

# Flora of Singapore precursors, 1. *Gynochthodes praetermissa* (Rubiaceae: Morindeae), a new West Malesian species, with notes on related taxa

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**ABSTRACT.** *Gynochthodes praetermissa* is newly described for the flora of western Malesia. It most resembles *Gynochthodes coriacea*, with which it has been confused. They can be distinguished on various leaf attributes and by the new species having corolla lobes at most twice as long as the corolla tube, whereas *Gynochthodes coriacea* has corolla lobes at least three times as long as the tube. *Gynochthodes coriacea* and *G. sublanceolata* are found to be synonymous, the former having priority.

**Keywords.** *Gynochthodes coriacea*, *Gynochthodes sublanceolata*, Malesia, Rubiaceae, Southeast Asia, synonymy, taxonomy

## Introduction

The circumscription of *Gynochthodes* Blume (Rubiaceae) has recently undergone some major changes, based on molecular phylogenetic studies, due to the addition of many taxa with a lianescent or climbing habit that were formerly placed in *Morinda* L. (Razafimandimbison et al., 2008, 2009; Razafimandimbison & Bremer, 2011). The genus currently includes around 95 recognised species distributed from Madagascar, through tropical Asia, to tropical Australia and the Pacific Islands (Razafimandimbison & Bremer, 2011; Wong & Razafimandimbison, 2015).

During a study of the genus for the Flora of Singapore project, several novel discoveries were made. Firstly, after surveying material collected from Singapore and elsewhere in the Southeast Asian region, a number of specimens which had in the past been identified as *Gynochthodes coriacea* Blume by various authors (e.g. Ridley, 1900; King & Gamble, 1904; Ridley, 1923; Keng, 1990) were found to differ from the type specimen of the species in a number of leaf and floral characters (Table 1). These specimens were then compared to all type specimen images of presently accepted species in *Gynochthodes* available on BioPortal (<http://bioportal.naturalis.nl/>), GBIF (<https://www.gbif.org/>), and JSTOR® Global Plants (<https://plants.jstor.org/>) to ascertain if they could be matched and identified. It was found that the specimens represented a new species, here named *Gynochthodes praetermissa* W.W.Seah & K.M.Wong. Secondly, while studying the type material, we were able to confirm the synonymy of *Gynochthodes coriacea* and *G. sublanceolata* Miq., a species also

present in the Singapore flora. The leaf characters considered by Suratman (2018) to differentiate the two species in Sumatra overlap, and no other consistent differences were observed (Table 2). *Gynochthodes sublaceolata* is therefore relegated to synonymy of the earlier named *Gynochthodes coriacea*.

All herbarium acronyms used follow Thiers (continuously updated) and conservation assessments follow the guidelines in IUCN (2012). All measurements indicated were obtained from dried specimens and materials.

