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The Chacobo Indians and their Palms[1]

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ABSTRACT

An ethnobotanical study of the Chacobo Indians in northeastern Bolivia revealed 12 species of palms recognized by this Amazonian tribe. In a 1 hectare forest inventory 7 of these species were found; ecological importance values were calculated and the ethnological importance of each was assessed.

The Chacobos belong to the southeastern Panoan language group of Amazonian Indians (Métraux 1948). There are at present some 400 Chacobos, but the Tribe formerly numbered in the thousands. Late in the last century they lived in small groups in the northeastern Bolivian Department of Beni, scattered between Lago Rogoaguado and the Río Mamoré, 13°–14°S, 65°–66°W.

Since then the Chacobos have been forced northward by more aggressive Tacanan tribes. Their range and numbers were further diminished this century by "civilized" Bolivians looking for rubber and sport in the form of hunting the Indians like wild animals. The Summer Institute of Linguistics (SIL) claims to have made the first friendly contact with the Tribe in 1955 (Prost 1970). At that time the Chacobos numbered only about 135, and lived in four groups, each with 30–35 individuals. Their villages were located in isolated regions along the Ríos Benicito, Ivon, Geneshuaya, and Yata. They were seminomadic, living by hunting and fishing with bow and arrow, and collecting wild fruits and nuts from the forest. They were also agriculturalists who cultivated principally sweet manioc, corn, and bananas. Both men and women pierced their nasal septum to accommodate an adornment of feathers and earlobes where they wore incisor teeth of the wild pig. The men dressed in barkcloth made from the inner bark of *Ficus* spp. and wore a crown of feathers on their heads. Feathers and various other adornments were worn around their arms, wrists, and ankles. A collar of beeswax into which they pressed blue-colored seeds completed the outfit. The women wore only a small loincloth held in place by a liana belt. Necklaces of different colored seeds were common for both men and women. They cut their hair in the form of bangs in the front, but let it grow long in the back. The men wrapped their long hair into a ponytail, while the women let theirs hang free. They commonly painted their bodies with various red, black, and blue plant dyes. They celebrated the harvests of manioc and corn with festivals which were the occasions for consuming great quantities of *chicha* (fermented beverage made from manioc or corn flour), much dancing and singing. Among all the Chacobos, only a couple spoke any Spanish, and they lived quite effectively outside of the Bolivian cash economy. More information on traditional Chacobo culture can be found in Torrico (1977) and Prost (1970).

Today much of this has changed. A number of aspects of their culture, including their ceremonies, traditional mode of dress, and supernatural beliefs have already been lost (Fig. 1). Other aspects, including their botanical knowledge, are for the most part intact although they too

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are being lost due to the acculturation the Tribe is now experiencing. The SIL was responsible for reducing the Chacobos' nomadism by encouraging them to take up the collection of wild *Hevea* rubber for sale in the town of Riberalta. Also, in the early 1960s they orchestrated several transfers of villages and scattered families to centralized locations. Presently, the SIL has left the region and the Swiss Evangelical Mission has contact with the Tribe. With the cash they earn from the sale of rubber and brazilnuts, the Chacobos buy clothes, firearms, radios, and various foods (when their agricultural production falls below expectations). Most of the Tribe live today on 43,000 hectares of forested land along the Río Ivon. They own this piece of land, thanks to the SIL, and on it they make their capital village, Alto Ivon. It was here that I concentrated my study.

Much has been written on the significance of the forest to Amazonian Indians, but the degree of importance has never really been quantified. A primary goal of my study was to attempt such a quantification. In this paper I report on the results obtained for the palms.

Methods

During my seven months at Alto Ivon, I employed two basic approaches to study the palms (and other plants) used by the Chacobos. The first I call the "artifact/interview" technique. It is simply the traditional approach to ethnobotany as generally practiced by anthropologists, and involves asking from what plants a particular item is made. For example, what species are employed to make dugout canoes or to thatch house roofs? Once the name is known, a trip is made to the forest to find that specific plant. This approach also involves the outright interviewing of informants, without any particular artifact present, as to the use of plants as foods, fuels, medicine, or in construction and crafts, ceremonies, or commerce.

