Gardens' Bulletin Singapore 73(2): 267–278. 2021
doi: 10.26492/gbs73(2).2021-04

Flora of Singapore precursors, 26: The genus *Maesa* (Primulaceae) in Singapore and clarification of *Maesa ramentacea* in Malesia

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ABSTRACT. Two species of *Maesa* are recorded for Singapore: the scrambling species *M. sumatrana* Scheff. found in the Central Catchment area, and the small tree taxon *M. leptobotrya* Hance found primarily in the Bukit Timah area. Both species have traditionally been misidentified as the widespread species *Maesa ramentacea* (Roxb.) A.DC., and this taxonomic confusion is discussed; a key to the two species, descriptions and photographs are provided.

Keywords. Ericales, Malaysia, Primulaceae, Southeast Asia, taxonomy

Introduction

In preparation for an account of Primulaceae for the *Flora of Singapore*, the taxonomy of the genus *Maesa* Forssk. in Singapore is clarified. Traditionally, all specimens of *Maesa* in Singapore were determined and recorded as *M. ramentacea* (Roxb.) A.DC. (e.g., Turner, 1993: 151; 1995: 369). This name has been widely used throughout Malesia for plants with ovate to elliptic, entire leaves but, with careful examination, are morphologically and geographically distinct from true *Maesa ramentacea* and best recognised as several distinct species. In Singapore, the name *Maesa ramentacea* has been used for two species, each quite distinct from each other (and from *M. ramentacea*): a scrambling species, *M. sumatrana* Scheff., found from southern Thailand and throughout west Malesia, and a tree species, *M. leptobotrya* Hance, endemic to Peninsular Malaysia and Singapore.

Maesa ramentacea in western Malesia

The name *Maesa ramentacea* has been used indiscriminately in Southeast Asia for several populations of seemingly glabrous species with ovate to elliptic, entire leaves, regardless of other morphological attributes and any considerations of biogeography and ecology. However, the name is based on Indian material and is best restricted to the commonly collected tree species found throughout Northeast India and continental Southeast Asia (Fig. 1). The distribution tapers out dramatically south of the Isthmus of Kra (Thailand) and, apart from a few records from Langkawi, Perlis and coastal

Fig. 1. *Maesa ramentacea* (Roxb.) A.DC. Flowering branch from Peninsular Thailand; note inflorescences all attaining the same size along the length of the reproductive branch, diagnostic for tree species of *Maesa*. (Photo: T.M.A. Utteridge)

Penang, is absent from Peninsular Malaysia, Singapore and the rest of Malesia (see Utteridge, 2012).

Mez (1902: 28) treated all Asian material with entire, glabrous leaves within a very broad *Maesa ramentacea*. This broad delimitation has persisted in the literature, e.g., Stone (1989: 283) considered the species as a 'shrub, scrambler or tree to 15 m'. Unfortunately, this has resulted in a 'dustbin' taxon that does not reflect morphological variation observed in different geographical populations with correlated differences in leaf shape, indumentum, habit, flower size etc. Importantly, species of *Maesa* are either self-supporting (i.e., trees and shrubs) or non-self-supporting, best termed as scrambling, but often described as climbers or lianas (note that members of *Maesa* have no climbing mechanisms such as hooks, tendrils or twining stems). Field observations have confirmed that habit is constant and very useful for species delimitation in the genus (see Utteridge, 2012 for examples in Borneo and Malaysia, and Utteridge, 2013 and Sumanon et al., 2020 for examples in New Guinea). Examination of all Malesian specimens historically determined as *Maesa ramentacea* has led to the finding that all specimens from Borneo and Sumatra are described as scrambling or climbing, and there are no specimens stating the habit as a tree at maturity; almost all of this material is best determined as *Maesa sumatrana*.

In addition to the habit, careful examination of the indumentum, especially when used in conjunction with leaf size and shape, is very useful for species identification in the genus. In Peninsular Malaysia and Singapore, nearly all the specimens of *Maesa* collected from trees are seemingly glabrous but, using a lens or dissecting microscope, are actually densely hairy on the midrib and abaxial venation with short, stiff hairs,

whilst the leaves of *M. ramentacea* are entirely glabrous; there are also useful differences in leaf size and shape that can be used to identify the species (see below).