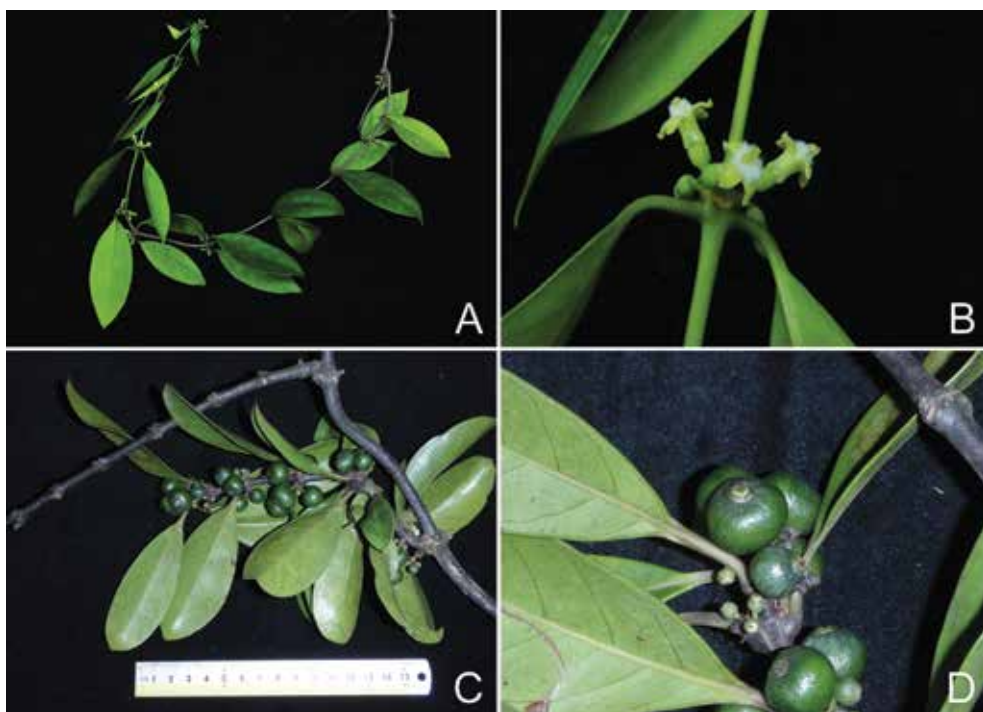
### Description of the new species

#### *Gynochthodes praetermissa* W.W.Seah & K.M.Wong, **sp. nov.**

This species most resembles *Gynochthodes coriacea* Blume in its climbing habit, small leaves with few (4–8) pairs of secondary veins, and presence of domatia in vein axils on the lower leaf surface, but differs in its ovate to obovate leaves, which are coriaceous and consistently have recurved margins, as well as corolla lobes that are only slightly to at most twice as long as the corolla tube. In comparison, *Gynochthodes coriacea* has broadly elliptic or lanceolate leaves, which are chartaceous to subcoriaceous and have plane to only slightly recurved margins, as well as corolla lobes that are at least three times as long as the corolla tube. Additionally, the new species is similar to *Gynochthodes motleyi* (Hook.f.) Ruhsam, a Bornean taxon, in its habit and some leaf characters, but differs in its larger leaves ((3.8–)5–9.1(–12.9) × 1.5–4.9(–5.8) cm) with more conspicuous secondary and tertiary venation on the lower surface and longer petioles (10–17 mm long), and flowers with a longer corolla ((5.5–)6–7 mm long) in which the lobes are only slightly to at most twice as long as the tube. *Gynochthodes motleyi* has smaller leaves (2.8–6.4 × 1–2.6 cm) with inconspicuous secondary and tertiary venation on the lower surface and shorter petioles (2–4 mm long), and flowers with a shorter corolla (3.3–4.6 mm long) in which the lobes are more conspicuously (at least three times) longer than the tube. – TYPE: Singapore, Gardens' Jungle, 1899, H.N. Ridley 10393 (holotype SING [SING01993141] (fl); isotype K [K001129459] (fl)).

*Gynochthodes coriacea* auct. non Blume: Ridley, Fl. Singapore 98 (1900); King & Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 73: 92 (1904); Ridley, Fl. Malay Penins. 2: 122 (1923); Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. 154 (1990).

Slender liana. **Stipules** triangular, inconspicuous, not persistent. **Leaves** ovate to obovate, (3.8–)5–9.1(–12.9) × 1.5–4.9(–5.8) cm, typically coriaceous, usually drying dark brown or sometimes black, glabrous on both surfaces, midrib sunken above, raised below, secondary veins 4–8 pairs, slightly to prominently raised or slightly sunken above, prominently raised below, looping and joining some distance away from the margin, typically with densely to sparsely hairy domatia in their axils on the lower leaf surface, tertiary veins reticulate, apex rounded to acute, base cuneate to obtuse, margin consistently recurved; petioles 10–17 mm long. **Inflorescence** of



**Fig. 1.** *Gynochthodes praetermissa* W.W.Seah & K.M.Wong. **A.** Fresh specimen with flowers. **B.** Flowers, with corolla lobes that are only slightly longer than the corolla tube. **C.** Fresh specimen with fruits, showing ovate to obovate leaves. **D.** Fruits. A & B from Gardens' Jungle (Singapore Botanic Gardens' Rainforest), C & D from *Lua LHK 11-49*. (Photos: A & B, P.K.F. Leong; C & D, H.K. Lua)

individual flowers in fascicles in leaf axils. **Flowers** 4- or 5-merous; pedicels 0.7–2.2 mm long, sparsely hairy; calyx cup-shaped, 0.8–1 × 0.5–0.8 mm, including a limb 0.2–0.3 mm long; corolla (5.5–)6–7 mm long, white; corolla tube (2.0–)2.5–3 mm long; corolla lobes 3.5–4 mm long, glabrous outside, densely hairy inside; anthers 2 mm long, dorsifixed on very short glabrous filaments inserted in the corolla throat, partly exerted; stigma bilobed, arising from the centre of the disk without an obvious style. **Fruit** a drupe, subglobose, 11.9–13.2 mm diameter, pale to dark greenish, often with persistent remnants of pericarp vasculature remaining as fibrous strands on pedicels. (A full image of the holotype is available on JSTOR® Global Plants; see also Fig. 1 here.)

