noose must be set, not just anywhere. (M.G, Kaaguay Poty)

These concepts become significant when we consider the *Mbyá* notion of “*tekoha*,” the concept expressing the *Mbyá* idea of territoriality on three semantic levels: first in a geophysical sense; then as a social and economic concept; and finally in a sense that is political. As a geographic concept, the limits of the “*tekoha*” function as natural borders. “*Tekoha*” is the total area of land belonging to a community, and its size and characteristics will enable the community to practice subsistence activities such as hunting, fishing, gathering, and farming. The “*tekoha*” is in this sense made up of “*monte*” highlands, wetlands, rivers, and streams; forests fit for burning and planting (called “*ka’aju*”); and spaces where the different family huts are built around the ceremonial hut (the “*opy*”). As a social concept, “*tekoha*” is found in the network of family lineage, and occasionally also among different settlements and different autonomous family groups. The “*tekoha*” understood in this sense has to do with social and economic exchange during visits and social or religious ceremonies, in which the value of compulsory mutual help is highly regarded. The political sense of the concept of “*tekoha*” is complex. The autonomy of family groups supersedes any form of leadership that is merely based on hierarchy, which can only be found fragmented at present (Beate-Lehner in Chase-Sardi, 1989: 34–35).

The concept of “*tekoha*,” as the result of traditional practices (Larricq, 1993: 96), summarizes the idea of a place where such practices are performed. It integrates

in a single space the material, social, and symbolic dimensions that constitute the *Mbyá* way of life in its natural environment.

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Notes

1. The quotation marks indicate local names. For the definition of “*capuera*” see the Results section: *The wilderness and the settlement: where subsistence practices take place*.
2. Our studies have been carried out in *Valle de Molinos*, with the objective of describing “activities.” We believe “activities” are units relevant to characterize the way of life of indigenous communities. Even if it would be empirically problematic to define “activities” as a system of interrelated beliefs and behaviors (Howard, 1963: 434), we have chosen this concept for its functional significance (Hill, 1966: 10). In other words, we use the concept of “activity” as a unit to describe community strategies used to solve different types of problems (Crivos and Martínez, 1997: 139–140).
3. The “domestic unit” (DU) is proposed as a basic, essential unit for observing and describing group life. The DU could be defined as a complex unit that involves three components: social (a group of persons sharing a common residence), spatial (the physical space that they inhabit), and economic (those group activities that are performed either partially or totally within this space). (Crivos and Martínez, 1996: 100)
4. A “*colonia*” is a generally small area of agricultural production and livestock keeping. The lands were originally allotted to European immigrant families that arrived in Argentina in the second half of the 19th. century. These people and their descendants, still living in these lands, are known as “*colonos*.”
5. For the definition of “*monte*” see the Results section: *The wilderness and the settlement: where subsistence practices take place*.
6. The term “harvesting” is used loosely here, as the case is that only that which is necessary for consumption is gathered at a given moment. Likewise, it is difficult to refer to the storage of harvested goods, with the exception of specific, selected plants whose seeds will be used in the following sowing season.

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