

The Use of Palms by the Pumé Indians of Southwestern Venezuela

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ABSTRACT

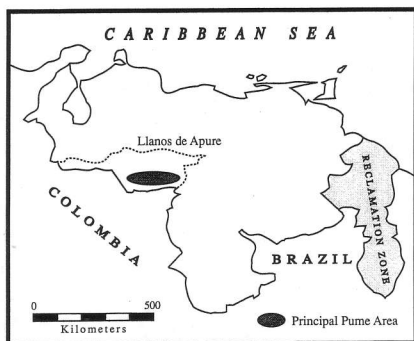
This paper presents information on the patterns of use of *Astrocaryum jauari*, *Euterpe precatoria*, *Mauritia flexuosa*, and *Mauritiella aculeata* among the Pumé, a native American group living in the seasonally inundated savanna region of southwestern Venezuela. Palm products form an integral part of everyday Pumé life providing fiber, food, and shelter. The use of these four genera of palms by the Pumé is compared to their use among other South American peoples.

In this paper are described the uses of *Astrocaryum jauari*, *Euterpe precatoria*, *Mauritia flexuosa*, and *Mauritiella aculeata* among the Pumé, a native American group living in the seasonally inundated savanna region of southwestern Venezuela. The close relation between humans and palms in lowland South America has been long remarked upon by botanists and ethnographers (Wallace 1853, Levi-Strauss 1950, Beckerman 1977, Anderson 1978, Balick and Beck 1990). Despite the fact that only a few palm species have ever been domesticated worldwide, palms probably provide more economic benefits to humans in the form of food, fiber, building materials, fuelwood, and folk medicine than any other family of plants, including grasses and legumes (Uhl and Dransfield 1988, Johnson 1988, Beckerman 1979, Levi-Strauss 1950, Balick 1986, Clement 1988). This is also true among the Pumé for whom palms provide fiber to manufacture artifacts and clothing, food in the form of fruits, palm heart, and grubs, and leaves used to thatch houses and make additional artifacts.

Background

The Pumé inhabit the *Llanos de Apure* located in southwestern Venezuela west of the Orinoco river and south of the Apure river (Fig. 1). The Llanos de Apure have an average elevation of less than 200 m above m.s.l. and lie at the center of the tropical savanna extending from the Delta of the Orinoco in northeastern Venezuela to the Guaviare river in southern Colombia. The most characteristic landscape features of the area occupied by the Pumé are longitudinal sand dunes less than 10 m high, 20-50 m wide, and up to 500 m long (Morales 1979). Average annual rainfall in the area occupied by the Pumé is nearly 2,000 mm, but most precipitation is concentrated in a six month rainy season. This climatic characteristic combined with the slight gradient of the Llanos de Apure results in extensive flooding that can last from one to 10 months of the year and be as deep as 1 m (Zink 1986, Andel and Postma 1954, FAO 1965, Goosen 1964).

The 1983 Indian Census of Venezuela recorded a total Pumé population of 3,873 (OCEI 1985). Of this total, about 83% refer to themselves as *bea khonome* Pumé and are called *Yaruro* by Spanish speakers (a name also commonly used in historic and older ethnographic accounts). The *bea khonome* Pumé live in permanent villages along the major rivers running through the Llanos de Apure: the Arauca, the Cunaviche, the Capanaparo, the Riecito, and to a lesser extent the Cinaruco. Their subsistence is based predominately on manioc



1. Location of the Pumé within Venezuela

horticulture supplemented with fish and other vertebrates obtained from the river courses and many of these Pumé work on a seasonal basis as migrant laborers. The remaining 17% of the Pumé population are referred to as *ciri khonome* Pumé by other Pumé and as *Capuruchano* by Spanish speakers. This subpopulation occupies the interfluvial savanna between the Capanaparo and Cinaruco rivers and represents the least acculturated segment of Pumé society. The *ciri khonome* Pumé live in semi-nomadic villages following a subsistence pattern based on fishing, hunting, gathering of wild foods, and some gardening of manioc and corn (Gragson 1989, in press).