The second approach I call the "inventory/interview" technique. This involves the active collection of plants and the subsequent interviewing of informants as to names and uses. In the present study, in addition to making general collections around Alto Ivon, I did an ethnoecological inventory of 1 hectare of forest about 4 km from the village. This area of forest was far enough from the village that plants were not collected there by the Indians. Yet it was typical of areas of the forest closer to the village which were being actively entered and utilized. In this hectare I marked and collected every tree with a DBH (diameter at breast height) of 10 cm or more. Then I went back and did fifty 2 m square subplots to sample for saplings, shrubs, and lianas, and then fifty 1 m square subplots to sample for epiphytes and herbs. For all of these collections I obtained names and use information from Chacobo informants.

Palm Occurrence

In the hectare inventoried I found 94 species and 649 individuals of trees. Of this total, 7 species and 127 individuals were palms (Table 1). In other words, 7.4% of the total species and 19.6% of the individuals in the hectare were palms. The palms accounted for 18,714 sq. cm, or 8.7% of the total of 214,846 sq. cm basal area. By summing these three percentages (relative diversity, relative density, and relative dominance) one obtains the Family Importance Value (FIV), as defined by Mori et al. (1983). For the hectare sampled, the Palmae have a FIV of 35.7. In this study only two families have FIVs higher: Moraceae (53.6) and Myristicaceae (41.3). Thus, ecologically the palms appear to be quite significant arboreal components of the forest surrounding Alto Ivon.

Ecological data for each of the seven species are presented in Table 2. I have followed the standard definitions and cal-

Table 1. Occurrence of Palmae in 1 hectare forest inventory.

	All Families Total	Palmae	
		No.	% Total
Species	94	7	7.4
Trees	649	127	19.6
Basal Area, cm sq.	214,846	18,714	8.7
		Family Importance Value:	35.7

culations of relative frequency, density, dominance, and importance value as Curtis and Cottam (1962). It is important not to confuse these species values with the FIVs discussed above. In order to calculate relative frequency, five consecutive 10 m sq. plots were combined to make a single sampling unit (e.g., plots 1–5 = sampling unit 1, plots 6–10 = sampling unit 2, etc.). Thus, my 100 plots yielded 20 sampling units. The presence of each species was then recorded each time it appeared in a sampling unit. It is necessary to aggregate the 10 m sq. plots into larger units because if the plots themselves are used then frequency and density are nearly the same. By counting the total number of occurrences of all species (374) and dividing that into the number of occurrences for a particular species, one obtains the relative frequency for that species.

The other two values, relative density and dominance, are easier to understand. Relative density is simply the number of trees of a species divided by the total number of trees recorded (649). Relative dominance is the basal area of a species divided by the total basal area for all trees recorded (214,846 cm sq.). By summing the relative frequency, density and dominance, one obtains the importance value for each species.

As can be seen from Table 2, only two species are really common, *Euterpe precatoria* Mart. (I.V. = 16.01) and *Socratea exorrhiza* (Mart.) H. A. Wendl. (I.V. = 14.46). It is virtually impossible to stand anywhere in the forest surrounding Alto Ivon and not see both of these species. Both are easy to spot: *E. precatoria* with its crown of leaves with gracefully drooping pinnae and *S. exorrhiza* with its spiny stilt roots. Less common, but certainly not rare, is *Astrocaryum aculeatum* Meyer (I.V. = 6.57), a heavily armed, erect species in subgenus *Pleiogynanthus*.

Table 2. Frequency, density, dominance, and importance values for Palmae in 1 hectare forest inventory.

