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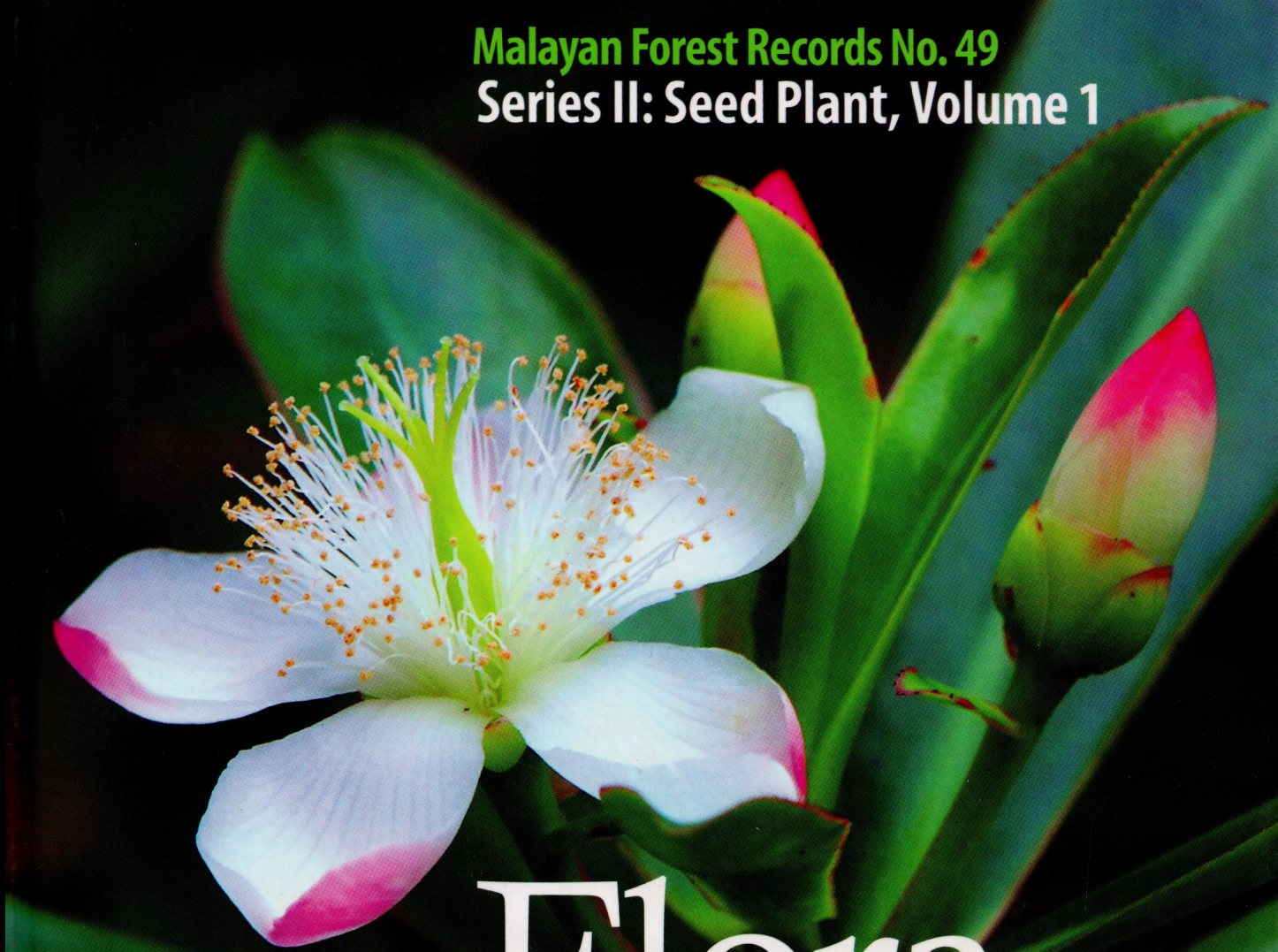