Methods and Results

Ethnobotanical information on the Pumé is presented by Ramia (1962), Mitrani (1976), and Gragson and Tillett (n.d.). Ramia collected a limited amount of ethnobotanical information among the Pumé while conducting a botanical survey of the Llanos de Apure. Mitrani conducted ethnographic research on the medicinal use of plants by *bea khonome* Pumé living near the Cunaviche river. I have conducted ethnographic research since 1986 on *ciri khonome* Pumé subsistence ecology and settlement practices that is complemented with botanical collections. To date in this research, 103 plant specimens have been collected in the area bounded by the

Capanaparo, the Cinaruco, and the Riecito rivers and processed by Stephen Tillett, Universidad Central de Venezuela. Voucher specimens and duplicates are currently deposited in the Dr. Victor Manuel Ovalles Herbarium (MYF), but matching sets will eventually be placed at the Venezuelan National Herbarium (VEN) and the New York Botanical Garden (NY). The palm species reported in this paper are part of this collection and their determinations were made or confirmed by Andrew Henderson (NY). The descriptions of palm biology and ecology in the next section derive from personal observations (Gragson 1987), the general works of Uhl and Dransfield (1987), and Braun and Chitty (1987).

Palm Use

Astrocaryum cf. *jauari* Mart. Pumé: bai to. Spanish: macanilla. Voucher specimen: TLG 46.

The "macanilla" is a monocaulescent, arborescent, pinnate leaved palm growing to an approximate height of 5 m. The stem has well-defined leaf scars and is thickly armored with flat spines up to 12 cm long; the petiole and rachis combined reach a length of 3 m, and the underside of individual leaflets are covered with shorter spines. This palm tends to grow along the margins and in the more open areas of seasonally flooded gallery forests associated with major rivers throughout the Llanos de Apure (e.g., Riecito); it is sparsely distributed in the interfluvial areas with single specimens occasionally being found along seasonal streams.

The *bea khonome* Pumé use *A. jauari* extensively as a source for fiber to weave small bags and baskets used to hold personal items and to twine into cord for making hammocks. Fiber is extracted from leaf pinnae by beating and stripping, and the extracted fiber is whitened in boiling water before use. The *ciri khonome* Pumé seldom use *A. jauari* as a fiber source substituting instead *Mauritia flexuosa*. This

is a reflection of the lower availability of *A. jauari* in the interfluvial area since a large number of palms are needed to obtain the quantities of fiber required to manufacture most items. Nevertheless, items made from *A. jauari* fiber are preferred by both Pumé and Criollos over the same items made from *M. flexuosa* fiber, and are widely traded and sold throughout the Llanos de Apure. With particular reference to hammocks, the Pumé say those made from *A. jauari* fiber are smoother and more comfortable to sleep on, while both Pumé and Criollo say they wear better and last much longer than the same items made from *M. flexuosa* fiber.

Almost without exception, bows for hunting among both the *bea khonome* and the *ciri khonome* Pumé are manufactured from the stemwood of *A. jauari*. To manufacture a bow, a palm is felled and the trunk is split lengthwise to remove a wedge-shaped blank, which is then scraped into shape with a knife over a period of weeks. The woody, immature seeds of *A. jauari* are drilled length-wise to make the nose pieces on *yopo* (Spanish) inhalers. Yopo (an hallucinogen manufactured from the seeds of *Anadenanthera peregrina*) is used extensively by nearly all Pumé men on ceremonial and secular occasions (Fig. 2).

Euterpe cf. *precatoria* Mart. Pumé: h ñnan to. Spanish: manaca. Voucher specimens: TLG 45 and TLG 96.

The "manaca" is a monocaulous, arborescent, pinnate leaved, palm growing to an approximate height of 20 m. The stem is gray-black in color and has well-defined leaf scars, while the stemwood is soft and stringy. The leaf sheath is up to 1.5 m long, and the petiole and rachis combined reach a length of 3 m. This palm is found growing in the Llanos de Apure in the deeply shaded interior of seasonally flooded gallery forests associated with permanent and temporary waters.