Species	No. Sampling Units of Occurence	No. Trees	Basal Area (sq. cm)	Rel. Freq. (%)	Rel. Den. (%)	Rel. Dom. (%)	Impor. Value
Euterpe precatoria	18	53	6,509	4.81	8.17	3.03	16.01
Socratea exorrhiza	17	46	6,061	4.55	7.09	2.82	14.46
Astrocaryum aculeatum	10	15	3,416	2.67	2.31	1.59	6.57
Jessenia bataua	4	6	1,552	1.07	0.92	0.72	2.71
Oenocarpus mapora	4	5	530	1.07	0.77	0.25	2.09
Maximiliana maripa	1	1	346	0.27	0.15	0.16	0.58
Scheelea princeps	1	1	299	0.27	0.15	0.14	0.56

Table 3. Palms recognized and used by the Chacobos at Alto Ivon. Voucher specimen numbers are on Boom's series and are deposited at NY.

Chacobo Name	Spanish Name	Voucher	Scientific Name	Use	Parts Used
xëbichoqui	motacusillo	4573	*Maximiliana maripa*	thatch	leaves
				food	fruits
				toy	bracts
quëboitsama	bacaba	4152	*Oenocarpus mapora*	medicine	sap
				food	fruits
				thatch	leaves
panabi	assaí	4151	*Euterpe precatoria*	drink, food	fruits
				medicine	leaves
				thatch	leaves
				brooms	leaves
itsama	mayo	4538	*Jessenia bataua*	drink, food	fruits
				doors	petioles
xëbini	motacú	4145	*Scheelea princeps*	food	fruits
				thatch	leaves
				medicine	leaves
				baskets	leaves
onipa	pachuba	4155	*Socratea exorrhiza*	medicine	fruits/bark
				walls, beds	trunks
				grater	roots
panima	chonta	4159	*Astrocaryum aculeatum*	food, bait	fruits
				bows	"wood"
				baskets	leaves
pani	chonta loro	4154	*Astrocaryum huicungo*	food	fruits
huanima	chima	4984	*Bactris gasipaes*	food, drink	fruits
				bows	"wood"
canahuanima	—	4129	*Bactris humilis*	medicine	fruits
shinishëoxo	—	4509	*Bactris monticola*	food	fruits
tananë	—	4436	*Geonoma juruana*	arrows	stems
				thatch	leaves

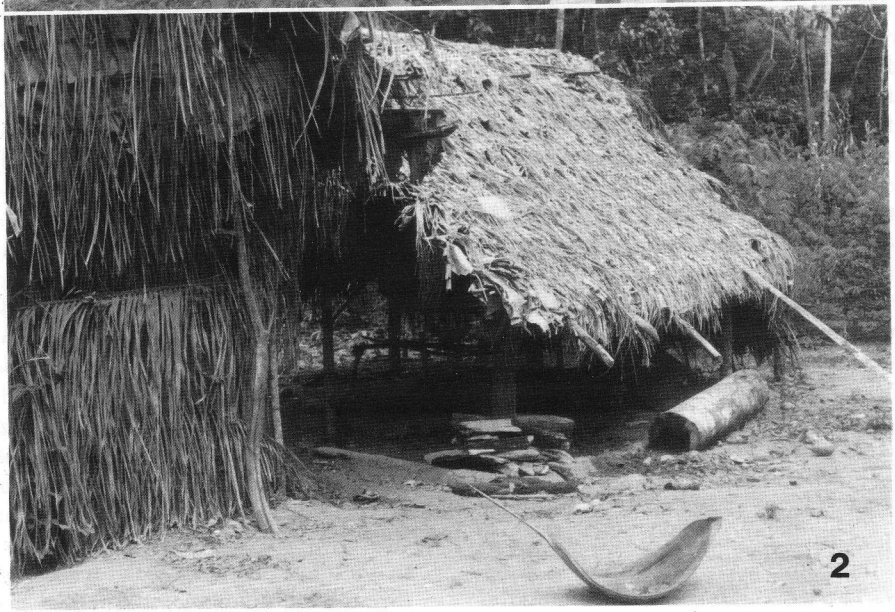
The next two species are about equally important ecologically: *Jessenia bataua* (Mart.) Burret (I.V. = 2.71) and *Oenocarpus mapora* Karst. (I.V. = 2.09). The last two of the seven species in the inventory are quite rare in the forest, each only occurring once in the hectare: *Maximilana maripa* (Correa de Serra) Drude (I.V. = 0.58) and *Scheelea princeps* (Mart.) Karst. (I.V. = 0.56).

