The Names and Uses of Palms Among a Tribe of Yanomama Indians

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Abstract

This paper presents an examination of 20 of the major palm species utilized by a tribe of Yanomama Indians, the so-called Xiriana-teri, in the north of Amazonas State, Brazil. The Indian, Brazilian, and scientific names for each species are provided. The Xiriana-teri's uses of palms are examined in detail, and it is found that they utilize palms to a far lesser degree than do many other South American tribes. To a large extent this is due to the material aspect of their culture, which is rudimentary in comparison with other forest tribes. But the author maintains that, to some extent, palms are utilized to a lesser degree by the Xiriana-teri due to past overexploitation of economically important species in the area adjacent to the village.

The Yanomama Indians are a loosely defined tribal group occurring in the frontier region between Venezuela and Brazil. Their 150 or more villages are scattered throughout an area of roughly 150,000 sq. km., bordered by the equator and latitude 5° North, and by longitudes 61° and 66°30′ West (Spielman, Migliazza, & Neel, 1974). The Yanomama represent one of the least acculturated, relatively large tribal groups remaining in South America. Only in the past 20 years have permanent contacts with the outside world become established.

This study is concerned with one of the Yanomama tribes, the so-called "Xiriana-teri" in the State of Amazonas, Brazil, adjacent to the Venezuelan frontier (Latitude 1°44′ North, Longitude 63°39′ West). The village is located on the west bank of the Rio Toototobi,[1] a tributary of the Rio Demení, itself a major tributary of the Rio Negro. The area surrounding the village is less than 200 m above sea level and is covered continuously by tall tropical forest: aerial reconnaissance revealed no sign of savannas, which cover extensive areas some 250 kilometers to the East in the Brazilian Territory of Roraima. The Xiriana-teri have occupied their present location at Toototobi for at least 15 years, since the arrival of a Protestant missionary and his family. While contacts with the outside world have made some impression on the material and spiritual lives of the Indians, their traditional culture appears to have remained largely intact. Other than body painting, no pictorial art is practiced among the Xiriana-teri. Ceramic work is not produced, and weaving is relatively uncommon. In its material aspects, the culture of the Xiriana-teri is on a simple, predominantly subsistence level, an observation which holds true for virtually all of the Yanomama tribes (Chagnon, 1968).

