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# A new species of *Astrocaryum* (Palmae) from Acre, Brazil

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## ABSTRACT

KAHN, F. & E. J. LINHARES FERREIRA (1995). A new species of *Astrocaryum* (Palmae) from Acre, Brazil. *Candollea* 50: 321-328. In English, English and French abstracts.

A new species of the genus *Astrocaryum* (Palmae, Arecoideae, Cocoeae) from the western region of Brazilian Amazonia is described. A key including allied species is given.

## RÉSUMÉ

KAHN, F. & E. J. LINHARES FERREIRA (1995). Une nouvelle espèce d'*Astrocaryum* (Palmae) d'Acre, Brésil. *Candollea* 50: 321-328. En anglais, résumés anglais et français.

Une nouvelle espèce du genre *Astrocaryum* (Palmae, Arecoideae, Cocoeae) de la région occidentale de l'Amazonie brésilienne est décrite. Une clé dichotomique permet de la différencier des espèces les plus proches.

**KEY-WORDS:** PALMAE — *Astrocaryum* — Taxonomy — Brazil.

The upper Moa River valley is the westernmost region of Brazil, located at about one hundred air kilometres from Pucallpa, Department of Ucayali, Peru. This tributary of the Jurua River is nearer from the Andes than Iquitos, the capital of Peruvian Amazonia, is. Palm flora in this region includes Subandean genera, such as *Aiphanes*, *Aphandra*, *Catoblastus*, *Chamaedorea*, *Chelyocarpus*, *Dictyocaryum*, *Iriartea*, *Phytelephas*, *Wettinia*, and most Amazonian genera which also occur in the neighbouring Peruvian Amazonia (KAHN & GRANVILLE, 1992; KAHN & MOUSSA, 1994a, b). Four species of *Astrocaryum* have been found along the Moa River valley: *A. chambira* Burret, *A. chonta* Martius, *A. jauari* Martius, and a new species here described.

***Astrocaryum faranae*** F. Kahn & E. Ferreira, *spec. nov.* (Fig. 1-3).

Ab *A. carnosum* Kahn & Millán differt floris pistillati calyce truncato non plicato ad apicem, corolla calyce longiore non plicata ad apicem, aculeatis epicarpium usque 14 mm. longis.

**Type: Brazil.** Upper Moa River, Acre, *Francis Kahn & Farana Moussa 3560* (Holotype CEN; isotypes, G, NY, P).

A *medium-sized, multistemmed* palm, usually 2-3 adult axes together. Stem up to 4 m in height, 18-20 cm in diameter, covered with spiny persistent sheaths of the dead leaves. *Leaves* up to 10; *sheath and petiole* 75-110 cm long, gray-tomentose, adaxial side with gray-tomentose, black, up to 3 cm long spines, abaxial side with flattened, gray to black, 1-10 cm long spines in sparse groups