Fieldwork throughout Thailand, Peninsular Malaysia, Singapore, Sabah and Sumatra has confirmed that there are no plants matching *Maesa ramentacea* s.s. south of the Peninsular Malaysian border regions (Utteridge, pers. obs.).

In Singapore, two distinct species of *Maesa* are found: *M. leptobotrya,* the self-supporting tree/shrub species also distributed throughout Peninsular Malaysia and in Singapore primarily found in the Bukit Timah area (Fig. 2); and *M. sumatrana*, the non-self-supporting 'climbing' species found throughout western Malesia (= Sundaland) and primarily found in the Central Catchment (Fig. 3).

In the genus *Maesa,* the inflorescences can sometimes be galled with a 'witches' broom' appearance, and the leaves subtending the galled inflorescences are then much reduced being only up to 2 cm wide; several of the early collections from Singapore, of both species, are of galled specimens, no doubt collected out of curiosity (e.g., *M. leptobotrya*: *Hullett 127*, *Keng 1029*; *M. sumatrana*: *Goodenough 151*, *King's Collector 1219*).

Specimens have been examined from A, BM, BO, CANB, GH, K, K-W, KEP, L, M, NY, SAN, SING, SINU and U (Thiers, continuously updated).

Key to the genus *Maesa* in Singapore

1a. Main stems self-supporting (i.e., shrubs or trees, not scrambling or 'climbing'); reproductive shoot leaves attaining full size along entire length of shoot, lamina ovate-elliptic to elliptic or elliptic-oblong, bases cuneate-obtuse to rounded; inflorescences racemose or compound racemose, not expanding as the plagiotropic shoot elongates, inflorescence axis hairy to densely hairy under lens .... 1. *Maesa leptobotrya*

1b. Main stems not self-supporting (i.e., 'scramblers', described on collecting notes variously as climbers, woody vines, lianas or scandent shrubs); reproductive shoot leaves often becoming reduced and bracteose toward apex of shoot; lamina ovate to ovate-elliptic, bases cordate or rounded; inflorescences compound racemose and elongating as the plagiotropic shoot elongates, inflorescence axis glabrous under lens ..... 2. *Maesa sumatrana*

Taxonomic treatment

1. *Maesa leptobotrya* Hance, Ann. Sci. Nat. Bot., sér. 4, 18: 224 (1862). – TYPE: [Malaysia], 'Crescit ad Malaccam', 1845, *Griffith s.n.* (lectotype K [K000605869], designated here; isolectotype U [U1361757] - lower left hand specimen).

Maesa indica auct. non (Roxb.) Sweet: Ridley, J. Straits Branch Roy. Asiat. Soc. 33: 103 (1900).

Maesa ramentacea auct. non (Roxb.) A.DC.: Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. 139 (1990), p.p.; Turner, Gard. Bull. Singapore 45: 151 (1993), p.p.; Turner, Gard. Bull. Singapore 47: 369 (1995), p.p.; Chong et al., Checkl. Vasc. Pl. Fl. Singapore: 58, 145, 229 (2009), p.p.