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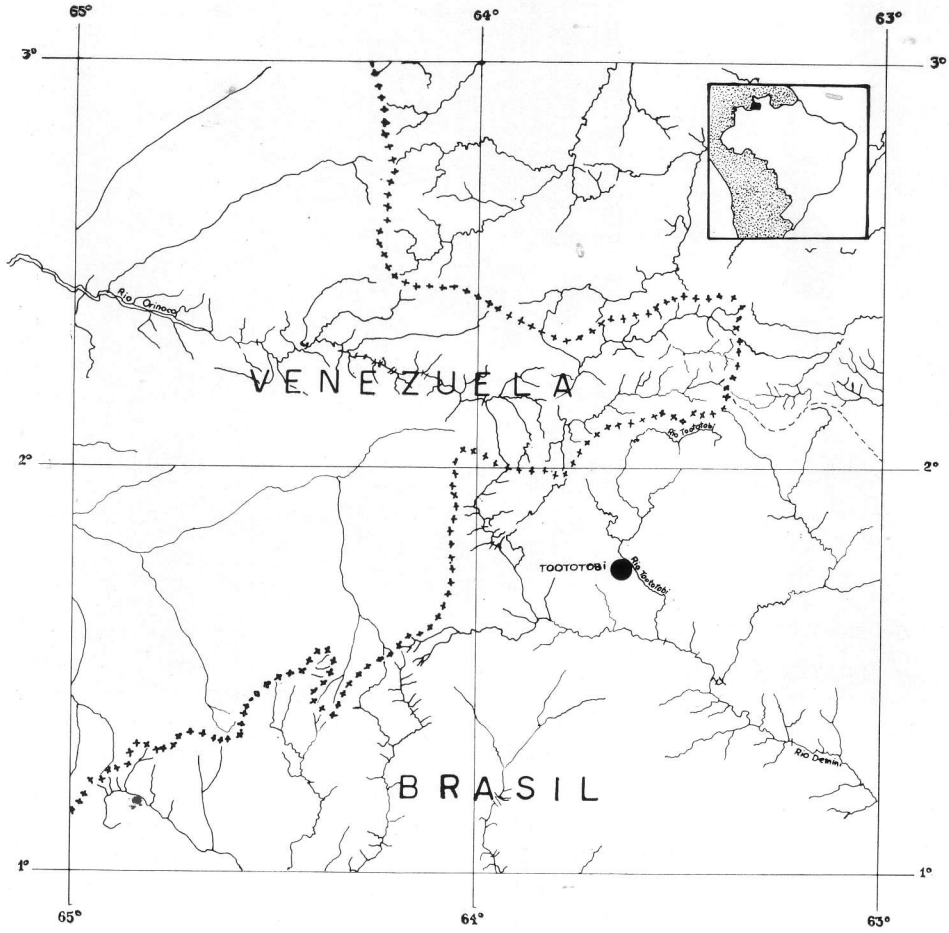
[1] The river and the village have been occasionally referred to as "Totobi" in the literature (e.g. Schultes and Holmstedt, 1968). However, "Tootobi" is the name encountered in the more recent literature (e.g. Spielman *et al.*, 1974), and it is utilized in reference to the river in the 1972 edition of the *Carta do Brasil ao Milionésimo* (I.B.G.E., Rio de Janeiro).



1. Map showing location of Toototobi.

Methods and Results

With the exception of studies by Schultes and Holmstedt (1968) and Cocco (1972), virtually no ethnobotanical work on the Yanomama appears in the literature. While there are a number of valuable references on the uses of palms among Amazonian Indians (e.g. Wallace, 1853; Levi-Strauss, 1950; Civrieux, 1957; Wilbert, 1976), only passing commentaries can be found concerning palm uses among the Yanomama (Chagnon, 1968; Cocco, 1972; Smole, 1976). Present lack of information on the role of palms in the lives of the Yanomama is the result of the relative isolation of this indigenous group, combined with the formidable difficulties involved in obtaining botanical specimens of palms for identification. The situation is hardly improved by the confused taxonomic state of a number of large palm genera that are typically Amazonian, such as *Astrocaryum*, *Bactris*, and *Euterpe*.

The lack of knowledge concerning ethnobotany and taxonomy of Amazon-

2. Aerial view of Xiriana-teri village at Toototobi. The large circular structure in the background is the *moloca*, a communal dwelling found in many Amazonian tribes.

ian palms prompted me to focus on palms during a short visit to Toototobi in August, 1975. I made intensive collections of botanical specimens in the vicinity of the village; due to time limitations, I only collected those species of palms that were unknown to me. The original botanical specimens have been deposited in the herbarium of the Instituto Nacional de Pesquisas da Amazônia (INPA); duplicates, when obtained, were sent to the L. H. Bailey Hortorium in Ithaca, New York, U.S.A.

One of the greatest problems which I experienced while collecting palms at Toototobi arose from the seemingly innocuous fact that the Indians have no word, and apparently no concept, equivalent to our notion of the word "palm." The Xiriana-teri divide plants into two major groups: one group, denoted by the suffix *-hiki*, represents dicotyledonous trees; the other group, denoted by the suffix *-siki*, represents cryptogams as well as phanerogams, and among the latter includes trees, vines, and herbs that are predominantly monocotyledons (e.g. Palmae, Gramineae, Marantaceae, Araceae, etc.), as well as some lianous or herbaceous dicotyledons (such as cotton). Undoubtedly the Xiriana-teri employ a sophisticated and complex scheme of plant classification, as is suggested by Taylor's study (1974) of animal classifications among a nearby tribe of the Yanomama.