# Flora of Peninsular Malaysia

*Edited by*
R. Kiew
R.C.K. Chung
L.G. Saw
E. Soepadmo
P.C. Boyce

# FLORA
# OF
# PENINSULAR MALAYSIA

## Series II: Seed Plants

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**MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION**
**GOVERNMENT OF MALAYSIA**

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# FLORA OF PENINSULAR MALAYSIA

## Series II: Seed Plants

## Volume 1

*Edited by*
**R. Kiew, R.C.K. Chung,**
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# CTENOLOPHONACEAE

**A.R. Ummul-Nazrah**

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Exell & Mendonça, Consp. Fl. Angol. 1, 2 (1951) 248, 392; Hutchinson, Fam. Flow. Pl. 2, 2nd ed. (1959) 265, Gen. Flow. Pl. 2 (1967) 608; Cockburn, Tr. Fl. Malaya 1 (1972) 305; van Hooren & Nooteboom, Blumea 29 (1984) 559, Fl. Malesiana 1, 10 (1988) 629; Runi, Tr. Fl. Sabah & Sarawak 2 (1996) 151; Savolainen *et al*., Kew Bull. 55 (2000) 257; Brummitt *in* Heywood *et al.* Flow. Pl. Fam. World (2007) 115; Mabberley, Pl. Book (2008) 234.

Monogeneric family.

**Taxonomy.** Van Hooren & Nooteboom (1984) treated Ctenolophonaceae as a family separate from Linaceae and Olacaceae by a combination of inflorescences and flowers with stellately tufted hairs, opposite leaves with interpetiolar stipules, contorted, caducous petals, free filaments inserted halfway onto the extrastaminal disc, bifurcating style, and seed with crest-like arillode. Among Malaysian families, Brummitt (2007) indicated that Ctenolophonaceae is closest to Violaceae.

## CTENOLOPHON Oliv.

(Greek, *ctenos* = comb, *lophorus* = crested; the crested arillode)

Trans. Linn. Soc. 28 (1873) 516; Masters, Fl. Brit. India 1 (1875) 577; King, J. As. Soc. Beng. 64, 2 (1895) 105; Ridley, Fl. Malay Pen. 1 (1922) 423; Cockburn, Tr. Fl. Malaya 1 (1972) 306; van Hooren & Nooteboom, Blumea 29 (1984) 560, Fl. Malesiana 1, 10 (1988) 629; Runi, Tr. Fl. Sabah & Sarawak 2 (1996) 151; Lim, PROSEA 5, 3 (1998) 172.

Big trees, trunk with buttresses. Indumentum of inflorescences and flowers comprising *stellate and simple hairs*. **Stipules** *interpetiolar*, boat-shaped, caducous. **Leaves** simple, *opposite*, glabrous, margin entire; venation *pinnate*. **Inflorescences** terminal or occasionally axillary, cymose panicles; bracts paired, caducous. **Flowers** *bisexual*, actinomorphic, *often with minute stellate hairs*; sepals 5, shortly connate at the base, *imbricate*, *subequal*, *hard*, *swollen and persistent in the fruit*; petals 5, free, *contorted*, often shortly clawed, *caducous*; disc extrastaminal, membranaceous, cup-shaped, margin dentate to undulate; stamens 10, *free*, *inserted on the inner side of the disc*, unequal, longer ones opposite petals, shorter ones opposite sepals; anthers *dorso-versatile*, 2-locular, *introrse*; ovary superior, 2-locular, ovules 2 per locule, style 1, *bifurcating*, stigmas 2, capitate. **Fruit** a one-locular capsule, pericarp woody, splitting into 2 valves. **Seeds** solitary, *persisting and pendulous from the top of the filiform columella* after the pericarp falls; arilloid *crest-like* and surrounding the lower half of the seed; endosperm copious.

**Distribution.** Two species: *Ctenolophon parvifolius* in W Malesia and New Guinea and *C. englerianus* Mildbr. in W Africa (Angola, Zaire, Nigeria, Gabon).

