

subtended by a fertile bract similar to the peduncular bracts but progressively smaller, the lowermost branches bearing a membranous prophyll to 12 cm. long, upper branches with incomplete prophylls or prophyll lacking, main axis and branches more or less flattened, branches mostly curved with flattened base to ca. 18 cm. long, 1.3 cm. wide in fruit, fertile portion to ca. 20 cm. long; rachillae to 8 cm. long, subtended by narrowly triangular, membranous, tomentum-tipped bracts to 15–17 mm. long on lowermost branches, shorter above, shortly adnate above the bract and with a short sterile base.

Flowers sessile or briefly pedicellate, borne singly in a spiral on the rachillae, bracts short; perianth 2–2.5 mm. long, creamy white, erect at anthesis; sepals 3, connate for ca. 0.5 mm., 2.0–2.5 mm. long, lobes deltoid; petals 3, about as long as the sepals, distinct, imbricate; stamens 6, filaments broad and thick basally, subulate above, anthers exserted and spreading from the narrow mouth of the perianth; carpels 3.

Fruit globose or depressed-globose, with persistent thickened perianth, 1.6–2.0 cm. wide, 1.6–1.8 cm. high; epicarp not tessellate; mesocarp rather thin; endocarp membranous; seed brown, depressed-globose, ca. 1.6 m. wide, 1.4 cm. high; embryo above the middle.

Vernacular names: *Carnaubinha* fide Prance et al.; *chuco* in Itonama, *huechichaho* in Baures, *iriai* in Cayuvava, *sava* in Iténès, *choinan* in Pacaguara, fide d'Orbigny.

Distribution and ecology: Bolivia and Brazil along banks of rivers, larger in forests than along the banks (fide d'Orbigny), flowering November (Prance et al.) to January (d'Orbigny), fruiting April (d'Orbigny) to July (Prance et al.).

Specimens examined:

BOLIVIA. STATE OF PANDO: west bank

of Río Madeira opposite Abunã in forest on terra firme, 9 July 1968, G. T. Prance, E. Forero, L. F. Coelho, J. F. Ramos & L. G. Farias 5708 (BH). BRAZIL. Region of Forte Príncipe da Beira, Río Guaporé, 1832, d'Orbigny 32 (Hb. Mart, BR, holotype). TERRITORY OF RONDÔNIA: basin of Río Madeira; east bank of Río Madeira between Abunã and Penha Colorado, varzea forest, 20 Nov. 1968, G. T. Prance, W. A. Rodrigues, J. F. Ramos & L. G. Farias 8717 (BH). CULTIVATED. Botanical Garden, Museu Emílio Goeldi, Belém, Pará, Brazil: 8 Nov. 1946, L. H. Bailey 324 (BH); photographs only, 1961, Stanley Kiem s. n. (BH); 1 June 1963, Museu Goeldi 349. R-8 (BH); 1966, Cavalcante s. n. (BH); 20 Mar. 1967, H. E. Moore, Jr. 9549 (BH).

Chelyocarpus chuco stands somewhat by itself in the genus as noted earlier. The presence of a prophyll on some primary branches is unusual in the alliance, for such have not been observed in *Cryosophila* nor in *Itaya*. The less deeply lobed leaf with its green under-surface further sets the species apart from others in *Chelyocarpus*, from *Itaya*, and from most in *Cryosophila*.

Chelyocarpus dianeurus (Burret) H. E. Moore, tr. nov. (Fig. 4, 5, 13B).

Tessmanniophoenix dianeura Burret, Notizblatt des Botanischen Garten und Museums zu Berlin-Dahlem 11: 499. 11 Jul. 1932; Dugand, Revista de la Academia Colombiana de Ciencias 8:387. 1951.

Type: Archer 2199 (US).
Tessmanniodoxa dianeura (Burret) Burret, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 15: 337. 30 Mar. 1941. Trunk gray, to ca. 5 m. high or more, 6–9 cm. in diam.

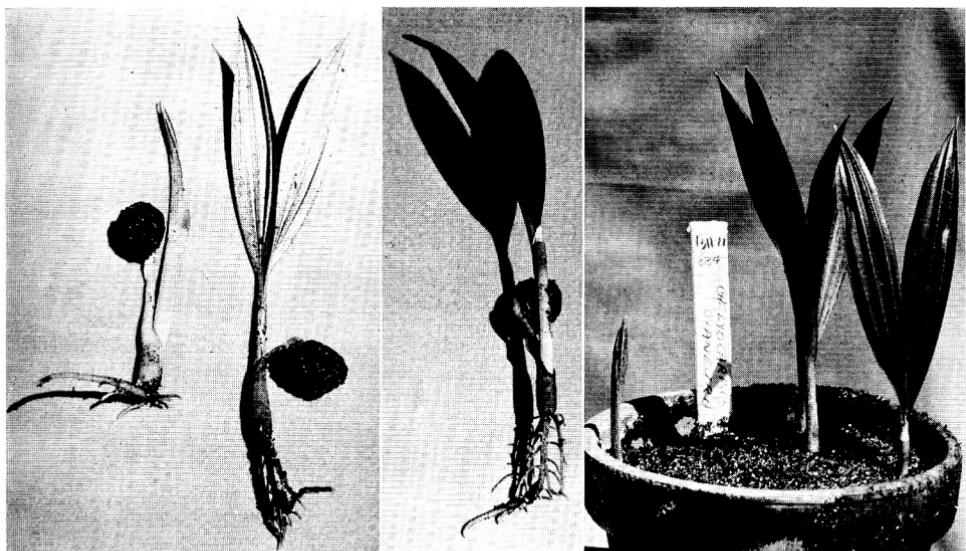
Leaves ca. 10 or more; sheaths to ca. 3 dm. long, brown-fibrous-margined, the inner ones densely golden appressed-villous; petiole as long as the blade or longer, 1–1.3 m. long, ca. 1.5 cm. wide at base and apex, brown furfuraceous-