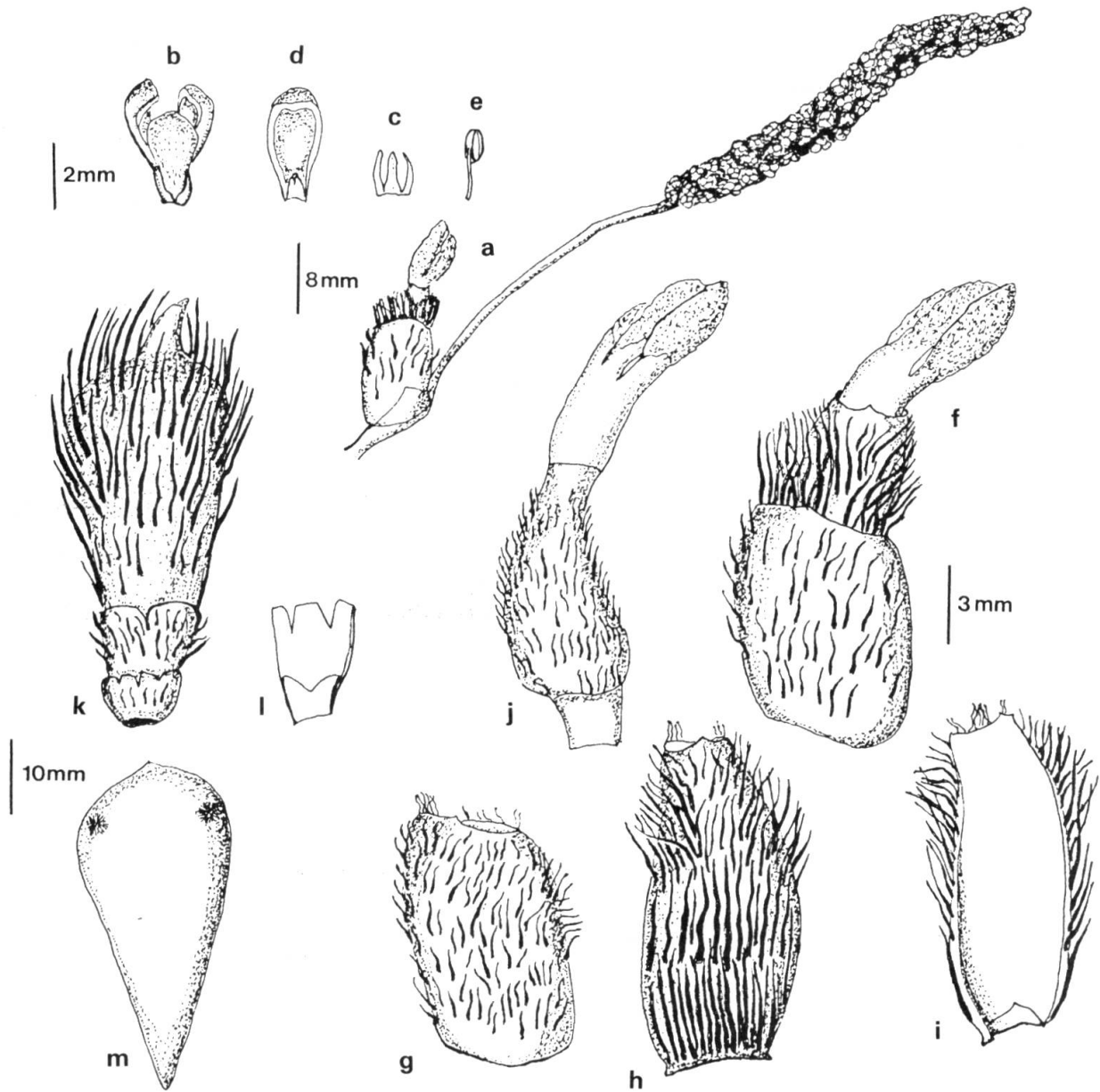


Fig. 1. — *Astrocaryum faranae*: **a**, rachilla; **b**, staminate flower; **c**, sepals; **d**, petal with pistillode at base; **e**, stamen — (**b-e**: same scale); **f**, pistillate flower; **g**, calyx; **h**, corolla; **i**, staminodial ring low and membranous in corolla; **j**, pistil — (**f-j**: same scale); **k**, fruit; **l**, staminodial ring in corolla at fruit maturity; **m**, endocarp — (**k-m**: same scale).



Fig. 2. — *Astrocaryum faranae* in the field (Photo F. Kahn).