**Ecology.** Lowland rain forest.

## **Ctenolophon parvifolius** Oliv. Fig. 1, Map 1

(Latin, *parvus* = small, *folium* = leaves)

Trans. Linn. Soc. 28 (1873) 516, *t.* 43, figs. 1–7; Masters, Fl. Brit. India 1 (1875) 577; King, J. As. Soc. Beng. 64, 2 (1895) 106; Ridley, Fl. Malay Pen. 1 (1922) 423; Cockburn, Gard. Bull. Sing. 24 (1969) 6, Tr. Fl. Malaya 1 (1972) 306; van Hooren & Nooteboom, Blumea 29 (1984) 560, Fl. Malesiana 1, 10 (1988) 631; Runi, Tr. Fl. Sabah & Sarawak 2 (1996) 151. **Type:** *Maingay s.n.* (= Kew Distr. No. 382), Malaya (holotype K; isotype L). **Synonym:** *Ctenolophon grandifolius* Oliv., Trans. Linn. Soc. 28 (1873) 517, *t.* 43, figs. 8–10, Masters, Fl. Brit. India 1 (1875) 577, King, J. As. Soc. Beng. 64, 2 (1895) 105; Ridley, Fl. Malay Pen. 1 (1922) 423. **Type:** *Maingay s.n.* (= Kew Distr. No. 383), Malaya (holotype K; isotype L).

Small to big trees, 12–40 m tall, bole to 40 cm diameter; buttresses steep, short to spreading to 4 m high and wide, to 12.5 cm thick. **Bark** *reddish brown*, *cracked to scaly*, *lenticellate*; *inner bark reddish brown to pink*, *fibrous*, *with clear brown exudate.* **Sapwood** *pale yellow to cream*. **Twigs** terete. **Leaves:** petioles (0.6–)0.7–0.8(–1.6) cm long; laminas broadly to narrowly elliptic, 3.6–17(–21.5) × 2.1–7(–20) cm, coriaceous, base obtuse or rounded to broadly cuneate, apex acute to acuminate, acumen 0.5–1.5(–1.8) cm long; *midrib sunken above and prominent beneath*; lateral veins 8–12(–14) pairs, *prominent on the lower surface*, *curving near the margin*; *intercostal venation reticulate*, *conspicuous on both surfaces.* **Inflorescences** to 6.3 cm long, with *stellate hairs*. **Flowers:** sepals *dark yellow to green with grey stellate hairs*, obovate to ovate, *c.* 2 × 2 mm; petals cream tinged pink, oblong, 5–9 × 2–4 mm, *minutely velvety outside with stellate hairs*; stamens: filaments glabrous, 3.5–6 mm long, anthers *c.* 2 × 1 mm; ovary ellipsoid to ovoid, 1.5–3 mm long, 1–2 mm diameter, styles 5.5–6.5 mm long, glabrous. **Infructescences** 5–6.5(–13.5) cm long, spreading 1–3 cm wide, with *stellate hairs*. **Fruits** ellipsoid, 1.2–2 (–2.5) cm long, 0.5–1.4 cm wide, with *stellate hairs and at the apex with silky hair*, *sharply acute*, *at the base with persistent*, *club-shaped swollen stalk and sepals*; *ripe fruit pink or green with a pink tip*, drying with shallow ridges. **Seeds** ellipsoid, *c.* 1.5 cm long.

**Vernacular name.** *Mertas* (Malay).

**Distribution.** Malesia: Sumatra, Peninsular Malaysia, Borneo, the Philippines (Samar, Leyte and Mindanao), and New Guinea. Throughout Peninsular Malaysia except for Perlis.

**Conservation status.** Least concern.

**Ecology.** This species is common but scattered in primary lowland mixed dipterocarp forest on ridges and hill slopes to 850(–1650) m altitude and in seasonal swamps.

**Uses.** The wood of *Ctenolophon* is used for medium to heavy construction, house building, marine construction, ship building, heavy-duty flooring, parquet floor, piling, power transmission posts, fences and tool handles. Its timber is filled with resin, which gives it a shiny appearance (Lim, PROSEA 5, 3 (1998) 172).

