

# Notes on the Palms of Amazônia Legal

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## ABSTRACT

New records, range extensions, and notes of interest are given for palms occurring in the Amazônia Legal region of Brazil.

Amazônia Legal is the name given to Brazil's share of the Amazon basin. It includes the Federal Territories of Roraima and Amapá, the States of Acre, Pará, Rondônia, and parts of Goiás, Maranhão and Mato Grosso (Fig. 1). It is a vast area, extending at its widest 3,000 km from west to east and 2,500 km from north to south. Much of the area is tropical lowland rainforest, but there are extensive savannas in the northern and southern parts.

During the nineteenth century there were various botanists studying the palms of the Amazon region, starting with Martius (1823-1853). This was followed by significant contributions by Wallace

(1853), Spruce (1871), Trail (1876, 1877a, b), Drude (1882) and many works by Barbosa Rodrigues, which culminated in Sertum Palmarum Brasiliensium (1903). There has been less activity this century, with the exception of Hawkes (1952a, b) and Bondar (1964). Recently, Balick et al. (1982) have provided a check list of palms in the region.

The present paper presents new records, range extensions, and notes of interest on the palms collected over the last few years especially by Brazilian and foreign collectors as part of Projeto Flora Amazônica (Prance et al. 1984). The order of sub-families, tribes, and genera is taken from Dransfield and Uhl (1986).

## Coryphoideae—Corypheae

Of the 31 genera of this tribe, 3 occur in Amazônia Legal; *Chelyocarpus*, *Itaya* and *Copernicia*.

*Chelyocarpus* is a genus of three species, two of which occur in western Brazil. *Chelyocarpus chuco* (Mart.) Moore is known from Bolivia and Brazil, in the area of the Rio Madeira. The second species, *C. ulei* Dammer, had never been collected in the wild in Brazil, although reported to occur there by Moore (1972). There are, however, two collections from nearby Bolivia and it is well known from Amazonian Peru.

The monotypic *Itaya* was previously only known from one small area of Peru near Iquitos (Moore 1972). Here the population of *I. amicum* Moore was reported to number less than 100 individuals, and was thought to be in danger of extinction



1. Amazônia Legal of Brazil.



2. *Copernicia prunifera* in Mato Grosso. 3. *Iriartella setigera* near Manaus.

(Moore 1977). However, this species has now been collected from western Brazil on the Rio Javari. This represents a range extension of approximately 200 km, and it is to be expected, and hoped, that this rare and interesting palm occurs in the intervening area.

*Copernicia prunifera* (Miller) Moore, the carnauba wax palm, was previously only known from northeastern Brazil (Maranhão, Ceara, Piauí, Paraíba, Rio Grande do Norte, Pernambuco, Sergipe and Alagoas). Dahlgren and Glassman (1961, plate II) show the distribution of this species (but note that Dahlgren and Glassman use the incorrect name, *C. cerifera* (Arruda da Camara) Mart.). However, this species has now been collected in the northern part of Mato Grosso (Fig. 2). This is a range extension of almost 800 km from its nearest previously known locality, and is geographically intermediate between the range

of *C. prunifera* in northeastern Brazil and *C. alba* in southwestern Brazil. This emphasizes the probable relatedness of the two species, even though Dahlgren and Glassman placed them in different subgenera.

#### Calamoideae—Lepidocaryeae

Three neotropical genera, all found in Brazil, make up this tribe; *Mauritia*, *Mauritiella*, and *Lepidocaryum*. This tribe needs systematic work, but in *Mauritia* there appear to be just two species; *M. flexuosa* L. (Fig. 4) and *M. carana* Wallace (Fig. 5). The latter, easily distinguished from *M. flexuosa* by its fibrous leaf sheaths, was reported by Wallace (1853) to grow in areas adjoining the Rio Negro and Upper Orinoco, preferring dry catinga forests or sandy margins of streams. It seems to grow in two distinct habitats,



4. *Mauritia flexuosa* near Manaus, showing non-fibrous leaf sheaths. 5. *Mauritia carana* near Manaus, showing fibrous leaf sheaths.

in swampy areas in tall forest and also in campinarana forest. Both species are common near Manaus.

