

the pericarp anatomy of several of the specimens, representing widespread populations, reinforced this conclusion. The specimens examined shared a unique feature in the genus, namely a distinct series of fibrous bundles in the outer pericarp, similar to that found in some species of the closely related genus *Gronophyllum*. As far as can be determined, the fruit in this species are all bright red at maturity. Leaves are characteristically strongly arcuate, with pinnae ascending but soft and drooping at the tips. The habitat preference of mountainous terrain for this species contrasts with the lowland habitat of *Gulubia costata*.

In this regard, however, the locality given for the type collection of *Gulubia longispatha* is troublesome and possibly an error. The locality is given vaguely as "the Sepik River, altitude 197 m, November 1910." At 200 m, one is still in lowland alluvial forest, the wrong habitat for this species as currently understood. It is recorded, however (Flora Malesiana 1: 478. 1950), that during November (Nov. 2-13) Schultze made a side trip to the mountains south of the Sepik, ascending to Peripetus Peak (alt. 1,492 m), which I have not located, but which apparently is in the vicinity of the Leonard Schultze River, 10-15 miles east of the Frieda River. This, then would be very close to where I collected the species and observed it in great abundance. It is possible and likely that the type of the species was collected on this side trip at an altitude considerably above 197 m.

The populations in the Sepik Basin are homogeneous with respect to stamen number (9), but those in the southern part of the range are more variable. *Gulubia brassii* has 20-24 stamens, which at first prompted me to maintain it as a separate species. Other populations bridge the gap, however. The specimen from the Morobe Province has 12 stamens, and the specimens from the Mt. Suckling area have 18. With the addition of the anatomical data

from the pericarp, it became evident that *Gulubia brassii* could no longer be maintained.

4. ***Gulubia valida* Essig sp. nov.** *G. longispathae* affinis sed robustior, foliis rigidioribus, pinnis erectis, apicibus non pendulis, staminibus 12, fructu atrosanguineo vice pallide-rubro differt. Typus: Papua New Guinea, *Essig LAE 55099* (holotypus BH; isotypi A, BRI, CANB, K, LAE).

Solitary palm, with stems 15-20 cm in diameter; leaves about 22 in a crown, strongly arcuate, with pinnae ascending and rigid, not drooping at the tips, sheath 110 cm long, petiole 40 cm long, blade 210 cm long, petiole and rachis brown-lepidote above and below, pinnae about 57 on each side, to 80 cm long, 2.2 cm wide, glabrous above, brown-dotted below, lacking ramenta. Inflorescence branching to 2 orders, with 6-7 secondary axes, these white, glabrous; upper peduncular bract present, 20 cm long, narrow, triangular; rachillae 48 cm long with ca. 134 triads. Staminate flowers white, 17 mm long and 4.5-6.5 mm wide, stamens 12, pistillode lacking; pistillate flowers white, 3 mm high, staminodes 3, dentiform; fruit 11 × 7 mm, dark red to purple; endosperm homogeneous.

Distribution: Elevations around 1,000 m in the Torricelli Mountains of north central New Guinea.

SPECIMENS EXAMINED: PAPUA NEW GUINEA. West Sepik Province: Lumi Subprovince, Torricelli Mtns., near the village of Fatima, beside the road running eastward from Lumi, alt. ca. 3,000 ft, 26 November 1971, *Essig LAE 55099* (holotype BH; isotypes A, BRI, CANB, K, LAE).

Gulubia valida appears to be most closely related to *Gulubia longispatha*, but there are clear differences in the foliage and fruit. The leaf rachis is not as strongly arcuate as in *G. longispatha* and

the pinnae are stiff and erect, not drooping at the tips as in that species. The epithet *valida* refers to the strength and robustness of the foliage. The fruit lack the series of fibrous bundles in the outer pericarp characteristic of *G. longispatha*, but otherwise the pericarp structure is very similar (Fig. 11). The fruit also ripen to a dark red color, as opposed to the bright red of the neighboring species. In addition, *G. valida* has staminate flowers with 12 stamens while the nearest populations (all those in the Sepik Basin) of *G. longispatha* have staminate flowers with 9 stamens.

The new species might be confused with a species of *Gronophyllum* (*G. cf. mayrii*) that occurs in the Torricelli Mtns. at somewhat higher elevations (*Darbyshire 464* at CANB, LAE), and which apparently has a similar overall appearance. The generic distinction (of longer, valvate petals in the pistillate flowers) is clear, however. Also, the *Gronophyllum* has fewer pinnae per leaf (38 per side as opposed to 57 per side in the *Gulubia*), and the pinnae of the *Gronophyllum* possess numerous conspicuous ramenta on the lower surface. Flower color is not known in the *Gronophyllum*, and the fruit color was recorded by *Darbyshire* as pale brown.

5. *Gulubia macrospadix* (Burret) H.

E. Moore in *Principes* 10: 88. 1966.

Paragulubia macrospadix Burret in Notizbl. Bot. Gart. Berlin-Dahlem 13: 84. 1936. Type: *Kajewski 1787* (holotype B, destroyed; isotype A).

Gulubia niniu H. E. Moore ex T. C. Whitmore, Guide to the Forests of the Solomon Islands, 1966, name only.

A tall, solitary palm to 20 m in height; stem ca. 11–12 cm in diameter; leaves ca. 20–25 in a crown, arcuate, with pinnae drooping at the tips, sheath ca. 60–90 cm long, petiole 35–50 cm long, blade ca. 150–195 cm long, petiole and rachis

brown-dotted, pinnae ca. 30 on each side, 82–100 cm long, 2.5–3.5 cm wide, tip very briefly praemorse or notched, lower surface glaucous, with ramenta lacking or few and inconspicuous at the base of the midrib. Inflorescence, 40–90 cm long, branching to 2 orders with 7–11 primary branches and 11–24 rachillae, upper peduncular and rameal bracts lacking; rachillae 25–36 cm long, ca. 2 mm wide, glabrous, bearing ca. 150 triads. Flowers red to rose in color. Staminate flowers 8 mm long, 3 mm wide, with 6–9 stamens. Pistillate flowers globose-pyramidal, 3.5 mm high, with 3 dentiform staminodes. Fruit 12–16 × 8 mm, bright crimson, seed with ruminant endosperm.

Distribution: Bougainville and Santa Ysabel in the Solomon Islands.

Local names: *niniu* (Kwara'ae language), *kuritu* (Bougainville).

SPECIMENS EXAMINED: PAPUA NEW GUINEA. Bougainville Province: Kugumara, Buin, 28 May 1930, *Kajewski 1787* (holotype B destroyed, isotype A); SOLOMON ISLANDS. Santa Ysabel: Bogotu Peninsula, slopes of ridge on mainland opposite Horara Village near Tatamba, alt. 0–500 ft, 22 March 1964, *Moore & Whitmore 9305* (BH, BSIP); Maringe Lagoon, near Tiratona Village, on a broad ridge, alt. 1,600 ft, 23 October 1963, *Whitmore BSIP 2325* (BSIP, K).

This treatment is based essentially on that of Moore (1966), as I have not seen any specimens other than those used in his analysis. *Gulubia macrospadix* is distinguished from all other species in the genus by the ruminant endosperm of its seed. This prompted Burret to erect a new genus for the species, a move which he believed was bolstered by the praemorse character of the pinnae. Moore rejected the new genus, pointing out that ruminant and homogeneous endosperm coexist in many genera, and that other species of *Gulubia* also have slightly praemorse tips. The fruit is also distinctive by virtue of a