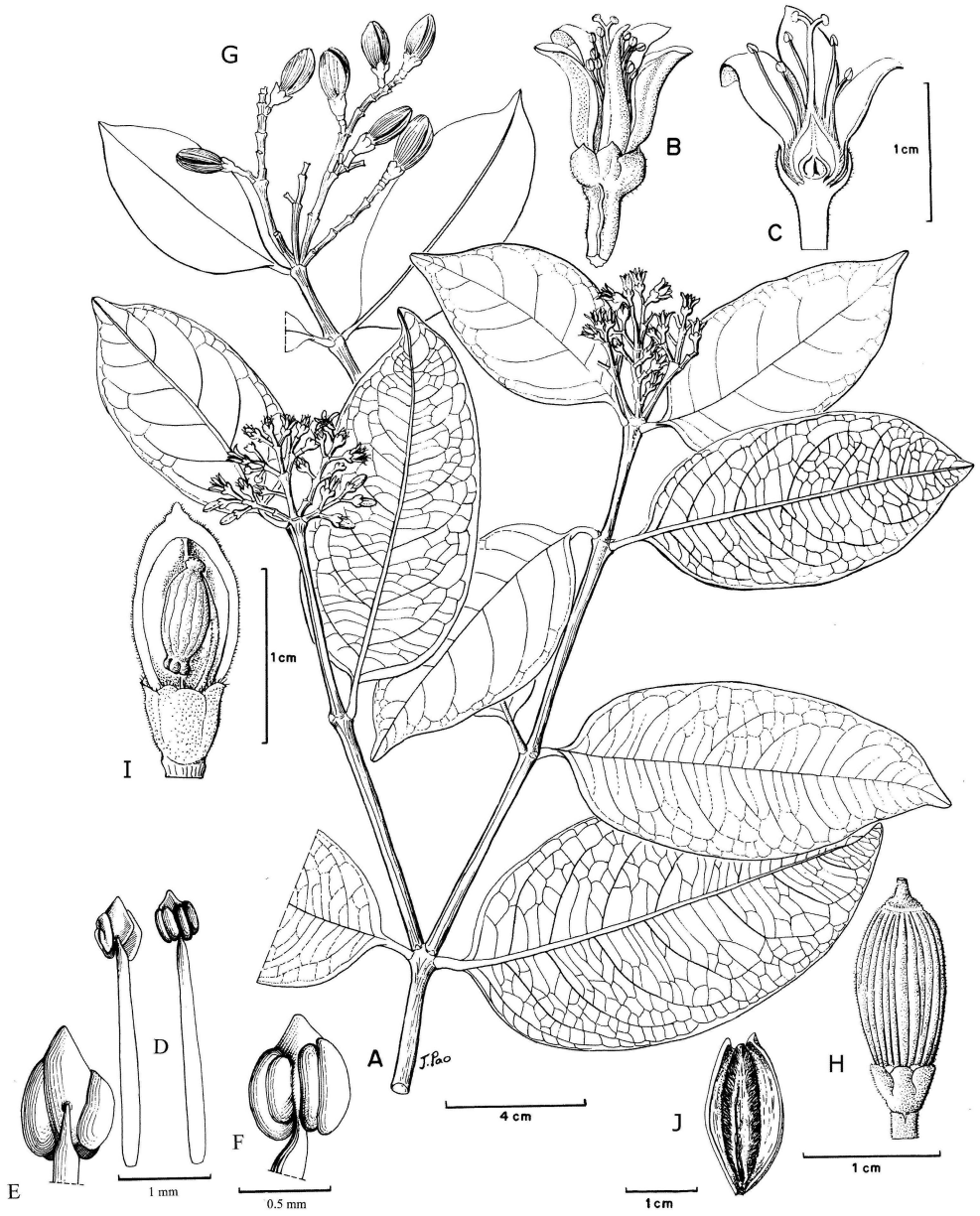
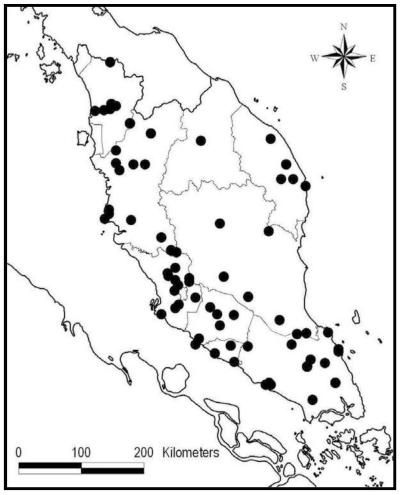