#### Ceroxyloideae—Hyophorbeae

The predominantly Central American *Chamaedorea* is represented in Brazil by probably just two species from Acre and Rondônia, but previously neither had been much collected. *Chamaedorea integrifolia* (Trail) Dammer and *C. lanceolata* (R. & P.) Kunth (synonymous with *C. pinnatifrons* (Jacq.) Oersted) are now relatively well collected. A specimen representing *Chamaedorea* from Serra do Cachimbo, on the border of Mato Grosso and Pará, represents an extraordinary range extension of almost 2,000 km eastwards for this genus in Brazil. The specimen is very similar to *C. lanceolata* (R. & P.) Kunth.

#### Arecoideae—Iriarteae

Species from five of the six genera of this tribe occur in Amazônia Legal. Their correct names are *Socratea exorrhiza* (Mart.) Wendl. (“paxiúba”); *Iriartea deltoidea* R. & P. (“paxiuba barriguda”); *Iriartella setigera* (Mart.) Wendl. (“paxiubinha”); *Wettinia maynensis* Spruce (“paxiuba de macaco”); and *Catoblastus pubescens* (Karst.) Wendl. *Iriartella setigera* (Fig. 3) is a common species in western areas of Amazônia Legal, but a second species from Peru, *Iriartella stenocarpa* Burret just makes it into Brazil in extreme western Acre. *Wettinia* and *Catoblastus* are other typical Andean genera known from western Brazil.

#### Arecoideae—Areceae

Six genera of this, the largest tribe of palms, occur in Amazônia Legal; *Mani-*



6. *Manicaria saccifera* near Manaus. 7. *Leopoldinia pulchra* near Manaus.

*caria*, *Leopoldinia*, *Euterpe*, *Oenocarpus*, *Jessenia*, and *Hyospathe*. *Prestoea* possibly occurs in Brazil, and Barbosa Rodrigues (1903) mentions it in passing.

*Manicaria*, the common and well-known "bussu," is distributed up the Amazon valley from Belém to above Manaus. Throughout its range *M. saccifera* (Fig. 6) was always known to occur near rivers at low elevations, and never above 200 m. In Venezuela, close to the border with Brazil, *M. saccifera* has now been collected at 1,200 m elevation on Cerro Marahuaca. This is an extraordinary extension in the range of elevation of this species, and in view of this discovery there is every reason to suppose that it may be found on some of the Brazilian tepuis. It is known from the base of Serra Aracá.

*Leopoldinia pulchra* (Fig. 7) is known from Manaus north up the Rio Negro into Venezuela, and also from the Trombetas

and Tapajos (Barbosa Rodrigues 1903; Spruce 1871), usually on black water rivers and north of the Amazon (Wallace 1853). This species has now been collected 400 km south of Manaus, where the Transamazonica Highway crosses the Rio Marmelos, east of Humaitá.

There are at least six species of *Euterpe* from Amazônia Legal, but some species are poorly known. *Euterpe precatória* Mart. and *E. oleracea* Mart. are familiar species. *Euterpe catinga* Wallace has been collected several times, and it now seems that the following are synonyms of this species; *E. caatinga* Barbosa Rodrigues, *E. controversa* Barbosa Rodrigues, and *E. catinga* var. *aurantiaca* Drude. Wessels Boer (1972) also thought that *E. aurantiaca* Moore from 1,500 m on Cerro Sipapo in Venezuela should be included here. If so, this would mean a range in elevation of 100 to 1,500 m for *E. catinga*. In view



8. *Euterpe erubescens* on Serra da Neblina, with *Geonoma appuniana* in background. 9. *Phytelephas macrocarpa* near Tabatinga.

of what is now known about *Manicaria*, perhaps this range is not so unusual as Wessels Boer suggested. *Euterpe erubescens* Moore, previously only known from the Venezuelan tepuis, has now been collected on Serra Aracá. It also occurs on Serra da Neblina, on the border with Venezuela, where it grows at 2,000 m with *Geonoma appuniana* Spruce (Fig. 8).

