

Specimens observed:

PERU - Kahn 3230 (USM), 3231 (K, P), 11 Jan 1992, 500 m, Pasco, Oxapampa, La Merced-Villa Rica road, Puerto Capelo village. Kahn 3232 (AAU, K, P, NY, USM), 13 Jan 1992, 400 m, Pasco, Oxapampa, Villa Rica-Iscozacín road, San Juan de Cacazu village. Smith 4045 (MO, P, USM), 15 May 1983, 10°09'S, 75°19'W, 350 m, Pasco, Oxapampa, Chuchurras River drainage, Belén on the Comparichimas River.

Distribution: In the central and southeastern piedmont of Peru, 380-800 m in elevation.

Ecology: In understory of forests on steep slopes, frequent in open areas.

Uses: Liquid endosperm of unripe fruit is drunk.

Vernacular names: chonta (P)

Notes: *Astrocaryum perangustatum* is characterized by the fruit being remarkably narrow basally, and the pinnae very wide (up to 11 cm), golden and satiny beneath.

21. *Astrocaryum gratum* F. Kahn et B. Millán, sp. nov. (Fig. 51).

Palma solitaria; differt a *Astrocaryum macrocalyx* Burret et *Astrocaryum perangustatum* Kahn et Millán annulo staminodiali deminuto vel 6 staminodiis dentiformibus.

Kahn F. & Llosa J.A. 2147, Peru (Holotype: P; Isotypes: CAY, K, USM).

A medium-sized, single-stemmed palm. Stem 3-10 m high, 17-20 cm in diameter, with some spines in groups; sheaths of dead leaves persistent on about 1 m under the crown. Leaves 8-12; sheath and petiole up to 2 m long, purplish, fibrous at margins, densely setose, armed with dense, flattened, black, up to 15 cm long spines on abaxial side, these shorter on lateral sides of petiole; rachis 4.6-5 m long, black-setose, with up to 3 cm long spines in groups of 2-3; pinnae 90-110 per side, regularly arranged in one plane; basal pinnae 105-131 cm long, 1.9-3 cm wide; median pinnae 134-145 cm long, 5-7 cm wide; apical pinnae 40-61 cm long, 2.5-12.5 cm wide. Inflorescence and infructescence erect; prophyll 1 m long, 11-12 cm wide, abaxial side with dense, dark brown, 3-5 mm long setae, adaxial side smooth or with dense, short setae; peduncular bract 90 cm long, inserted 40 cm from rachis, with scattered black and dense tawny setae, and flattened, black, 2-3 cm long spines at apex; peduncle 1.3 m long, section oval, 4 x 3 cm near rachis, 7 x 4 cm at base; rachis up to 70 cm long; rachillae many, proximal part glabrous, 2-4.5 cm long, distal part bearing staminate flowers in low density, 11.5-15 cm long, covered with transparent, clavate to globose hairs, one pistillate flower inserted 0.5-1 cm from the rachis. Staminate flower with sepals 0.6-0.7 ± 0.1 mm long; petals 2.8 to 2.9 ± 0.2 mm long, slightly connate basally; stamens 6; anthers 1.3-1.5 ± 0.1 mm long; filament up to 1.3 mm long; pistillode 3-parted. Pistillate flower with calyx ovoid to pear-shaped, slightly 3-dentate, with a few minute setae, margin ciliate, 6.4 ± 0.4 to 9.6 ± 0.7 mm long; corolla urceolate, slightly shorter than calyx, 5.4 ± 0.4 to 9.1 ± 0.5 mm long, with setae or 0.5 mm long spines, margin ciliate; staminodial ring 0.9 to 2.5 ± 0.4 mm, very short or reduced to 6 teeth; pistil wide basally and tapered into a slender style, brown-tomentose, with white setae; stigmas 3, 3-4 mm long. Fruit turbinate to obovate, depressed, 3.9-6.7 cm long, 2.7-3.9 cm wide, with a pedicel, up to 3.5 cm long; pericarp orange with brown to black, flexuous, 1-3 mm long setae; mesocarp fleshy, up to 1.2 cm thick; endocarp bony, turbinate, slightly acuminate and curved basally, 2.6-4.3 cm long, 1.7-2.3 cm wide; perianth with corolla cup-shaped, crenate, lacinate, or irregularly lobed, 9-18 mm long, staminodial ring wavy, 6-denticulate, 4-10 mm long, calyx deeply lobed, 5-12 mm long.