**Figure 1.** *Ctenolophon parvifolius.* A, flowering leafy twig; B, open flower; C, flower in longitudinal section; D, stamen; E, abaxial side of anther; F, adaxial side of anther; G, fruiting leafy twig; H, fruit; I, longitudinal section of fruit; J, seed. (A–C, G–J reproduced with permission from Tr. Fl. Sabah & Sarawak 2 (1996) 152, D–F from *FRI 177*.)




**Map 1.** Distribution of *Ctenolophon parvifolius*.

**Note.** Masters (1875), King (1895) and Ridley (1922) placed *Ctenolophon* in Olacineae (Olacaceae), while Cockburn (1972) included it in the Linaceae.

# PLATES


L.G. Saw


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**Plate 1.** A, lowland dipterocarp forest, Endau-Rompin State Park. B, hill dipterocarp forest, Maxwell Hill, the glaucous crowns on the ridges are *Shorea curtisii.*


L.G. Saw


L.G. Saw

**Plate 2.** A, semi-evergreen forest, Machinchang FR, Langkawi. B, lower montane forest, Fraser's Hill.


**Plate 3.** A, lowland dipterocarp forest, Pasoh FR, note the emergents and middle canopy layer. B, upper montane forest, G. Brinchang, Cameron Highlands. *Rhododendron wrayi* with white blooms (foreground) and thickets of bamboo, *Holttumochloa magica.* C, stands of *Livistona speciosa* on ridges of upper hill dipterocarp forest. D, heath vegetation on raised sandbanks, Jambu Bongkok, Terengganu.


**Plate 4.** A, heath vegetation on sandstone, Endau-Rompin State Park. B, heath vegetation, G. Tahan. C, *Livistona endauensis* stand on sandstone massif, Endau Rompin State Park. D, limestone hill, Batu Caves.


M.Y Chew


M.Y Chew

**Plate 5.** A, beach vegetation, Langkawi. B, freshwater swamp forest, rassau (*Pandanus helicopus*)-belt.


**Plate 6.** A, mangrove forest, stand of *Rhizophora apiculata*, Matang FR. B, mangrove forest, stand of *Bruguiera gymnorhiza*, Tioman Island. C, brackish water vegetation, *Nypa fruticans* in the foreground, *Phoenix paludosa* in the background, Marang, Terengganu. D, freshwater swamp forest, *Pholidocarpus kingianus*, Seri Iskandar, Perak.


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**Plate 7.** A, riparian vegetation, rheophytes on stream banks. B, aquatic vegetation in natural lake, Tasik Chini.


**Plate 8.** A, *Syzygium* swamp in Tasik Bera. B, quartz ridge, Klang Gates. C, *Baeckea frutescens* on quartz ridge, Klang Gates.

# Flora of Peninsular Malaysia

The Flora of Peninsular Malaysia Series II provides revisions for seed plant families that occur in Peninsular Malaysia. Volume 1 includes general chapters on the seed plant families and vegetation types in Peninsular Malaysia. Species assessment and conservation of seed plants are discussed. Revisions for 26 families, 35 genera and 81 species are provided that include descriptions and keys for the genera and species with conservation status and distribution maps provided for species. Representative species are illustrated by botanical plates and colour photographs.

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