Fig. 3. — Inflorescence of *Astrocaryum faranae* (Photo F. Kahn).

of 1-3; *rachis* 315-370 cm long; *pinnae* 91-97 per side, regularly arranged in one plane, abaxial side covered in a white indumentum; *basal pinnae* 64-86 cm long, 0.9-1.6 cm wide; *median pinnae* 94-100 cm long, 4.5-5.1 cm wide; *apical pinnae* 29-39 cm long, 1.2-5 cm wide. *Inflorescence* and *infructescence* erect. *Prophyll* 50 cm long, 10 cm wide, flattened, setose, with brown to black, up to 2 cm long spines. *Peduncular bract* 45-75 cm long, inserted up to 35 cm from the rachis, with dense terete to flattened, brown-tomentose, shiny black, up to 1.5 cm long spines, a few others up to 3 cm long at the apex. *Peduncle* 74-80 cm long, unarmed, green at base, covered in a gray-brown indumentum above the bract insertion; *rachis* 14-35 cm long; *rachillae* many, proximal part 1.5-4.5 cm long, glabrous, distal part bearing staminate flowers 3.0-5.5 cm long, one pistillate flower inserted basally on the rachis, apical part of the rachis without pistillate flowers. *Staminate flower* with *sepals* minute,  $1.2 \pm 0.2$  mm long; *petals* brown,  $2.8 \pm 0.2$  mm long; *stamens* 6; *anthers*  $0.9 \pm 0.1$  mm long; *filaments* up to 1.8 mm long; *pistillode* minute, 3-parted. *Pistillate flower* with *calyx* tubular, truncate, 3-denticulate,  $8.6 \pm 0.8$  to  $11.0 \pm 1.1$  mm long, with brown, 2-3 mm long spines; *corolla* longer than the calyx, obclavate to elongato-urceolate, 3-denticulate,  $13.5 \pm 1.0$  to  $14.3 \pm 1.3$  mm long, with dense, brown to black, 3 mm long spines; *staminodial ring* membranous, irregularly 6-dentate,  $2.7 \pm 0.5$  mm long, often with setae at the margin; pistil conoidal, floccose, with whitish to brown, 2 mm long spines; *stigmas* 3,  $9 \pm 1$  mm long. *Fruit* turbinate to obovate, 1.2-2.4 cm wide in the upper part, 4.2-8.0 cm long including a curved, tapered, 0.6-2.3 cm long rostrum; *epicarp* yellowish brown-tomentose, armed with shiny black, up to 1.4 cm long spines, these very dense in the upper part; *mesocarp* 2 mm thick, fibrous, fleshy and orange at maturity; *endocarp* round at top, pointed at base; *perianth* with *calyx* tubular, 6-15 mm long, crenate to lacinate, with 1-2 mm long spines in the upper half, *corolla* campanulate, crenate to lacinate, 12-28 mm long, with up to 3 mm long spines; *staminodial ring* deeply divided into 2-3 lobes, these 1-3-pointed, creamy or with longitudinal brown strips, 3.6-7.5 mm long. *Eophyll* slightly bifurcate.

*Specimens examined.* — **Brazil:** Acre, Mun. Mancio Lima, upper rio Moa, near Igarapé Vitor 7°35'S, 73°45'W, 14 Oct. 1989 (fr), *Henderson 1125* (CEN, INPA, NY); Acre, rio Jurua, 19 Mar. 1992 (fr), *Ferreira 167* (UFAC); Acre, Mun. Mancio Lima, upper rio Moa, at 5 hours by 40 HP from Cruzeiro do Sul, 16 Feb. 1994 (fl, fr), *Kahn & Moussa 3560* (CEN, G, NY, P).

*Ecology.* — Understory of terra firme forests.

*Uses.* — Not reported.

*Vernacular name.* — Murumuru, huicungo.

Since BURRET (1934), the genus *Astrocaryum* has not been revised. A preliminary treatment of this genus in Amazonia (KAHN & MILLÁN, 1992) dealt with 24 species, 5 in the subgenus *Pleiogynanthus* and 19 in the subgenus *Monogynanthus* (3 in the section *Munbaca* and 16 in the section *Ayri*).