In any case, time limitations prevented me from probing deeply into the complexities of Xiriana-teri plant taxonomy. Lacking a word for palms, I was forced to ask my Indian informants to show me every plant that fell into their *-siki* cate-

gory. My companion on the trip, Dr. Ghillean Prance of the New York Botanical Garden, adapted a more efficient scheme for amassing a formidable collection of mushrooms: he simply asked the Indians to obtain the specimens for him. Unfortunately, palms are not so easy to collect: upon my request to collect a number of plants in the *-siki* category, the Indians judiciously ignored the palms but managed to bring me a fine collection of bamboos and vines.

In addition to collecting the palms, I obtained as much information as possible concerning their names and uses among the Xiriana-teri. Although probably not all of the palms which occur in the vicinity of Toototobi are included in this article, certainly the species most important economically are. The results are summarized in Table 1.

Discussion

Food and drink.

Chagnon (1968) states that of all the vegetable foods gathered in the wild by the Yanomama, palm fruits are by far the most significant. This appears to be true for the Xiriana-teri, who depend on a large number of palm species to provide edible fruits. (The Xiriana-teri refer to fruits, seeds and seedlings as "*moki.*") Probably the most important is *Bactris gasipaes* (*Guiliema gasipaes*), a palm cultivated throughout tropical America. This particular species is not native to Amazônia and has not been found in the wild; it may have had its origin in the Andes of Colombia, where a strikingly similar species occurs (unpublished field observations, H. E. Moore, Jr., and A. B. Anderson, 1974). The fruits of *B. gasipaes* are boiled and have an excellent, starchy taste. The harvest occurs in February or March, and unfortunately there were no trees in fruit during the time of my visit (August).

Another popular fruit among the Xiriana-teri is provided by *Orbignya spectabilis*; during my visit, each family group had a sizeable supply which served for snacks throughout the day. The fruits of this species are eaten raw.

Mauritia flexuosa and *M. aculeata* also provide edible fruits that are especially sought after by the Indians. They soak the fruits of these species in water for a few days, after which the outer scales are easily scraped off, exposing a thin layer of flesh that tastes rather like cheese. The Xiriana-teri also prepare juices from the fruits of these species. However, *M. flexuosa* and *M. aculeata* have become somewhat depleted in the vicinity of Toototobi, apparently due to intensive exploitation by the Indians. The fruits of *M. flexuosa* are reported to be highly nutritious, along with those of *Astrocaryum tumuca*, which are also popular among the Xiriana-teri: the fruits of both species have a vitamin A content three times that of carrots (Pechnik, Mattoso, Chaves, & Borges, 1947).

Probably no month passes without a harvest of one or another of the many species of palms that the Xiriana-teri depend upon for edible fruits. Yet they are apparently less imaginative than other Amazonian tribes in their repertoire of food and drink derived from palm fruits. Wallace (1853) reported that in the Rio Negro region of Brazil, Indians extract a clear, inodorous oil from *Oenocarpus bacaba* fruits; the oil is used for cooking and also occasionally for lighting lamps. The use of palm oils appears to be a common phenomenon among Amazonian tribes according to Levi-Strauss (1950), who also found that, in addition to medicinal uses, palm oils are often mixed with pigments to

Table 1. The names and uses of palms among the Xiriana-teri.