Specimens observed:

BOLIVIA - *Henderson & Salomon* 534 (NY), 7 Dec 1985, 15°58'S, 67°37'W, 800 m, Nor Yungas, ca. 4 km beyond San Pedro on road to Incahuara. *Kahn* 2400 (LPZ, P), 19 Aug 1989; *Mejia s.n.* (USM), Aug 1991; *Moraes* 922 (LPZ, NY), 22 Dec 1987: 14°30'S, 66°28'W, 250 m, Beni/Yacuma, Biological Station. PERU - *Kahn & Llosa* 2128 (NY, USM), 28 Sep 1987; 2143, 2144 (USM), 2147 (CAY, K, P, USM), 1 Oct 1987; *Millán* 118, 119, 120 (USM), 2-4 Apr 1992: Puerto Maldonado, Madre de Dios. *Vargas* 18574 (BH), 15 Jan 1967, 350 m, Madre de Dios, Tambopata, Concepción to lake Sandobal. *Vargas* 18718 (BH), 17 Jan 1967, 350 m, Madre de Dios, Tambopata, Barrola, De las Piedras River.

Distribution: In the southwestern parts of the Amazon basin.

Ecology: In forests on sandy soils, in secondary vegetation, in gallery forests in periodically flooded savannahs.

Uses: Liquid endosperm of unripe fruit is drunk; fleshy mesocarp is sweet and edible.

Vernacular names: chonta, chonta negra, chonta de macallo (B); huicungo (P).

Notes: *Astrocaryum gratum* differs from *Astrocaryum macrocalyx* and *Astrocaryum perangustatum* in the staminodial ring which is short, entire or reduced to 6 teeth in flower, and in its fruit with a long pedicel, the pericarp sparsely setose, and the mesocarp thick and fleshy. The rachis of its inflorescence, up to 70 cm, is the longest in the section *Ayri*. Its fruit is not remarkably narrow basally and its pinnae are whitish, not golden beneath as in *Astrocaryum perangustatum*. The calyx in fruit is not so deep and obconoidal as in *Astrocaryum macrocalyx*.

22. *Astrocaryum chonta* Martius, *Palmet Orbigny*: 84, t. 4, figs. 1-2, t. 29C, 1844 (Fig. 52, 53).

Type specimen: d'Orbigny 15, Santa Cruz de la Sierra (?), not seen.

A medium-sized, single-stemmed palm. Stem up to 10 m high, 18-27 cm in diameter, unarmed with prominent leaf scars; sheaths of dead leaves persistent on about 1-2 m under the crown. Leaves 8-12-(16), up to 9.5 m long; sheath and petiole up to 2.3 m long, fibrous, armed with flattened, black, up to 20 cm long spines; rachis up to 7.6 m long, whitish-tomentose, with flattened, black, up to 10 cm long spines, arranged in groups in the middle part, distal part black-setose with scattered, 1-2 cm long spines; pinnae 80-130 per side, regularly arranged in one plane; basal pinnae 65-120 cm long, 0.5-3.4 cm wide; median pinnae 84-163 cm long, 4-8 cm wide; apical pinnae 23-48 cm long, 1.8-6 cm wide. Inflorescence and infructescence erect; prophyll 85 cm long, 12 cm wide, brown-setose, with a few flattened, black spines; peduncular bract up to 1.1 m long, covered with dense, soft, light to dark brown, 5 mm long setae, with whitish-floccose, flexuous, black, 2 cm long spines at apex; peduncle 1.1 m long; rachis up to 60 cm long; rachillae many, proximal part glabrous, 1-7 cm long, distal part bearing staminate flowers 6.5-10.5 cm long, covered with transparent, clavate hairs, one pistillate flower at base inserted 3-10 mm from rachis. Staminate flower with sepals small, 0.6 to 0.9 ± 0.1 mm long, connate basally; petals brown 2.5 ± 0.1 to 2.9 ± 0.2 mm long, slightly connate basally; stamens 6; anthers 0.7 to 1.4 ± 0.1 mm long; filament up to 1.9 mm; pistillode irregularly 3-parted. Pistillate flower with calyx truncate to cup-shaped, slightly setose, 3-denticulate, wide at mouth, margin ciliate,