A new flora of Amazonian palms treats several species as varieties of *A. murumuru* Martius — e.g. *A. macrocalyx* Burret and *A. javarense* Trail ex Drude (HENDERSON, 1994). This author is strongly influenced by the morphological similarity of the vegetative parts in the subgenus *Monogynanthus* section *Ayri*, and does not take into account the clear differences which exist between these species mainly in the pistillate flowers (calyx and corolla form, size, spines, staminodial ring form and size) as well as in the fruits (form and size, epicarp pilosity, spines, texture, mesocarp fleshy or not, form and size of perianth and staminodial ring at fruit maturity).

The section *Ayri* was divided in four groups of species according to the characters of the pistillate flowers (KAHN & MILLÁN, 1992). *A. faranae* clearly belongs to group 2 with *A. carnosum* Kahn & Millán, *A. javarense* Trail ex Drude, *A. huicungo* Dammer ex Burret, *A. ferrugineum* Kahn & Millán, *A. scopatum* Kahn & Millán, and *A. ciliatum* Kahn & Millán. All these species present a calyx covered with flexuous, 2-4 mm long spines.

*Astrocaryum faranae* is akin to *A. carnosum*. Both present a staminodial ring which is low, irregularly 6-toothed, membranous, not adnate in the corolla, and a fruit with a fleshy mesocarp. This last character is, however, clearly more developed in *A. carnosum*. These species differ each other from the following characters:

- 1) *A. faranae* — calyx of the pistillate flower tubular, truncate, not folded at the apex, clearly shorter than the corolla, this obclavate to elongato-urceolate, not folded at the apex; the spines on the epicarp longer, up to 1.4 cm; a palm with several aerial stems (2-4, up to 4 m in height), leaves up to 6 m long; growing in terra firme forest.
- 2) *A. carnosum* — calyx of the pistillate flower tubular and folded at the apex, subequal to slightly longer than the corolla, this oblong to tubular and folded at the apex; the spines on the epicarp shorter, no more than 0.7 cm; a subacaulescent, multistemmed palm with one adult axis (stem no more than 2 m in height in old trees) and several juvenile axes, leaves up to 8 m long; growing in seasonally flooded areas.

### Key to *A. faranae* and relative species

The reader will find a key to the other Amazonian species and illustrations of flowers and fruits in KAHN & MILLÁN (1992)

- 1a. Leaves ragged with pinnae oriented in several directions from the rachis. Several pistillate flowers at the base of the rachillae
  - Subgenus **Pleiogynanthus**: ***Astrocaryum aculeatum*** Meyer
    - A. acaule*** Martius
    - A. chambira*** Burret
    - A. jauari*** Martius
    - A. vulgare*** Martius
- 1b. Leaves with pinnae regularly arranged in one plane. One pistillate flower at the base of the rachillae ..... Subgenus **Monogynanthus** 2
- 2a. Fruit oblong to elongato-obovate; epicarp smooth, not tomentose, unarmed or with small setae in the upper third, dehiscent, open like a yellow to orange flower at maturity. If no aerial stem, inflorescence and infructescence erect. If aerial stem, this armed with rings of long spines, sheaths of the dead leaves not persistent under the crown, inflorescence and infructescence pendulous ..... Subgenus **Monogynanthus** section **Munbaca**:
  - Astrocaryum gynacanthum*** Martius
  - A. paramaca*** Martius
  - A. rodriguesii*** Trail
- 2b. Fruit turbinate, depressed at base to obovate; epicarp yellowish to brown-tomentose, not smooth, setose to spiny, not dehiscent at maturity. If aerial stem, this usually unarmed, without rings of spines, sheaths of the dead leaves persistent under the crown in the upper part of the stem or in its whole length. Inflorescence erect, infructescence erect or slightly pendulous under fruit weight at maturity .. Subgenus **Monogynanthus** section **Ayri** 3
- 3a. Median pinnae several-ribbed, plicate; apical pinnae multi-pointed (several pinnae connate together). Spines on petiole regularly arranged in linear, horizontal or oblique parallel rows. Proximal part of the rachillae hirsute. Stigmas remarkably large
  - Astrocaryum farinosum*** Barbosa Rodrigues
  - A. sciophilum*** (Miquel) Pulle
  - A. sociale*** Barbosa Rodrigues
- 3b. Median pinnae one-ribbed, not plicate, apical pinnae one or multi-pointed; or median pinnae with 1-2 parallel ribs on each side of the midrib near the margins, not plicate, apical pinnae one-pointed in adult palm (see ***A. ciliatum***). Spines on petiole often in groups, usually not arranged in regularly spaced linear rows. Proximal part of the rachillae glabrous ..... 4
- 4a. Calyx of the pistillate flower cup-shaped, or urceolate, or ovoid, elongato-ovoid to pear-shaped, glabrous or glabrate ..... 5