INDIAN NAME	BRAZILIAN NAME	SCIENTIFIC NAME	USES						
			Edible Fruits	Edible Palm Hearts	Roof Thatching	Lumber	Bows	Arrow Points	Other Uses
Dorea-	Caraná or Caranaí	Mauritia aculeata H.B.K.	X						
Liõkoho-	Buritĺ	Mauritia flexuosa L.	X						
Manaka-	Paxiuba	Socratea exorrhiza (Mart.) H. Wendl.				X	X	X	
Bahanaki-	Ubím	Geonoma baculifera (Poit.) Kunth			X				X
Wanama-	Ubím	Geonoma deversa (Poit.) Kunth			X			X	X
Kunuana-	Palha vermelha	Orbignya spectabilis (Mart.) Burret	X			X		X	
Okolaxi-	Inajá	Maximiliana martiana H. Karst. (=M. regia Mart.)	X	X					
Yoi-	Urucuri	Scheelea martiana Burret	X	X					
Ai-amo-		Astrocaryum aff. aculeatum G.F.W. Meyer	X	X				X	X
Mahã-	Murumuru	Astrocaryum murumuru Mart.	X	X					
Uri-	Tucumã	Astrocaryum tucuma Mart.	X	X					
Xohomo-		Astrocaryum sp.	X	X					
Lasa-	Pupunha	Bactris gasipaes H.B.K.	X	X			X	X	
Mokamo-	Maraja	Bactris sp.	X	X				X	
Yarimo-	Marajá	Bactris sp.	X	X		X		X	
Yoroa-	Marajá	Bactris sp.	X	X		X		X	
Yoyoma-	Marajá	Bactris sp.	X	X					
Hokoma-	Bacaba	Oenocarpus bacaba Mart.	X	X			X	X	X
Koanani-	Patauá	Jessenia bataua (Mart.) Burret	X	X			X	X	X
Maima-	Açaí	Euterpe precatoria Mart.	X	X		X			X

produce body paints. Yet apparently little use is made of palm oils among the Xiriana-teri. They do extract oil by boiling the fruits of *Mauritia flexuosa*, which is then mixed with water and rubbed on cakes of baked cassava bread.

In the Rio Negro region, Wallace (1853) discovered that the fruits of *Bactris gasipaes* are ground into a kind of flour which is then either roasted to make cakes or allowed to ferment in water, this latter process producing a creamy wine. According to Levi-Strauss (1950), Amazonian Indians commonly derive beverages or mushes from such species as *Euterpe precatoria*, *Oenocarpus bacaba*, *Jessenia bataua*, *Mauritia flexuosa* and *Maximiliana martiana* (*M. regia*). Yet although these species occur in the vicinity of Toototobi, such beverages or mushes are practically unknown among the Xiriana-teri.

Throughout tropical America, species of the genus *Euterpe* provide highly esteemed hearts of palm, generally referred to as "*palmito*." Among the Xiriana-teri, palm hearts (referred to as "*amoki*") from the species *Euterpe precatoria* are considered superior. Other species from related genera (subfamily Arecoidae) are likewise favored for palm hearts: *Jessenia bataua* and *Oenocarpus bacaba*. The cultivated *Bactris gasipaes* is also popular. In fact, the Xiriana-teri eat the palm hearts of most of the local species. Although extraction of the heart kills the palm, this does not appear to deter the Indians in their avid pursuit of palm hearts. Furthermore, the missionary at Toototobi informed me that, with the exception of the cultivated *B. gasipaes*, the Indians usually obtain edible fruits, as well as hearts, simply by cutting down the palms.

Among other tribes of the Yanomama, palms provide an additional, albeit less direct, source of food. Chagnon (1968: 30–31) describes the Yanomama's use of decaying palm trunks as sites for collecting edible insect larvae:

> The Yanomamö come very close to practicing "animal domestication" in their techniques of exploiting this food. They deliberately cut the palm down in order to provide fodder for the insect. When they cut the tree, they also eat the heart of the palm, a very delicious, crunchy vegetable that slightly resembles the taste of celery hearts. One palm we cut yielded an edible heart of about 50 pounds. After the pith has been allowed to decay for several months, it contains numerous large, fat, white grubs. The pith is dug out of the tree with sticks, broken open by hand, and the grubs extracted. Each grub is bitten behind his squirming head, and the head and intestines removed simply by pulling the body away with the teeth. If a grub gets damaged in the process of extracting it, the parts are eaten raw on the spot. A fair-sized palm tree will yield three or four pounds of grubs, some of them as large as a mouse. The grubs are wrapped in small packages of leaves and placed in the hot coals to roast. . . . I could never bring myself to eat one, but an experienced missionary told me they tasted very much like bacon . . . . The discarded seeds of palm fruits also get infected with much smaller grubs. The Yanomamö break the hard seeds open with a rock, extract the grub, and prepare it in the above manner.