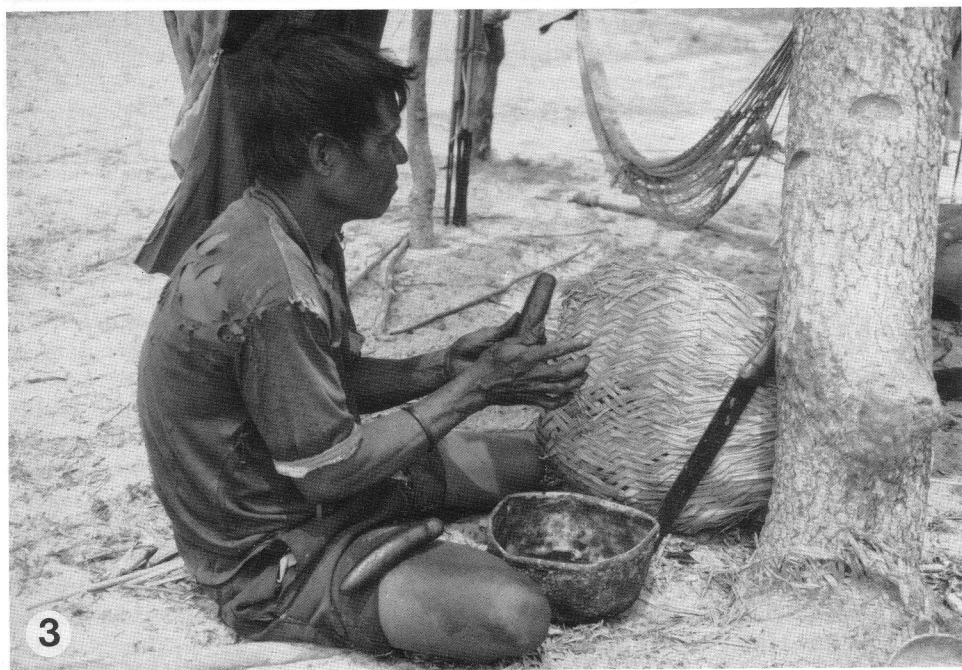
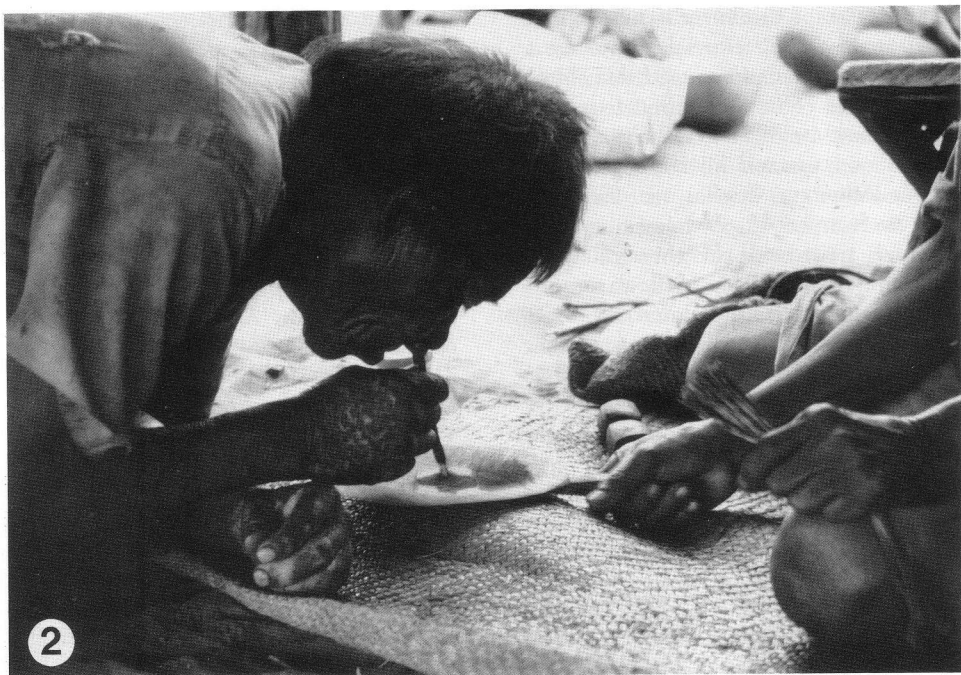
E. precatoria has a minor, and non-

