

#### 4a. *Calamus laevigatus* Mart. var. *laevigatus*

(Latin – smooth)

*Rotan Liah* (Br.,Mal.), *Wi Anak* (Ib.)

Martius, Hist. Nat. Palm. 3: 339 (1853); Dransfield, Mal. Forester 41: 334 (1978), Man. Ratt. Malay Pen. 138 (1979), Ratt. Sabah 102 (1984) and Ratt. Sarawak 103 (1992).

*Calamus retrophyllus* Becc., Ann. Roy. Bot. Gard. Calcutta 11 (Suppl.): 123 (1913).

Solitary (very rarely clustered) moderate high-climbing rattan to 30 m or more; stem without sheaths 8–10 mm diam., with to 20 mm, internodes to 25 cm. Sheaths dull to pale green, drying very pale brownish-green, armed with sparse horizontal ± triangular spines borne on swollen bases, sometimes also with very faint horizontal ridges, sometimes unarmed, and with brown scales abundant on young leaf surfaces; knee conspicuous; ocrea scarcely developed. Leaf cirrate to 1 m, including the cirrus to 65 cm; petiole absent; leaflets c. 20 on each side of the rachis, concolorous, arranged irregularly, the basal up to 8 pairs on each side very close and strongly reflexed across the leaf sheaths forming a chamber in which ants frequently nest; upper leaflets in groups of 2–4 and fanned within the groups, the largest leaflets to c. 20 × 0.5–2 cm, somewhat plicate, drying very pale green. Inflorescences usually about the same length as the leaves, without a terminal flagellum, and with up to 10 partial inflorescences; main bracts rather densely armed with black-tipped, pale, bulbous-based spines and brown indumentum, ultimate bracts and bracteoles with abundant minute spines producing a rough feel. Mature fruit rounded, c. 12 mm diam., with a short beak and covered with 15–19 vertical rows of pale straw- to whitish-coloured scales, sometimes flecked with red. Seed rounded, c. 10 mm diam., deeply pitted; endosperm slightly ruminant. Seedling leaf bifid. (Fig. 35, Pl. 10D).

Throughout Brunei. Elsewhere throughout Borneo and Peninsular Malaysia, rather rare in Sumatra.

**BEL:** Sungai Liang, Andulau F.R, *Fuchs* 21153. **TEM:** Amo, Belalong, *Stockdale* 11; Amo, Bt.Belalong, *Dransfield J.* 7111. **TUT:** Lamunin, *Dransfield J.* 6805.

Uses: produces an excellent cane of the same diameter as *rotan sega* but as the plant is usually solitary, harvests are not great.

*C. laevigatus* var. *laevigatus* is a very widespread species occurring at altitudes up to 850 m above sea level and on a variety of soils. This is a very variable taxon. Some forms have very narrow leaflets. This species can easily be seen from the Labi Road in Andulau Forest Reserve.

#### 4b. *Calamus laevigatus* var. *mucronatus* (Becc.) J. Dransf.

(Latin – bearing an abruptly narrowed tip)

*Rotan Peladas* (Br.), *Uwai Padas* (Dus.), *Wi Anak* (Ib.)

Dransfield, Bot. J. Linn. Soc. 81: 8 (1980), Ratt. Sabah 104 (1984) and Ratt. Sarawak 106 (1992).

*Calamus mucronatus* Becc., Rec. Bot. Surv. India 2: 213 (1902) and Ann. Roy. Bot. Gard. Calcutta 11: 420 (1908).

Very slender solitary rattan climbing to great heights, often over 60 m in length; stem without sheaths c. 4 mm diam., with sheaths to 8 mm diam.; internodes to 13 cm, frequently less in exposed stems. Sheaths dull dark green with very few triangular spines to 3 mm, often with wart-like bases; knee well developed; ocrea to 3 mm fringed with hairs. Leaf cirrate to 90 cm including the cirrus to 45 cm, often the whole leaf to only 30 cm in exposed stems; petiole absent or very short, c. 1 cm; leaflets c. 8 on each side of the rachis, lanceolate and abruptly narrowed at the tip, irregularly arranged in pairs or singly, the basal 1 or 2 reflexed across the stem, the longest to 13 × 2 cm, dark green (drying pale), ± cucullate, transverse veinlets conspicuous. Inflorescences without terminal flagellum, to 45 cm with c. 8 partial inflorescences in all, in detail very similar to that of the type variety but much smaller. Mature fruit ovoid (? always), c. 15 × 10 mm, with a short beak and covered with 14 vertical rows of straw-coloured scales with darker margins. Seed ovoid c. 12 × 8 mm; endosperm deeply ruminant. Seedling leaf bifid. (Fig. 36).

Widespread in Temburong District. Elsewhere widespread in Borneo, but never very abundant. Endemic.

**TEM:** Amo, Bt.Belalong, *Dransfield J.* 7109; Amo, Bt.Belalong, *Wong* 1360; Amo, Bt.Belalong, *Wong* 1388; Amo, K.Belalong, *Stockdale* 13; Amo, K.Belalong, *Stockdale* 54; Bangar, Bt.Biang, *Ashton* A 169.

Uses; an excellent very small diameter cane for binding purposes.

*C. laevigatus* var. *mucronatus* is one of the most slender species of rattan in Brunei; it has a very dark colour when fresh, but dries pale green. It is usually found on ridge tops on rather poor soils at altitudes up to 900 m above sea level.

### 5. *Calamus kiahii* Furtado

(Kiah bin Haji Salleh, plant collector in the employ of the Botanic Gardens, Singapore who visited Kinabalu with Furtado in 1932)

Furtado, Gard. Bull. Str. Settlements 8:251 (1935); Dransfield, Ratt. Sabah 107 (1984) and Ratt. Sarawak 106 (1992).

Clustering slender to moderate montane rattan climbing to 10 m, rarely more, frequently fertile when still short; stem without sheaths to 10 mm diam., with sheaths to 18 mm, internodes to 12 cm. Sheaths mid-green with sparse to dense scattered broad triangular flattened spines varying from 4–15 mm, fringed with hairs. Leaf cirrate to 2.0 m including the petiole 5–12 cm long and cirrus to 80 cm; leaflets up to c. 12 on each side of the rachis, irregularly arranged in distant groups of 2–4, lanceolate, suddenly mucronate, dark green, distinctly plicate, the largest to 30 × 3.5 cm, with very short marginal teeth. Inflorescence without terminal flagellum, curving, to c. 70 cm, usually less, with up to 8 evenly spaced partial inflorescences, the male more highly branched than the female; bracts tubular, with scabrid surfaces and all with conspicuous ciliate-hairy margins; female rachillae somewhat zigzag to 10 cm; male rachillae to 2 cm. Mature fruit ± globose, c. 20 mm diam., with short apical beak to 2 mm, and covered with 18 vertical rows of pale grey to brown scales with darker margins. Seed ± globular to laterally somewhat compressed, c. 14 × 10 mm; endosperm deeply ruminant. Seedling leaf not known. (Fig. 37).