Chagnon based his observations on tribes of Yanomama to the North, primarily in Venezuela. When we asked the Indians at Toototobi if they practiced this form of "animal domestica-

tion," we continually received negative responses. According to the missionary, it is basically contrary to the Xiriana-teri way of thinking to domesticate anything except an occasional pet.

Construction.

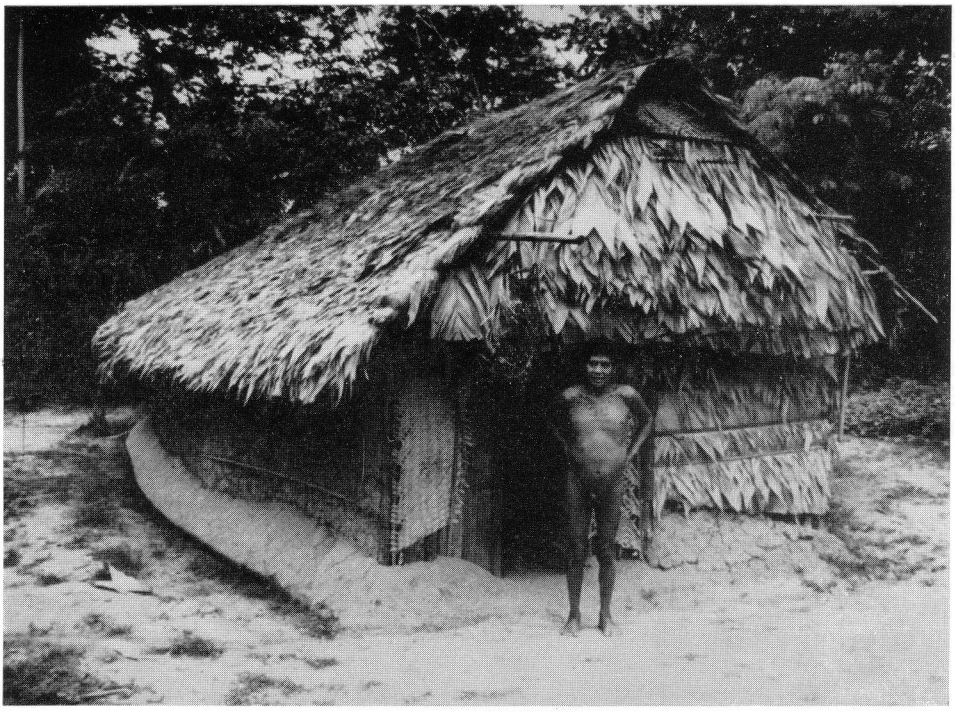
Among the Xiriana-teri, the palm that supplies the most valuable lumber is *Euterpe precatoria*. The wood of this species is durable yet soft and easy to work: it is used primarily to make wall slats, table tops, and shelves. *Socratea exorrhiza* is favored for making roof slats, although *Orbignya spectabilis* and two species of *Bactris* (*yarino-siki* and *yoroa-siki*) are occasionally used for this purpose as well. Compared with other tribes, however, the Xiriana-teri do not rely heavily on palms for construction purposes. Among other Amazonian Indians, for example, *Socratea exorrhiza* is widely employed for the construction of posts, fences, palisades, floors of canoes, shelves, and seats (Wallace, 1853; Levi-Strauss, 1950). Perhaps this species is not so widely used among the Xiriana-teri due to its scarcity in the forest adjacent to the village.