**Habitat and ecology.** Typically found in lowland mixed dipterocarp forest and secondary forest, including in coastal areas.

**Distribution.** Restricted to West Malesia, documented in Indonesia (Anambas Islands in the South China Sea), Peninsular Malaysia (Negeri Sembilan and Malacca), and Singapore.

*Etymology.* The specific epithet is derived from the Latin “*praetermissus*” which means neglected or overlooked.

*Provisional IUCN conservation assessment.* Least Concern (LC). Around the West Malesian region, *Gynochthodes praetermissa* has been recorded in several intact and secondary forest patches as well as in coastal areas. Possible threats are habitat disturbance and loss, as several forest patches, reserves (e.g., Pasoh Forest Reserve) and coastal areas where it is found have experienced some alteration (Corlett, 1992; Fletcher et al., 2012). Nonetheless, the species appears to be able to persist in different habitats as evident from recent collections of fertile specimens. Although we do not anticipate a severe depletion of the regional population, the lowland landscape transformations within its range must have been accompanied by some population extinctions. Currently, however, the EOO is too large for it to qualify as threatened under criteria B and, although the currently known AOO is within the range of a threat category, it is known from more than 10 locations. Therefore, it is assessed as Least Concern (LC).

*Additional specimens seen.* INDONESIA: **Riau Islands:** Anambas Islands, Jemaja, Padang in Letong, 12 Apr 1928, *Henderson SFN 20352* (SING [SING0250637]) (fr).

PENINSULAR MALAYSIA: **Negeri Sembilan:** Gunung Berumbun, 27 Jun 1885, *Alvins 1993* (see Notes below) (SING [SING0250632]) (fl); Jelebu District, Pasoh Forest Reserve, 8 May 1996, *Gardette. 1805* (K, KEP, L, SING [SING0250635]); Jelebu District, Seriting Forest Reserve, Simpang Pertang, 22 Aug 1996, *Gardette. 2146* (K, KEP, L, SING [SING02506364]).

**Malacca:** Chabau, 21 Sep 1885, *Alvins 2123* (SING [SING0250633]) (fl); Selandar, 27 Jan 1885, *Alvins 508* (SING [SING0250631]) (fl).

SINGAPORE: **Changi:** 1891, *Ridley 2871* (SING [SING0030176]) (fr). **Gardens' Jungle:** Jul 1894, *Ridley 6410* (K, SING [SING0030175]) (fl). **Central Catchment Nature Reserve:** MacRitchie Reservoir, 1996, *Lai 83* (SING [SING008208]) (fr); Seletar Reservoir, End of pipeline, Jan 1949, *Sinclair s.n.* (L) (fr). **Mandai:** 21 Jan 1977, *Samsuri SA 1388* (SING [SING0030173, SING0030174]) (2 sheets) (fr). **Pulau Lazarus:** 20 Jan 1981, *Maxwell 81-21* (SING [SING0030172], SINU) (fr). **Western Catchment:** 31 Aug 2011, *Lua LHK 11-49* (SING [SING0166661]) (fr).

*Notes.* *Gynochthodes* has not been revised for the entire Southeast Asian or Malesian region but is accounted for or included in a number of more local floras. Confusion about the identity of *Gynochthodes praetermissa* most likely began when Ridley (1900) first recorded it in Singapore under the listing of “*Gynochthodes coriacea* Miq.” (with incorrectly given author) and stated that it is “A much larger and broader leaved plant” (compared to *Gynochthodes sublanceolata*) found in “Changi, Gardens' Jungle”. King & Gamble (1904) had also cited several specimens from “Singapore: (Bot. Garden Jungle) *Ridley 6410, 10393, 2871*. – DISTRIB. Java, Borneo, Timor”. Ridley (1923) largely followed King and Gamble (1904) and cited more specimens, including a specimen from Gunung Berumbun attributed to Cantley as collector, but which was in fact collected by M.V. Alvins (Burkill, 1927).