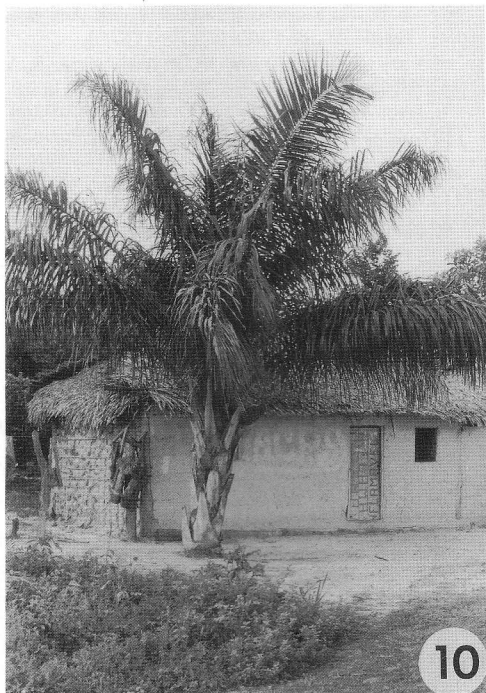
The known distribution of various species of *Jessenia* and *Oenocarpus* has recently been expanded (Balick 1986). *Oenocarpus distichus* Mart. is well-known from Pará and Maranhão, and has now been recorded from northern Goiás. *Oenocarpus discolor* Barb. Rodr. remains known only from the type locality in Mato Grosso. The third distichous-leaved species, *O. tarapabo* Mart. is known from Bolivia, and may also be present in Brazil (Balick 1986). *Oenocarpus minor* subsp. *minor* (Burret)

Balick, previously known from a single locality in Manaus, has now been collected near Ruropolis in Pará. A hybrid between *O. minor* and *O. bacaba* has been observed near Manaus, and will be the subject of a forthcoming study (Balick et al., in prep.).

#### Arecoideae—Cocoeae

Recent collecting has greatly extended the known range of *Barcella odora* (Trail) Drude. Henderson (1986) reported how this species is now known over a 400 km area north of the Rio Negro, being especially abundant in campinaranas.

*Markleya dahlgreniana* Bondar (Fig. 10) is now known to be a hybrid between *Orbignya phalerata* Mart. and *Maximiliana maripa* (Correa de Serra) Drude. Previously only known from the type locality in Pará, it has now been collected in



10. *Markleya dahlgreniana*. 11.  $\times$ *Attabignya minarum*.

other localities in Pará, Maranhão, and also in Suriname (Balick et al., in prep.). A second hybrid genus,  $\times$ *Attabignya* (Fig. 11) has recently been described (Balick et al., 1987).

According to Barbosa Rodrigues (1903) *Aiphanes* spp. occur on the Rio Javari, but they have apparently not been recollected.

### Arecoideae—Geonomeae

Two genera of this tribe are known in Amazônia Legal: *Geonoma* and *Pholidostachys*. *Geonoma* is ubiquitous in Amazônia Legal. *Pholidostachys synanthera* (Mart.) Moore was first collected by Trail (1876) in Brazil as *Calyptronoma robusta*, "in sylvis primaevis ad fl. Javary." It has only been recollected once since on the Rio Javari. This species is another example

of an Andean palm just reaching western Brazil.

A new species of *Asterogyne*, similar to *A. spicata* (Moore) Boer has recently been collected in French Guiana (de Granville & Henderson, in prep.), just over the border from Amapá in French Guiana. It would not be surprising if this species turned up in Brazil.