exclusive place in the economy of the Pumé. Its principal use is in the preparation of *peramán* (Spanish), a resinous substance used to seal, bind, and waterproof a multitude of manufactured items, and especially important in the manufacture of arrows. Droplets of resin collected from *Symphonia globulifera* are worked by hand into a single mass and then mixed with leaves of *E. precatoria* that have been burned into ash. Ash from *M. flexuosa* petioles may be substituted, however (Fig. 3). The fruits and heart of *E. precatoria* are occasionally eaten raw, but are not actively sought.

Mauritia flexuosa L.f. Pumé: tho to (mature), bObui to (woody-stemmed juvenile), chee to (acaulescent juvenile). Spanish: moriche. Voucher specimens: TLG 2 and TLG 3.

The "moriche" is a monocaulous, arborescent palm growing to a height of 30 m, that has reduplicate and briefly costapalmate leaves. The stem is unarmed, grayish-brown in color, and bears distinctive leaf scars. The petiole on mature specimens is up to 1 m long, but on acaulescent juveniles it can reach a length of 5 m. *M. flexuosa* can grow as a solitary individual in the interior of seasonally flooded gallery forests, but is often found in relatively dense, monospecific concentrations in seasonally flooded savanna (locally referred to in Spanish as a *morichal*).

M. flexuosa is the most widely used of all palms among the Pumé. Fiber is obtained from the young, unrolled leaf (sword leaf) and is used in a manner similar to the fiber extracted from the leaves of *A. jauari*. Fiber is extracted by placing the sword leaf in the sun for a few hours to dry and then separating the cuticle from the leaf segment by rolling them between the fingers and stripping; the cuticle is allowed to dry completely in the sun for several days before it is used to manufacture artifacts. The fiber obtained from *M. flexuosa*



2. Pumé man taking yopo through an inhalator. The nasal pieces are made from seeds of *Astrocaryum jauari* while the tubes (made of bird bone) are bound with peramán manufactured with ash from *Euterpe precatoria* leaves. The yopo pallet is being supported on a mat woven from *Mauritia flexuosa* leaf segments. 3. Pumé man making peramán. He is at the stage of incorporating ash (in this instance from *Mauritia flexuosa*) into the

leaves is dyed red by boiling in a decoction of *Arrabidaea chica* leaves and used without further modification as a "loincloth" by woman. The fiber is also used to weave small bags to hold personal possessions, slings for carrying babies, and most importantly to weave mats. Soils throughout the Llanos de Apure are loose and sandy, and mats are used for sitting on, laying uncooked and prepared food on, and as wind (or rain) shields. Twined fiber is used to manufacture the hammocks used by *ciri khonome* Pumé. A byproduct of fiber extraction which is occasionally used are the prominent midribs found on each leaf segment. These are loosely woven into manioc flour sifters.

Whole, mature leaves of *M. flexuosa* are used to weave floor mats, upright windshields, and the large baskets used as storage units for personal belongings inside houses, and by women to carry manioc, wild roots, and firewood. The major use of mature leaves, however, is for thatching houses. The attachment of the blade to the petiole of leaves is broken and the leaf is left to sun-dry for several days. In thatching a house, leaves are split in half lengthwise and hung over roof slats most frequently made of *Mauritiella aculeata*. (Between four and 1,200 leaves of *M. flexuosa* are used to thatch a single house depending on style, size, and season of use.)

Dry petioles of acaulescent juveniles of *M. flexuosa* are fairly straight, quite rigid, and extremely light. In this condition, individual petioles are used to make fences around small patches of squash or tobacco within the village. Several petioles can be pierced onto a stick to form a platform that is used as a shelf when suspended from the rafters of Pumé houses, or a windbreak/rainshield when stuck upright

into the ground. The petioles may also be charred and the ash used to manufacture peramán in the manner already described for *E. precatoria*. Rafts are made by lashing together with vines (several genera are used) three to four platforms composed of 10 to 12 petioles each. (The number of platforms used depends on the weight of the person using the raft.) These rafts are used to cross rain-swollen streams in the wet season and to fish from in lakes and deep ponds poisoned with *barbasco* (Spanish, *Tephrosia sinapou*) during the dry season (Fig. 4).