**Table 1.** Comparison of *Gynochthodes praetermissa* with *Gynochthodes coriacea* Blume and *Gynochthodes motleyi* (Hook.f.) Ruhsam. All measurements are made from dried specimens.

Character	<i>G. praetermissa</i>	<i>G. coriacea</i>	<i>G. motleyi</i>
Corolla	(5.5–)6–7 mm long	3.1–5 mm long	3.3–4.6 mm long
Corolla tube	(2.0–)2.5–3 mm long	0.5–1 mm long	0.8–1.1 mm long
Corolla lobes	3.5–4 mm long	2.6–4 mm long	2.5–3.5 mm long
Leaf petioles	10–17 mm long	4–7 mm long	2–4 mm long
Leaf dimensions	(3.8–)5–9.1(–12.9) × 1.5–4.9(–5.8) cm	(4–)5.3–9.2(–12.7) × (1–)1.5–4.7 cm	2.8–6.4 × 1–2.6 cm
Leaf shape	Ovate to obovate	Narrowly to broadly elliptic or lanceolate	Obovate
Leaf texture	Coriaceous	Chartaceous to subcoriaceous	Coriaceous
Leaf margin	Consistently recurved	Plane to slightly recurved	Slightly to consistently recurved
Leaf secondary veins	4–8 pairs, prominently raised below, looping and joining some distance away from the margin	5–7 pairs, raised below, faintly to noticeably looping and joining some distance away from the margin	4–5 pairs, slightly raised to flat below, faintly to hardly noticeably looping or joining some distance away from the margin
Leaf tertiary veins	Reticulate	Reticulate, sometimes inconspicuous	Usually inconspicuous

#### Additional observations on *Gynochthodes coriacea*

We consider the type specimens of *Gynochthodes coriacea* Blume, *C.L. Blume s.n.* (L [L0057744]), and *Gynochthodes sublanceolata* Miq., *J. Amann (S. Kurz) s.n.* (U [U0006036]), to be conspecific. We find that the morphological characters Suratman (2018) considered to be diagnostic in his study of the Sumatran species of *Gynochthodes* largely overlap in these two specimens (Table 2).

Here we make the formal nomenclatural reduction as follows:

**Table 2.** Comparison of the characters of *Gynochthodes coriacea* Blume and *Gynochthodes sublanceolata* Miq. as described by Suratman (2018), and from our observations of the type specimens: *C.L. Blume s.n.* (L [L0057744]), the lectotype of *Gynochthodes coriacea*, and *J. Amann (S. Kurz) s.n.* (U [U0006036]), the lectotype of *Gynochthodes sublanceolata*. All measurements are made from dried specimens.

Characters	<i>G. coriacea</i> (fide Suratman, 2018)	<i>G. sublanceolata</i> (fide Suratman, 2018)	<i>G. coriacea</i> type specimen	<i>G. sublanceolata</i> type specimen
Leaf texture	Coriaceous	Chartaceous to subcoriaceous	Subcoriaceous	Chartaceous to subcoriaceous
Intra-marginal nerves	Prominent	Absent	Faint	Faint
Leaf domatia	Present	Absent	Present	Present
Corolla	To 5.5 mm long	1.5–4.5 mm long	3–5 mm long	(Not available)
Corolla tube	0.5–1.5 mm long	0.5–1.5 mm long	0.5–1 mm long	(Not available)
Corolla lobes	4 mm long	1–3 mm long	2.5–4 mm long	(Not available)

*Gynochthodes coriacea* Blume, Bijdr., Fl. Ned. Ind. 993 (1826). – TYPE: Indonesia, Java, Kuripan, *C.L. Blume s.n.* (lectotype L [L0057744] (fl), designated by Suratman (2018: 231)).

*Gynochthodes sublanceolata* Miq., Fl. Ned. Ind., Eerste Bijv. 3: 542 (1861), **syn. nov.** – TYPE: Indonesia, Sumatra, Bangka, near Muntok, September 1858, *J. Amann (S. Kurz) s.n.* (lectotype U [U0006036] (fl), designated by Suratman (2018: 236)).

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