By far the best source of roof thatching is provided by *Geonoma baculifera*, a fairly common understory palm in the vicinity of Tootototobi (Fig. 3). The Xiriana-teri also utilize the leaves of *G. deversa* for roof thatching, although this species is considerably less desirable. The leaves of most *Geonoma* species are not very durable, but, according to Braun (1968), they are used by most of the Indian tribes in Venezuela because they are present in abundance, and this appears to be the case among tribes in Brazil as well. Wallace (1853) referred to a species of *Geonoma*, most likely *G. baculifera*, which occurs abundantly in flooded areas adjacent to the Rio Negro; this species was and probably still is much used for thatching by Indians in this region.

Miscellaneous uses.

The Xiriana-teri use a variety of palms to make bows and arrow points. Four species are used to make bows, which I list here in order of decreasing preference: *Socratea exorrhiza*, *Bactris gasipaes*, *Oenocarpus bacaba*, and *Jessenia bataua*. The first two species, however, are not often used to make bows. *S. exorrhiza* is relatively rare in surrounding forest adjacent to Tootototobi, and its wood is considered even more valuable for construction purposes. *B. gasipaes*, which Wallace (1853) considered to have the most durable wood of all the palms, is cultivated and regarded as extremely valuable for its fruit. Only *O. bacaba* and *J. bataua* occur commonly in the adjacent forest, and probably as a result the Indians usually make their bows from the wood of these species (Fig. 4). The fashioning of a bow is a painstaking process requiring a couple of days. Among the Xiriana-teri, metal knives serve as cutting tools, probably having replaced the lower mandible of a peccary (*Tayassu* spp.) which other tribes of Yanomama use to fashion bows (Chagnon, 1968). The final product is strong, durable, and very difficult to draw.

The Xiriana-teri make arrow points from 10 species of palms (Table 1). *Socratea exorrhiza* once again appears to be the most favored species for this purpose, although certainly not the most commonly used. The arrow point is usually fashioned from a splinter of palm wood. Lateral grooves are sometimes cut into the arrow point along its length, which cause the point to break off in the body of the target. The arrow points are coated with a poison derived from the resin of *Virola thei-*



3. Dwelling with roof thatching made from leaves of *bahanaki-siki* (*Geonoma baculifera*); weaving adjacent to door made from leaves of *okolaxi-siki* (*Maximiliana martiana* [*M. regia*]).

odora (Myristicaceae).[2] Arrow points coated with this poison are especially effective for hunting monkeys, which tend to cling to the branches when wounded; the poison acts to relax their muscles and eventually the monkeys fall to the ground.

While on the subject of weapons, I was informed that the trunk of *Jessenia bataua* is still occasionally used by the Xiriana-teri to make fighting clubs; the dense wood of this palm must make such clubs terribly effective. According to Chagnon (1968), club fights are fairly common among the Yanomama, usually resulting from arguments over women.

[2] The resin of this species is also the essential ingredient used in the preparation of a hallucinagenic snuff (Schultes and Holmstedt, 1968).

The Xiriana-teri often use palm leaves to weave makeshift baskets: *Geonoma baculifera*, *G. deversa*, and *Jessenia bataua* are favored for this purpose. The leaves of *Maximiliana martiana* (*M. regia*) (Fig. 3) and *J. bataua* (Fig. 4) are woven together and placed on the walls and doors of dwellings, apparently for decorative purposes; woven screens made from the leaves of these species serve to demarcate familial areas within the communal *maloca*. This, in addition to roof thatching, apparently represents the sum total of uses for which palm fibers are employed among the Xiriana-teri. I shall discuss this observation further in the conclusion.