- 4b. Calyx of the pistillate flower tubular, elongato-urceolate, or cask-shaped, or obclavate, hirsute with dense, flexuosus, 2-4 mm long spines . . . . . 6
- 5a. Calyx of the pistillate flower longer than the corolla, urceolate, ovoid, elongato-ovoid to pear-shaped . . . . . **Astrocaryum gratum** Kahn & Millán  
**A. macrocalyx** Burret  
**A. perangustatum** Kahn & Millán  
**A. urostachys** Burret
- 5b. Calyx of the pistillate flower shorter than the corolla, cup-shaped  
**Astrocaryum chonta** Martius  
**A. murumuru** Martius  
**A. ulei** Burret
- 6a. Calyx of the pistillate flower elongato-urceolate or obclavate, clearly longer than the corolla . . . . . 7
- 6b. Calyx of the pistillate flower tubular, or elongato-urceolate, or cask-shaped, subequal to shorter than the corolla; or tubular and folded at the apex, subequal to slightly longer than the corolla (see **A. carnosum**) . . . . . 8
- 7a. Abaxial side of the blade pilose with brown to rusty-red hairs  
**Astrocaryum ferrugineum** Kahn & Millán
- 7b. Abaxial side of the blade not pilose; median pinnae with 1-2 parallel ribs on each side of the midrib near the margins; limb of the corolla armed with dense spines in pistillate flower, remarkably ciliate in fruit . . . . . **Astrocaryum ciliatum** Kahn & Millán
- 8a. Staminal ring adnate, 1/3-1/2 as long as the corolla, not deeply 6-toothed, not membranous, mesocarp fleshy or not in ripe fruit . . . . . 9
- 8b. Staminal ring low, membranous, not adnate, deeply 6-toothed; mesocarp fleshy in ripe fruit . . . . . 11
- 9a. Calyx of the pistillate flower tubular to elongato-urceolate, subequal to shorter than the corolla; pistillate flowers crowded on rachis . . . . . 10
- 9b. Calyx of the pistillate flower cask-shaped, as long as the corolla; pistillate flowers not crowded on rachis . . . . . **Astrocaryum scopatum** Kahn & Millán
- 10a. Mesocarp fleshy, margin of the staminal ring slightly crenulate in the perianth at fruit maturity; multistemmed palm . . . . . **Astrocaryum huicungo** Dammer ex Burret
- 10b. Mesocarp not fleshy, margin of the staminal ring crenate in the perianth at fruit maturity; single-stemmed palm . . . . . **Astrocaryum javarense** Trail ex Drude
- 11a. Fruit with hard, up to 7 mm long spines; mesocarp 4-5 mm thick, very fleshy at maturity; Calyx of the pistillate flower subequal or slightly longer than the corolla, both calyx and corolla tubular, folded at the apex . . . . . **Astrocaryum carnosum** Kahn & Millán
- 11b. Fruit with hard, up to 14 mm long spines; mesocarp 2 mm thick, slightly fleshy at maturity. Calyx of the pistillate flower truncate, not folded at the apex, clearly shorter than the corolla, this obclavate to elongato-urceolate, not folded at the apex  
**Astrocaryum faranae** Kahn & Ferreira



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