Trees or shrubs to 10 m (in Singapore); hairy to densely hairy throughout with short, stiff hairs ≤ 0.025 mm long, and sparsely scaly with lepidote scales ≤ 0.05 mm in diam. ***Vegetative shoots and leaves*** not recorded. ***Reproductive shoots*** hairy to densely hairy, scaly but scales soon caducous; inflorescences produced along entire length of shoot, entire length of shoot with leaves subtending inflorescences. ***Reproductive shoot leaves:*** lamina ovate-elliptic to elliptic or elliptic-oblong, (6.5−)9–19.5(–24) × (2.8−)4.5–7.5(–11.5) cm, attaining full size along the entire length of the shoot, chartaceous, glabrous adaxially and abaxially, apex attenuate or acute to shortly acuminate, base cuneate-obtuse to rounded, margins entire (but some veinlets reaching the margin); midrib adaxially glabrous or hairy, abaxially sparsely to densely hairy; secondary veins brochidodromous, (6–)9–10 pairs per leaf, curving uniformly, indumentum as midrib; petiole 10–15(–25) mm long, sparsely to densely hairy. ***Staminate inflorescences*** axillary, compound racemose, branched to 2 orders with 8–22 first order branches; primary axis 7.5–10(–13) cm long, hairy to densely hairy and sparsely scaly or scales absent, pedicels 0.5–1.25 mm long, hairy; bracts triangular, c. 0.4 mm long, glabrous, margins densely ciliate, apex acute; bracteoles alternate or pseudo-opposite at base of hypanthium, triangular, apex acute. ***Pistillate inflorescences*** as staminate inflorescences except primary axis 4−9 cm long. ***Staminate flowers*** pentamerous; calyx-lobes triangular, 0.4–0.65 × 0.4–0.6 mm, glabrous, margins ciliate to sparsely ciliate, apex acute to rounded; corolla 1.4–1.5 mm long; corolla lobes ovate, 0.7–0.75 × 0.8–0.85 mm, apex rounded; stamens 0.5–0.7 mm long; pistillode (including hypanthium) spherical, 0.6–0.9 mm long; hypanthium glabrous. ***Pistillate flowers*** as staminate but with stamens reduced with vestigial anthers and filaments; ovary (including hypanthium) 0.7–1 mm long. ***Fruits*** globose, 3–3.5 × 2.5–3.5 mm, described as white to creamy-white when fresh; glabrous; pedicels at fruiting stage 1–1.7 mm long; bracteoles pseudo-opposite at base of fruit; persistent calyx-lobes not overlapping, appressed to erect. ***Seeds*** 10–12 per fruit.

Distribution. Endemic to Peninsular Malaysia and Singapore. In Singapore, *Maesa leptobotrya* has been collected primarily from what is now the Bukit Timah Nature Reserve, with two collections from Bukit Kallang in the Central Catchment Nature Reserve.

Ecology. Throughout its range, *Maesa leptobotrya* is found in forest edges, disturbed forests, secondary forests, lowland, submontane and moss forests. In Singapore, it has been collected from along paths and in disturbed areas in the Bukit Timah area.

Provisional IUCN conservation assessment. Globally Least Concern (LC) following IUCN Standards and Petitions Committee (2019) guidelines. *Maesa leptobotrya* has been extensively collected throughout Peninsular Malaysia, including recent collections

Fig. 2. *Maesa leptobotrya* Hance. Flowering branch from Peninsular Malaysia; note the ovate-elliptic to elliptic leaves with a cuneate-obtuse base. (Photo: Flora of Peninsular Malaysia project)

for the Flora of Peninsular Malaysia project; in addition, the species has often been collected from disturbed areas. In Singapore, the species is primarily found in the Bukit Timah area with two collections from Bukit Kallang and a historic collection from Changi, but has not been collected since 1996, even from the densely collected Bukit Timah Nature Reserve. The species is assessed here as Critically Endangered (CR/D) in Singapore based on an estimate of fewer than 50 trees in the country.

Specimens examined. SINGAPORE: Oct 1883, *Hullett 127* (SING). **Bukit Kallang:** 10 Sep 1994, *Karim et al. NK 154* (SING); Along pipeline area, 29 Oct 1996, *Lai 95* (SING). **Bukit Timah, without specific locality:** 21 May 1949, *Allen s.n.* (SING); 11 Oct 1961, *Chew 241* (A, C, G, K, M, NY, SING); 25 Oct 1955, *Enoch 126* (SINU); 16 Feb 1930, *Furtado s.n.* (SING); 9 Mar 1956, *Gilliland 5072* (SINU); 1960, *Jumali & Wee 2987* (SINU); 7 Dec 1964, *Keng 1029* (SINU); 12 Oct 1960, *Keng et al. 2881* (SINU); 13 Mar 1957, *Abdul Panji 463* (SINU); 23 Feb 1890, *Ridley 2805* (SING). **Bukit Timah:** Summit Police Station, Feb 1974, *Alphonso & Samsuri SA 904* (SING); Boundary path, 25 Mar 1974, *Chang & Samsuri SA 9* (SING); ibidem, 28 Feb 1982, *Maxwell 82-63* (SING); Lower Quarry Road, 19 Apr 1972, *Lye s.n.* (SING); Hampstead Path, 21 Oct 1970, *Mhd Noor 1411* (SING); North View Path, 12 May 1970, *Mhd Noor 1172* (SING); Roadside, 1890, *Ridley 2064* (SING); Summit, 7 Sep 1995, *Tang & Sidek 947* (SING); Ginger Walk, 23 Jul 1971, *Hamzah Tambi H-35* (SING); Near summit, 7 Feb 1957, *Whitmore 40* (SING). **Changi:** Feb 1889, *Ridley 194* (SING).