Five additional species are found around Alto Ivon, but did not enter into the inventory, so I have no quantitative data for them. Two are semicultivated palms (*Astrocaryum huicungo* Damm. ex Burret and *Bactris gasipaes* Kunth) which were never found in undisturbed forest, but rather occurred in abandoned fields near the village. The three other palms are small, understory species (*Geonoma juruana* Damm., *Bactris monticola* Barb. Rodr., and *B. humilis* (Wallace) Burret). *Bactris humilis* is quite common in the region, while the other species are much less so.

Palm Utilization

Information on all 12 palms recognized by the Chacobos is presented in Table 3, which shows the vernacular names in Chacobo and Spanish (when known), my collection voucher numbers, scientific names, uses, and parts of the palm used. Specimens are deposited at the Herbarium of The New York Botanical Garden (NY).

Xëbichoqui (*Maximiliana maripa*) is not a common palm, but its fruits are



1. A modern-day Chacobo family posing in front of a mango tree in Alto Ivon, the principal tribal village.
2. Around a Chacobo house palm uses abound. Seen in the foreground is the bract of *xëbichoqui* (*Maximiliana maripa*) which serves as a toy for children. The outer roof and wall thatch on the house is of leaves of *panabi* (*Euterpe precatoria*), which is underlain by a layer of *mani* leaves, *Phenakospermum guyanense* (L. C. Rich.) Endl. ex Miq. (Strelitziaceae).

highly prized so Indians will often travel considerable distances to collect them when ripe. A side bonus of such trips is the collection of the large, woody bracts which are a favorite toy for the children (Fig. 2). The leaves are said to be used for

thatch, but this cannot be regarded as an important use since the trees of this species are so widely spaced in the forest.

Quëboitsama (*Oenocarpus mapora*) is slightly more frequently encountered than *xëbichoqui*, and it too produces fruits with an edible pulp and has leaves which are employed as roof thatch. A sap extracted from the trunk is drunk as medicine to cure high fever.

Panabi (*Euterpe precatoria*) is unquestionably the palm most used for roof thatch by the Chacobos (Fig. 2). Generally, the Indians will thatch their roofs with a combination of the leaves from *panabi* and *mani*, *Phenakospermum guyanense* (L. C. Rich.) Endl. ex Miq. (Strelitziaceae). A less important use for the leaves is to employ them as make-shift brooms. The leaves are used medicinally to alleviate chest pains: the pinnae are shredded and boiled in water to produce a decoction which is drunk when cooled. The fruits are eaten after being soaked in water to soften them or are made into a drink to which sugar is often added to sweeten it. Surprisingly, the Indians do not eat the heart of this species.

Itsama (*Jessenia bataua*) has fruits that the Chacobos eat after being soaked in water or prepare as a drink as with *panabi*. The rather stout petioles of *itsama* are occasionally lashed together to form a door for those houses with walls (some Chacobo houses are open on all four sides).

Xëbini (*Scheelea princeps*) produces a fruit which is highly prized. The Chacobos bite one end of the fruit to enable them to peel back the hard exocarp to get at the thin, but edible, pulp which is eaten raw. The leaves are occasionally used as a roof thatch or are employed as medicine to cure diarrhea, one of the most common medical problems in the Tribe; a leaf decoction is prepared and drunk as for *panabi*. The most important use for the leaves of *xëbini*, however, is in the weaving of loose, light-duty baskets known in Chacobo as *poropachi*.

Onipa (*Socratea exorrhiza*) is used occasionally to cure fever; a fruit and/or bark decoction is drunk. A much more important use for the species, however, is in construction. The trunks are split to form boards which are employed as walls, bed slats, or floor platforms for those houses with elevated floors. An interesting use, which is no longer practiced, is the grating of manioc tubers on pieces of the spiny stilt roots to obtain flour. Today, this grating is accomplished on pieces of tin having ragged-edged perforations.