The ripe fruit of *M. flexuosa* is actively sought during the wet season and favored for consumption over that of any other palm. The mesocarp is sucked and scraped directly off the endocarp without preparation. The palm heart is also eaten, although a palm will seldom be felled for the sole purpose of extracting the heart. If the sword leaf is taken for fiber or leaves are collected for thatch, then the heart is nearly always extracted as well. Large *Rhynchophorus palmarum* grubs, which are roasted and eaten, are collected from the rotten trunks of *M. flexuosa* felled in previous years to obtain thatch.

Mauritiella aculeata (Kunth) Burret.

Pumé: kuecha to (mature), thonõnga to (juvenile). Spanish: moriche negro. Voucher specimens: TLG 6, TLG 7, TLG 42, and TLG 47.

The "moriche negro" is a multi-stemmed, arborescent palm growing to an approximate height of 10 m, that has reduplicate and briefly costapalmate leaves. The stem is silvery-gray in color, has distinct leaf scars, and is armed with stout, upward curving spines 1 to 2 cm long. This palm grows in deeply shaded areas of seasonally

←
softened resin of *Symphonia globulifera*. The man's left knee is touching a basket made from a mature leaf of *Mauritia flexuosa* and in the background is a hammock made of fiber extracted from the sword leaf of the same species.



4. Pumé man spreading barbasco in a river pond from a raft made with petioles of juvenile *Mauritia flexuosa*. He is poling himself with a petiole from the same species.

flooded gallery forests and is typically found growing in shallow basins retaining water year-round and located adjacent to streams or rivers.

The most important use of *M. aculeata* among the Pumé is in house construction. A mature palm is felled, the spines are removed, and the stem is split lengthwise into 6 to 10 slats. The spongy interior of the stem is scraped from each slat with a machete and discarded. Slat is tied to the roof beams on Pumé houses using vines (*Cynachum* ?) and serve to support the split leaves of *Mauritia flexuosa* used as thatch (Fig. 5). *Mauritiella aculeata* slats

are also used to build shelves inside Pumé houses.

The petiole of acaulescent juveniles of *M. aculeata* are some 3 m in length and about 1 cm in diameter. After sun-drying for several days, the petioles are used to manufacture arrow shafts although the practice is now largely restricted to older members among the *ciri khonome* Pumé. This use of petioles appears to have been more widespread in the past before *Gynerium* sp. cane was widely planted in gardens; *Gynerium* sp. cane has greater rigidity and durability than *M. aculeata* petioles, and the sturdier arrows that can be produced are favored by the Pumé.

Leaves of acaulescent juveniles of *M. aculeata* are the most commonly used material for weaving fire-fans, while the fibrous outer layer of the petiole is used for ties and binding material once it is stripped away from the pithy interior. These bindings are obtained on a spontaneous, as-needed basis, and are readily discarded after use. The fruits of mature *M. aculeata* are reportedly edible, but are not actively sought by the Pumé. Table 1 summarizes the use of different palm species among the Pumé.

Discussion

In general terms, the Pumé appear to rely on a smaller number of palm genera than most native and non-native peoples throughout the lowlands of South America; more than a difference in native knowledge, however, this may simply reflect environmental differences between tropical savanna where the Pumé live and tropical forest where most of the work on palm ethnobotany has been carried out. There appear to be fewer genera of palms represented in tropical savannas than there are in tropical forests (Balick 1985, Boom 1988, Anderson 1978), even though the observations are largely unsystematic in nature. The intensity and variety of uses of the palm genera by the Pumé is nev-

Table 1. The names and uses of palms among the Pumé.