Fig. 3. *Maesa sumatrana* Scheff. **A.** Flowering branch; note inflorescences produced along the distal portion of the shoot. **B.** Leaf detail; note the ovate to ovate-elliptic lamina with a cordate base. **C.** Inflorescence close up. **D.** Flower detail. All photographs from Nee Soon swamp forest with no associated vouchers. (Photos: X.Y. Ng)

Notes. *Maesa leptobotrya* is a very distinct species easily identified by the habit being a small tree or shrub 3–10 m tall in Singapore (to 15 m in Peninsular Malaysia), the short stiff hairs throughout (giving a hirsute or hirsutellous appearance with a lens or dissecting microscope) especially in the abaxial midrib and the inflorescence axes, the relatively large elliptic to oblong leaves with entire margins and an acute or shortly acuminate apex (often drying dark-brown), and the compound racemose inflorescences. There are no other *Maesa* tree species in Singapore that this species can be confused with.

Maesa leptobotrya differs from *M. sumatrana* in the habit (*M. sumatrana* scrambling or 'climbing'), elliptic to oblong leaves with acute apices (*M. sumatrana* with ovate or elliptic leaves with attenuate apices), the hairy inflorescence axis (*M. sumatrana* lacking hairs on the inflorescence axis), and comparatively smaller flowers

with longer bracteoles relative to the length of the pedicel. Although the application of the most appropriate name has, until now, been uncertain, Ridley astutely noted on a specimen of *Maesa leptobotrya* that it was a tree "quite distinct from the climbing one" (fide *Ridley 2064*, SING).

Although not found in Singapore, specimens of *Maesa ramentacea* are unlikely to be confused with *M. leptobotrya* as they differ in the leaf size and shape, having ovate leaves with an attenuate, tapering apex rather than the elliptic to elliptic-ovate leaves of *M. leptobotrya* with an attenuate, acute to shortly acuminate apex (see Fig. 4). In addition, in the herbarium, the leaves of *Maesa ramentacea* are usually somewhat nitid abaxially and usually dry a sandy-brown or olive brown, rather than the darker matt, brown or olive brown as seen in *M. leptobotrya*. As discussed above, the leaves of *Maesa leptobotrya* are short hairy on the abaxial venation, but the leaves of *M. ramentacea* are entirely glabrous.

Maesa leptobotrya is the earliest available name for the commonly collected Peninsular Malaysian and Singaporean taxon to be recognised as distinct from *M. ramentacea*. Henry Fletcher Hance was a British botanist based in China and his collections, including type material, are usually deposited at BM (but his letters are deposited at K, see Stafleu & Cowen, 1979: 42). *Maesa leptobotrya* was described by Hance (1862: 224) from a Griffith collection – 'Crescit ad Malaccam. (*Griffith*)'. Griffith's herbarium was initially at LINN and later transferred to K (Stafleu & Cowen, 1976: 1005); in addition, no material from Malacca (= Melaka) collected by Griffith is present in BM. It is unclear where the original type material is deposited, Hance gave no indication in the protologue, but the specimen at K clearly states 'Malacca, Griffith, 1845' and is designated as the lectotype here; the U collection is a much smaller scrappy piece and part of a mixed collection comprising mainly *Maesa sumatrana*.

2. *Maesa sumatrana* Scheff., Myrsin. Arch. Ind. 15 (1867). – TYPE: [Indonesia], Sumatra, *Korthals s.n.* (holotype L [L0064164]).

Maesa ovata Wall. ex A.DC., Trans. Linn. Soc. London 17: 133 (1834), non *M. ovata* Thouars ex Roem. & Schult. (1819). – *Maesa ramentacea* (Roxb.) A.DC. var. *ovata* C.B.Clarke in Hooker, Fl. Brit. India 3: 508 (1882). – TYPE: [Malaysia], Penang, 1822, *Wallich s.n.* [EIC 2324] (lectotype K-W [K001115654], designated here; isolectotypes G [G00138746, G003669954], K [K000501057, K000501058, K000501062], K-W [K001115655], NY [NY00329256]).