Panima (*Astrocaryum aculeatum*) is a very important species to the Chacobos. The fruits are so highly esteemed that special trips will be made into the forest to collect an infructescence that is just about ripe; if they wait until it falls, most of the fruits will be lost to forest mammals. An interesting, and indirect way of using the fruits is to extract the white-colored grubs (which sometimes live inside) for use as a fishing bait. The hard, black "wood" from the trunk of *panima* is carved into hunting bows called *canati* in Chacobo. Five varieties of arrowheads are carved from the same wood: *quërëquë*, *paca*, *tëpi*, *tahua quëspini*, and *bicobi*. Each point is designed to hunt a particular type of game or to fish. Today, most hunting is done with firearms, but fishing is still done with bow and arrow, usually using the point *bicobi*. The *bicobi* point has a bent, filed nail affixed into the tip to serve as a gaff. The carved points of most arrows fitted into a shaft made from the hollow stem of a grass, *Gynerium sagittatum* (Aubl.) Beauv., which is cultivated specifically for this purpose. The leaves of *panima* are the most important materials for basketry. The pinnae are split longitudinally and then tightly woven into different sizes and styles of baskets. An open-topped, low-sided basket, such as would be used for storing rice, is called *shichuma*. A basket with a top for storing valuables is called *chichabë-casa*. A fan woven from *panima* leaves is known as *huana huëquëti*. Given this

multitude of uses, I would nominate *Astrocaryum aculeatum* as the most important palm to the Chacobo culture.

Pani (*Astrocaryum huicungo*), an acaulescent species in subgenus *Monogynanthus*, is, in comparison to its larger relative, not so important. Yet, it furnishes one of the most prized of all fruits gathered by the Chacobos. They rate it along with the mango in terms of popularity. *Pani* is under semicultivation in abandoned agricultural fields and along trails in secondary forest. Also grown in such areas is *huanima* (*Bactris gasipaes*), the Peach Palm. It furnishes a hard, black "wood" which is occasionally carved into hunting bows and arrow points. Of course, the primary utility of *huanima* is the food and drink derived from its fruits.

The remaining species are of comparatively little importance to the Tribe. *Canahuanima* (*Bactris humilis*) has medicinal value as a remedy for stomach ache; a decoction of the fruits is drunk. *Shinishëoxo* (*Bactris monticola*) produces fruits which are occasionally eaten. *Tananë* (*Geonoma juruana*) has leaves which are sometimes used for thatch on small huts. The stems are reportedly used as arrow shafts when the cultivated *Gynerium sagittatum* is not available.

Discussion

As can be seen, a palm's ecological importance is not necessarily proportional to its utilitarian importance. It is precisely this discrepancy which lends support to the view that it is necessary to set aside large tracts of forest as reserves if indigenous Amazonian cultures are to survive. If two of the Chacobos' most useful palm species (*xëbichoqui* and *xëbini*) occur at such a low average density as 1 individual per hectare, then quite a few hectares are needed to accommodate enough trees to meet the cultural needs of the Tribe.

Another point that must be remembered is that, while the Chacobos of today make extensive use of their palms, their ancestors of 30 or more years ago (before they entered into the Bolivian cash economy and began a period of rapid acculturation) must have had an even greater dependance on the forest in general and palms in particular. It is probable that when the Chacobos were still seminomadic they came across a greater variety of palm species. This is certainly the case with the palm known in Bolivia as *Palma Real* (*Mauritia* sp.) a species of the eastern grasslands. The Chacobos know of this species from the time when they lived further south, more on the fringes of the savannas. Today, since they live deep in the forest, they have no more contact with *Palma Real*. Braun (1968) discusses the extensive use made of *Mauritia* palms by various Indians in Venezuela; no doubt they were similarly important to the Chacobos.

More ethnobotanical studies are urgently needed in order to record indigenous palm uses while there are still tribes available to study. The problem of cultural extinction, and consequent information loss, is especially acute in Amazonia. This brief survey of the palms used by the Chacobos serves to illustrate and emphasize once again the importance of the Palmae to the peoples of this fascinating region.

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