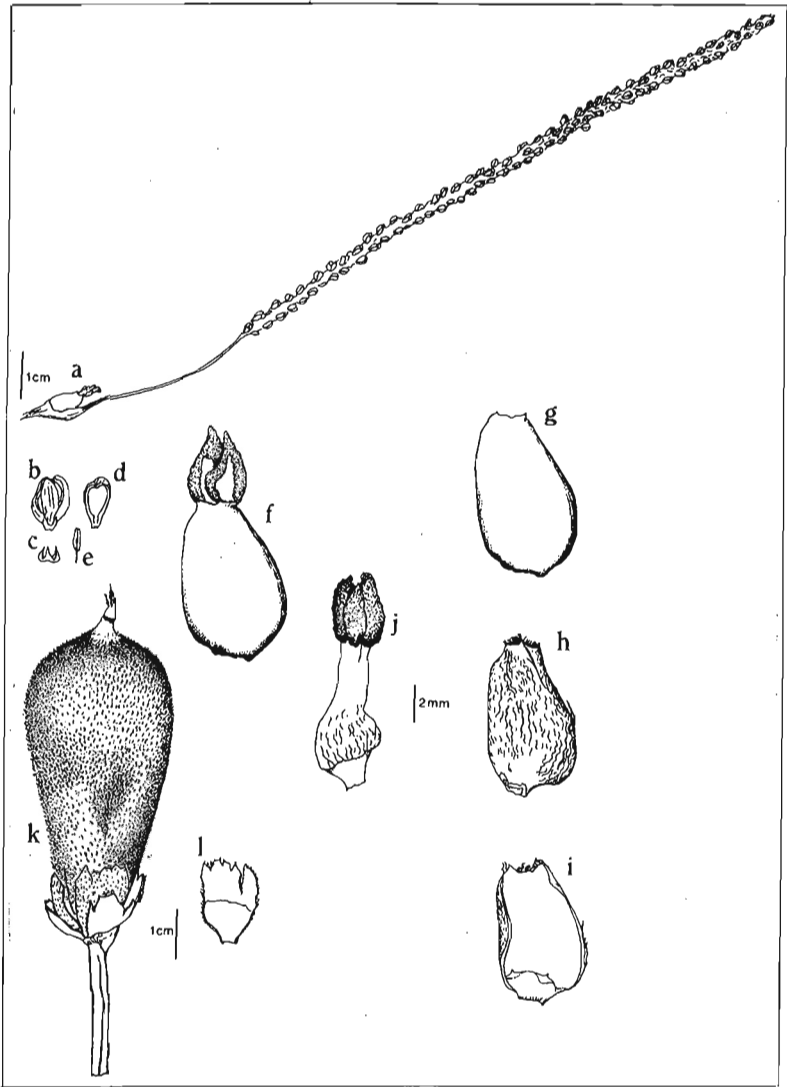


Fig. 51 - *Astrocaryum gratum*- a. rachilla; b. staminate flower; c. calyx; d. petal; e. stamen; f. pistillate flower; g. calyx; h. corolla; i. staminodial ring in corolla; j. pistil; k. fruit; l. perianth in fruit: corolla with staminodial ring. (b-j with same scale. Material used: Kahn 2400; Kahn & Llosa 2147; Millán 118)