4. *Chelyocarpus dianeurus* leaf, the central segments brought together in order to hold the blade (Moore, Parthasarathy & Orjuela 9458). Photo by M. V. Parthasarathy.

lepidote becoming glabrate; hastula deltoid with incurved margins, ca. 2 cm. high, 2 cm. wide; blade green and shining above, silvery below, 0.65–1.12 m. long, to 1.2 m. across, divided centrally to within 15–18 (or 3–5 fide Dugand) cm. of the base, divided laterally to or nearly to the base into 5–7 elongate-cuneate many-ribbed segments 1.2 m. long, 7–25 cm. wide, each again divided into 3–6 acute 1-ribbed segments 8–24 cm. long, 2–4.5 cm. wide, these with the midrib prominent below, the midrib, a lateral nerve on each side, and numerous oblique cross-veinlets evident above, lower surface covered with a continuous layer of thin white membranous scales, these rubbing off on contact.

Inflorescences several among the leaves, to ca. 8 dm. long; peduncle ca. 5 dm. long, flattened at base, brown-tomentose when protected, bearing a prophyll inserted ca. 21 cm. above the base and 2 sterile bracts at intervals of ca. 14 and 10 cm. respectively, these



5. Seedlings of *Chelyocarpus dianeurus* to show remote-tubular germination, single scale leaf, and bifid eophyll. From Moore & Gutiérrez 9999 cultivated at Cornell University.

(fide Burret) to 25 cm. long, oblong-lanceolate, densely dull gray-white-tomentose outside; rachis ca. 35 cm. long with ca. 50 simple rachillae, the lowest to 16 cm. long, upper shorter, each subtended by a small fertile bract.

Flowers sessile or on a low tubercle, subtended by a short bract; perianth 2.5 mm. high; sepals 4, ovate or nearly semiorbicircular, slightly imbricate, rounded at apex; petals 4, longer than the sepals, ovate-oblong or oblong, rounded; stamens 8 (-9), filaments flattened, broad basally, narrowed above, nearly filiform at the anthers, these oblong; carpels 2 or rarely 1.

Fruit greenish or probably yellowish or whitish at full maturity, globose or subglobose, 1.8–2.0 cm. wide, 1.7–2.0 cm. high; epicarp not tessellate; mesocarp whitish, ca. 1.5–2 mm. thick when fresh: seed depressed-globose, ca. 1.6 cm. wide, 1.3 cm. high, the seed coat thickened and slightly intruded on either side of the hilum; embryo in lower third; germination remote-tubular with 1 scale leaf and bifid eophyll.

Vernacular name: *noli* fide Archer, but this name is elsewhere applied to *Elaeis oleifera* fide Dugand; *quitasol* but this name also used for *Mauritia* (cf. Dugand) and probably other fan palms.

Distribution and ecology: western Colombia at elevations near sea level as an undergrowth palm in low rainforest, usually on slopes.

Uses: according to Archer, local Amerindians make pillows from the indument of sheath and petiole base.

Specimens examined:

COLOMBIA. DEPT. CHOCÓ: headwaters of the Río Tutunendo, east of Quibdó, May, 1931, *W. A. Archer* 2199 (US, holotype). DEPT. VALLE: Buenaventura, 23 May 1926, *O. F. Cook* 132 (US); 26 May 1926, *O. F. Cook* 146 (US); 29 May 1926, *O. F. Cook* 158 (US); forests in concession of Cartón Colombia, Baja Calima region, north of Buenaventura,

0–50 m. alt., 10 Feb. 1967, *H. E. Moore, Jr.*, *M. V. Parthasarathy* & *Pablo Orjuela* 9458 (BH, CALI); forested slopes in Cartón Colombia concession, near Río San Joaquin, Baja Calima region, north of Buenaventura, alt. 0–50 m., 24 Nov. 1971, *H. E. Moore, Jr.* & *M. Gutiérrez* 9999 (BH, CALI). Another collection cited by Dugand has not been seen—Dept. Valle: Río Calima, La Trojita, 5–50 m. alt., 19 Feb.–10 Mar. 1944, *J. Cuatrecasas* 16702 (COL).

Fresh flowers of other species of *Chelyocarpus* have been available for study but for *C. dianeurus* only those of the type have been seen. These are blackened and leave much to be desired in the way of analysis. Fruits collected in late November, 1971, and distributed through the seed bank of The Palm Society were greenish and perhaps had not achieved their fully mature color but seeds began to germinate at Cornell University in late March, 1972.

Chelyocarpus dianeurus and *C. ulei* are very similar in aspect but are clearly different in flower and fruit. The normally tetramerous flowers readily distinguish *C. dianeurus* from all other palms.

Chelyocarpus ulei Dammer, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 7: 395. 15 Jan. 1920; Burret, *op. cit.* 10: 395. 1 Dec. 1928, *op. cit.* 12: 151. 31 Dec. 1934; Macbride, Field Museum of Natural History, Botanical Series 13: 331. 1960. (Fig. 1, 6–12A). Type: Ule 5885 (B).

Tessmanniophoenix longibracteata Burret, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 10: 398. 1 Dec. 1928; *op. cit.* 11: 315. 30 Mar. 1932; Macbride, Field Museum of Natural History, Botanical Series 13: 332. 1960.

Type: *Weberbauer* 6765 (B, destroyed, F, lectotype).