Pumé Name	Spanish Name	Scientific Name	Edible Fruit	Edible Heart	Thatch	Building Material	Artifacts/Handicrafts	Other
bai to	macanilla	<i>Astrocaryum</i> cf. <i>jauari</i> Mart.	●	●	●	●	×	○
hēnan to	manaca	<i>Euterpe</i> cf. <i>precatória</i> Mart.	○	○	●	●	●	○
tho to	moriche	<i>Mauritia flexuosa</i> L.f.	×	×	×	○	×	×
kuecha to	moriche negro	<i>Mauritiella aculeata</i> (Kunth) Burret	○	●	●	×	×	○

× = important or major use.

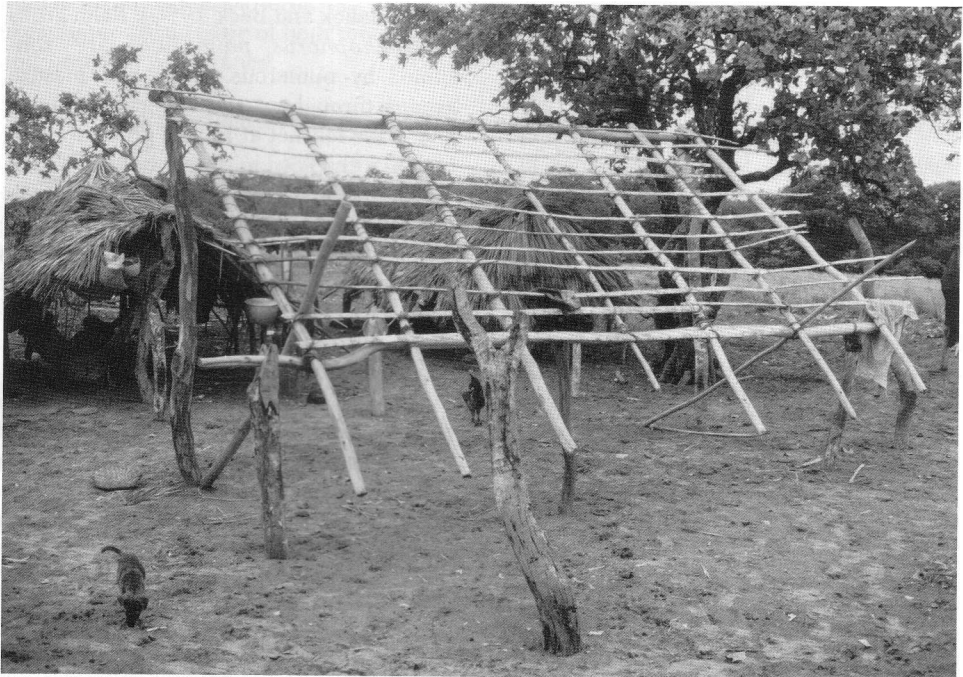
○ = unimportant or minor use.

● = no known use.

ertheless comparable to that of groups relying on a larger number of genera.

Like the Pumé, the Barí of the Maracaibo Basin and the Chácobo of north-eastern Bolivia manufacture bows from the hard stemwood of *Astrocaryum* (species unknown for the Barí, and *A. aculeatum* for the Chácobo [Beckerman 1977, Boom

1988]). The Barí, the Chácobo, and the Yanomama of southeastern Venezuela also use *Astrocaryum* stemwood to manufacture arrow points (*A. aculeatum* in the case of the Chácobo and the Yanomama); the Pumé now use metal arrow tips exclusively, but may have made arrow tips from stemwood in the past before metal was so



5. Pumé dry season house in an early stage of construction showing the roof slats made from *Mauritiella aculeata*. In the background are two occupied houses thatched with *Mauritia flexuosa* leaves.

easily obtained. The Guahibo living in the *Llanos del Meta* just south of the Pumé in Colombia, use seeds of *A. acaule* to manufacture the nasal pieces of yopo inhalers similar in shape to those manufactured by the Pumé (Balick 1979).

The Barí and Guajajara of northeastern Brazil are specifically known to extract fiber from the leaves of several species of *Astrocaryum* (Beckerman 1977, Balick 1988), but the practice is widespread among lowland peoples (Levi-Strauss 1950, Uhl and Dransfield 1988, Kahn 1988, Balick and Beck 1990). Although the Pumé are not known to eat the fruit or the heart of *A. jauari*, these two items are obtained for consumption from various species of *Astrocaryum* by the Barí, the Chácobo, the Yanomama, the Guajajara, and mestizos throughout lowland South America (Beckerman 1977, Boom 1988, Anderson 1978, Balick 1988, Mejía 1988, Balick and Beck 1990).