In terms of bodily decor, the uses of palms are rather limited as well. The Xiriana-teri paint their bodies on ceremonial occasions, but only rarely do

4. Bow being made from trunk of *koanani-siki* (*Jessenia bataua*); weaving at left made from leaves of same species.

they use dyes obtained from palms: the fruits of *Jessenia bataua* produce a dark-blue dye, and those of *Euterpe precatoria* a black dye. The Xiriana-teri know of neighboring tribes that fashion rings from the fruits of what is apparently *Astrocaryum* aff. *aculeatum*, but they themselves do not follow the practice, although this species is common in their area.

Again one is struck by the lack of palm uses among the Xiriana-teri. Wallace (1853) reported that in several Amazonian tribes the spines of *Bactris gasipaes* were used to make tattoos; soot produced by burning pitch was then rubbed into the wounds, producing an indelible, bluish stain. Throughout the Amazon Basin, species of *Astrocaryum* are widely employed for purposes of bodily decor: the black, polished fruits are fashioned into beads, earrings, and other types of ornaments (Levi-Strauss, 1950).

Finally, during my last day among the Xiriana-teri, on the morning before a festive reunion of the tribe, the Indians were busy sweeping the ground floor of their *maloca* with the stiff inflorescences of *Euterpe precatoria*, which are ideally suited for this purpose. Apparently this practice is widespread: I have observed the inflorescences of another species of *Euterpe* employed for a similar purpose by black inhabitants of the Chocó rain forest on the Pacific coast of Colombia.

Conclusion

The material and spiritual importance of palms in the lives of South American Indians has been documented by numerous authors, including Wallace (1853), Levi-Strauss (1950), Civrieux (1957), Braun (1968), Schultes (1974) and Wilbert (1976). While palms are obviously of great importance among the Xiriana-teri, particularly in their diet, these Indians exploit palms to a far lesser degree than do many other South American tribes. To a large extent this is because the material aspect of their culture is rudimentary by comparison with other forest tribes. But the lack of palm utilization by the Xiriana-teri may also be due to a scarcity of palms in the vicinity of Toototobi.

For example, two species that are particularly valuable among tribes throughout Amazônia—*Mauritia flexuosa* and *Socratea exorrhiza*—are not common in the vicinty of Toototobi, and the missionary there informed me that both species have become depleted in recent years. It is likely that these and perhaps other palm species have been overexploited during the relatively long period (at least 15 years) that the Xiriana-teri have resided at Toototobi. As noted above, the Indians usually cut down wild palms in order to collect fruits or palm hearts; according to the missionary, this practice has definitely contributed to the scarcity of certain palm species in the vicinity of Toototobi. Cocco (1972) suggests that palms are scarce among other Yanomama tribes for precisely the same reason. The pressures that an Indian tribe exerts on its local palm resources can be appreciated by considering that an estimated minimum of 39,000 palm leaves are needed for roof thatching in a typical Waika Indian village in Venezuela (Braun, 1968); furthermore, these leaves are by no means very durable and must be replaced every few years.

Such pressures on local resources can be an important factor in explaining why many tribes of the Amazonian terra firme are or have been traditionally nomadic, settling at a given site for a few years and then moving on (Meggers, 1971). Among the Xiriana-teri, however, the advantages of maintaining contact with the missionary (who supplies

medicine, machetes, cooking utensils etc.) appear to outweigh whatever disadvantages are incurred by overexploitation of local resources. Furthermore, the price of overexploitation may not be particularly high among the Xiriana-teri.