### Phytelephantoideae

*Phytelephas macrocarpa* R. & P. is known from Acre, and also from near Tabatinga in Amazonas (Fig. 9). It is cultivated in the grounds of the Museu Goeldi, from seed collected in Acre. The other common eastern Andean species, *Phytelephas microcarpa* R. & P., is not yet recorded for Brazil, but is very common in Ecuadorean and Peruvian Amazonas.

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## LITERATURE CITED

- BALICK, M. J. 1986. Systematics and economic botany of the *Jessenia-Oenocarpus* (Palmae) complex. *Adv. Econ. Bot.* 3: 1-140.
- , A. B. ANDERSON, AND M. F. DA SILVA. 1982. Palm taxonomy in Brazilian Amazônia: the state of systematic collections in regional herbaria. *Brittonia* 34: 463-477.
- , ——— AND J. T. DE MEDEIROS-COSTA. 1987. Hybridization in the Babassu palm complex. II. *Attalea compta* × *Orbignya oleifera* (Palmae). *Brittonia* 39(1): 26-36.
- BARBOSA RODRIGUES, J. 1903. *Sertum Palmarum Brasiliensium*. 2 vols. Brussels.
- BONDAR, G. 1964. *Palmeiras do Brasil*. Instituto de Botânica, São Paulo.
- DAHLGREN, B. E. AND S. F. GLASSMAN. 1961. A revision of the genus *Copernicia*. *Gentes Herb.* 9: 1-40.
- DRANSFIELD J. AND N. W. UHL. 1986. An outline of a classification of palms. *Principes* 30: 3-11.
- DRUDE, O. 1882. Palmae. In: C. F. P. von Martius, *Flora Brasiliensis* 3: 253-584. Munich.
- HAWKES, A. D. 1952a. Studies in Brazilian palms: 2. Bondar's species of Brazilian palms. *Arq. Bot. Estado de São Paulo* 2: 175-178.
- . 1952b. Studies in Brazilian palms: 3. A preliminary check-list of the palms of Brazil. *Arq. Bot. Estado de São Paulo* 2: 179-193.
- HENDERSON, A. 1986. *Barcella odora*. *Principes* 30: 74-76.
- MARTIUS, C. F. P. VON. 1823-1853. *Historia Naturalis Palmarum*. 3 vols. Leipzig.
- MOORE, H. E. 1972. *Chelyocarpus* and its allies *Cryosophila* and *Itaya* (Palmae). *Principes* 16: 67-88.
- . 1977. Endangerment at the specific and generic levels in palms. In: G. T. Prance and T. S. Elias. *Extinction is forever*. New York Botanical Garden.
- PRANCE, G. T., B. W. NELSON, M. F. DA SILVA, AND D. C. DALY. 1984. *Projecto Flora Amazônica: eight years of binational botanical expeditions*. *Acta Amazonica* 14 (1,2, suppl.): 1-29.
- SPRUCE, R. 1871. *Palmae Amazonicae, sive enumeratio palmarum in itinere suo per regiones Americae aequatoriales lectarum*. *J. Linn. Soc. Bot.* 11: 65-183.
- TRAIL, J. H. W. 1876. Descriptions of new species and varieties of palms collected in the valley of the Amazon in north Brazil, in 1874. *J. Bot.* 14: 323-333, 353-359.
- . 1877a. ———. *J. Bot.* 15: 1-10, 40-49, 75-81.
- . 1877b. Some remarks on the synonymy of palms of the Amazon Valley. *J. Bot.* 15: 129-132.
- WALLACE, A. R. 1853. *Palm trees of the Amazon*. J. van Voorst, London.
- WESSELS BOER, J. 1972. *Palmae. The botany of the Guayana Highland—Part IX*. *Mem. New York Bot. Gard.* 23: 89-107.

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