The Pumé make limited use of *E. precatória* compared to its use among other lowland South Americans. The fruit of various species of *Euterpe*, but most commonly *E. oleracea* (the assai palm), are widely used to manufacture beverages and mushes of various kinds by caboclos in Brazil as well as many native groups including the Barí, the Chácobo, the Guahibo, the Yanomama, the Apinayé (living in northeastern Brazil), and the Guajajara (Levi-Strauss 1950; Beckerman 1977; Boom 1988; Balick 1979, 1988; Anderson 1978; Strudwick and Sobel 1988). The palm heart of *E. precatória* and *E. oleracea* are also eaten by many groups, and that of *E. oleracea* is the source of canned palmito sold in the United States and Europe (Balick 1985, Kahn 1988, Strudwick and Sobel 1988). Fronds of *Euterpe precatória* are used for thatching houses by the Chácobo and the Guahibo, while the stemwood of this species is used by the Yanomama to build shelves and tables (Boom 1988, Balick 1979, Anderson 1978).

Throughout the seasonally flooded areas of lowland South America, *Mauritia flexuosa* is undoubtedly the most widely used of all palms. The Warao, a native group living in the Orinoco Delta region of Venezuela, make the most extensive use of this palm. They use the stems as piles to support their houses and to extract starch for consumption; they draw fiber from the leaves to manufacture clothing and hammocks; and they consume the fruits and the palm heart (Heinen and Ruddle 1974). The Yanomama, Apinayé, and Guajajara eat the mesocarp of *M. flexuosa* fruits without preparation like the Pumé, while the Guahibo make a fermented drink from the mesocarp (Balick 1979, 1988, Anderson 1978). Trade and sale of *M. flexuosa* fruit is a major source of income for residents of Iquitos, Peru (Padoch 1988).

Like the Pumé, the Guahibo and several Indian groups of the Guiana region favor *Mauritia* spp. for thatching their houses (Balick 1979, Levi-Strauss 1950, Thurn 1883, Balick and Beck 1990). Palm grubs (*Rhynchophorus palmarum*) are consumed by numerous native and mestizo groups throughout the tropical lowlands, and in the market at Iquitos grubs are sold both live and fried in their own fat (Padoch 1988, Kahn 1988, Mejía 1988, Balick 1986). The Guahibo and mestizos of the Peruvian Amazon extract grubs specifically from the rotten stems of *M. flexuosa* (Balick 1979, Padoch 1988). The Guahibo and the Pumé are the only two South American groups I am aware of who use the petiole from acaulescent *M. flexuosa* to build rafts (Balick 1979).

The Apinayé use the leaves of *Mauritiella armata* for manufacturing baskets, and the stemwood for manufacturing bows (Balick 1988). The stemwood of *M. armata* must have very different physical properties than *M. aculeata* used by the Pumé to manufacture house slats since the soft, spongy stemwood of this last species is inappropriate for making bows. Although the fruit of *M. aculeata* is not widely used

by the Pumé, the Apinayé, the Yanomama, and several mestizo groups in the Peruvian Amazon consume the fruit of several different species of *Mauritiella* (Balick 1988, Anderson 1978, Mejía 1988). In all, there are few references to the use of *Mauritiella* among lowland South Americans to compare with its use among the Pumé (Balick and Beck 1990).

Conclusion

Palms form an integral part of Pumé culture, as they do for many other native and non-native peoples of lowland South America. Some of the future investigations planned among the Pumé are aimed at formally assessing the economic value of palms particularly *Mauritia flexuosa*. Given the importance of this palm to the Pumé for thatching and fiber, the levels of extraction could have a significant effect upon nutrient cycling and ecosystem regeneration. The cumulative effects of human exploitation patterns on tropical ecosystems are an issue of both theoretical and practical importance.

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