Consider the relative lack of utilization of palm fibers by the Xiriana-teri. Among the majority of tribes throughout Northern South America, the principal provider of fibers is the ubiquitous *Mauritia flexuosa*. The Warao Indians of the Lower Orinoco, for example, utilize the fibers from this species to manufacture clothes, ornaments, hammocks, fishing tackle, baskets, fans, trays and a host of other items (Levi-Strauss, 1950; Wilbert, 1976). The Warao's extensive exploitation of *M. flexuosa* is no doubt the result of the abundance of this species in the Lower Orinoco, where virtually pure stands occur over immense areas. In contrast, while pure stands of *M. flexuosa* do occur in the vicinty of Toototobi, these are relatively small and scattered. Probably as a result, the Xiriana-teri utilize other plants to provide vegetal fibers. In addition to the cultivation of cotton, the Indians obtain fibers from a species of Araceae, *Cecropia* sp. (Moraceae), a species of Cyclanthaceae, a species of Annonaceae, *Couratari* sp. (Lecythidaceae) etc. The fibers from these plants are used to produce clothing, baskets, bags, twine and other articles, which Indians elsewhere produce from the fibers of palms. The ability of the Xiriana-teri to discover and exploit alternative sources of technology reveals a flexibility which they share with native peoples throughout tropical South America, a point made by Levi-Strauss (1950: 466–467):

> In tropical South America, the general cultural levels are determined historically rather than by the local plant resources, for no fundamental culture traits appear to depend directly on the botanical environment. . . . The striking fact is that, far from depending on the natural environment, South American Indians throughout the tropical area show exceptional ability to discover substitutes wherever a vegetal species is lacking.

Acknowledgments

Field work for this paper was carried out while the author held a fellowship from the Thomas J. Watson Foundation in Providence, Rhode Island, U.S.A. The trip to Toototobi was arranged by the National Film Board of Canada in Montreal. The missionary at Toototobi, Mr. Bruce Hartman, provided considerable information that proved invaluable in writing this paper. Two INPA researchers, Dr. Robert Pinger and Mr. Inocencio de Souza Gorayeb, obtained further information during subsequent trips to the tribe. Dr. Harold E. Moore, Jr., helped with the identification of palm specimens at Bailey Hortorium. Finally, the manuscript was reviewed by Dr. Ghillean Prance, New York Botanical Garden, and Dr. Nigel Smith, INPA.

The author wishes to express his gratitude to all of the persons and institutions mentioned above.

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NATURAL HISTORY NOTES

The freezing weather at Daytona Beach, Florida, in January, 1977, when a minimum temperature of 23°F occurred at the writer's garden, resulted in the death of many tropical palms, conspicuous among them 30 adult fishtail palms of the multiple-stem species *Caryota mitis*. Virtually all the tallest stems (trunks), numbering over 100, were freeze-killed. Of these dead stems, about a third had flowered and fruited before the freeze, some of them for several consecutive years. The roots of these cluster-forming palms were not frozen, and hence new growth sprang up after warmer weather returned; and barring hard freezes during the next several years, these new shoots will begin forming trunks within three or four years.

Some 20 of the adult trunks, all ostensibly stone dead, have produced pristine inflorescences at intervals of from three months after the freeze to as much as six months afterward. Singular indeed to see a wretched brown pole, with a collapsed crown of foliage, put forth one or more vivid green inflorescences from leaf axils below the brown dead fruits still hanging from the previous year! An obvious speculation is that the palms were shocked by the freeze into trying to perpetuate the species. What appears to be phenomenal, however, is doubtless not a phenomenon at all, but readily explicable by a plant anatomist or other botanical scientist versed in the mysteries of palm anatomy. It may not be news that freeze-shock sometimes causes plants to attempt reproduction of themselves even if futile, but it is nevertheless startling to observe a green inflorescence emerging from a palm trunk that has been hopelessly dead in all its parts, to all appearances, for half a year. A wasted effort, for no following fruits will mature to the point of seed production. Unluckily black-and-white photographs do not serve to distinguish between dead and living inflorescences of the caryotas under discussion, and so the affected palms are not illustrated in graphic support of this note. The writer does have, however, color slides and also prints that plainly reveal the striking contrasts.

Just how does a long-dead palm trunk put forth a vivid green inflorescence? It only indicates that some parts may survive independently, if only temporarily, the death of a large palm.

Flowering, after apparent death of a stem, has occurred at my location in