Maesa ovata Wall. ex A.DC. var. *cordata* Scheff., Myrsin. Arch. Ind. 15 (1867). – TYPE: [Indonesia], Sumatra, *Korthals s.n.* (holotype L [L0484114]).

Maesa ramentacea auct. non (Roxb.) A.DC.: Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. 139 (1990), p.p.; Turner, Gard. Bull. Singapore 45: 151 (1993), p.p.; Turner, Gard. Bull. Singapore 47: 369 (1995), p.p.; Chong et al., Checkl. Vasc. Pl. Fl. Singapore: 58, 145, 229 (2009), p.p.

Scrambling shrub, recorded as a climber or liana and reaching 15 m (in Singapore); glabrous or sparsely hairy with hairs 0.025–0.05 mm long, scales lacking. ***Vegetative shoots*** glabrous to sparsely hairy. ***Vegetative shoot leaves:*** laminas ovate, 5–9.5 × 4–5.5 cm, chartaceous to coriaceous, glabrous adaxially and abaxially, apex attenuate, base rounded to cordate, margins entire, very rarely serrulate; midrib glabrous or sparsely hairy adaxially, glabrous abaxially; secondary veins brochidodromous, 5–8 pairs per leaf, glabrous adaxially and abaxially; petioles 8–15 mm long, glabrous. ***Reproductive shoots*** glabrous; inflorescences produced along the distal portion of shoot, leaves often becoming reduced or lacking at the distal end of the shoot or with full sized leaves subtending inflorescences along the entire length of the shoot. ***Reproductive shoot leaves:*** lamina ovate to ovate-elliptic, rarely elliptic or oblong, 6–12.5 × (2.5–)3–5.5 cm, becoming bracteose toward the distal end of the shoot or attaining full size along the entire length of the shoot, chartaceous to coriaceous, glabrous adaxially and abaxially, apex attenuate, base rounded to cordate, margins entire, very rarely serrulate, midrib glabrous adaxially and abaxially (very rarely sparsely hairy adaxially); secondary veins brochidodromous, 5–8 pairs per leaf, glabrous or sparsely hairy adaxially and abaxially; petiole 5–12 mm long, glabrous (rarely sparsely hairy). ***Staminate inflorescences*** axillary, compound racemose, branched to 2 orders with 10–15 first order branches; primary axis 7.5–15 cm long, glabrous; pedicels 2–3.5 mm long, glabrous; bracts (narrowly) triangular, 0.5–0.8 mm long, glabrous, margins glabrous or sparsely ciliate, apex acute; bracteoles alternate or subopposite at base of hypanthium, broadly (rarely narrowly) triangular, apex acute. ***Pistillate inflorescences*** as staminate inflorescences except compound racemose with 5–10 first order branches, primary axis 4.5–12 cm long; pedicels 1.2–2.2 mm long; bracts 0.6–1 mm long; bracteoles 0.6–0.8 mm long. ***Staminate flowers*** pentamerous; calyx-lobes triangular, 0.75–1 × 0.7–0.8 mm, glabrous, margins glabrous or sparsely ciliate, apex acute; corolla 1.25–1.5 mm long, white; corolla lobes broadly ovate, (0.4–)0.5–0.8 × 0.85–1 mm; anthers 0.3–0.4 mm long; filaments 0.3–0.5 mm long; pistillode (including hypanthium) ellipsoidal, c. 1 mm long. ***Pistillate flowers*** as staminate flowers except corolla 1–1.25 mm long; stamens reduced with vestigial anthers and filaments; ovary (including hypanthium) 0.9–1 mm long. ***Fruits*** globose, 1.75–4 × 1.75–4 mm, glabrous; bracteoles pseudo-opposite at the base of the fruit; persistent calyx-lobes not overlapping, appressed. ***Seeds*** 2–8(–12) per fruit.

Distribution. Found throughout Sundaland, i.e., Peninsular Malaysia, Singapore, Sumatra, Java and Borneo and reaching north to the very southern part of Peninsular Thailand. Currently not known from the Philippines (including Palawan), Bali or Sulawesi.

Ecology. Found in primary forest (usually edges and gaps) and secondary habitats. In Singapore known from the margins of the evergreen forest from the Central Catchment, Nee Soon freshwater swamp forest and the Western Catchment. No collections have been made from the Bukit Timah area.

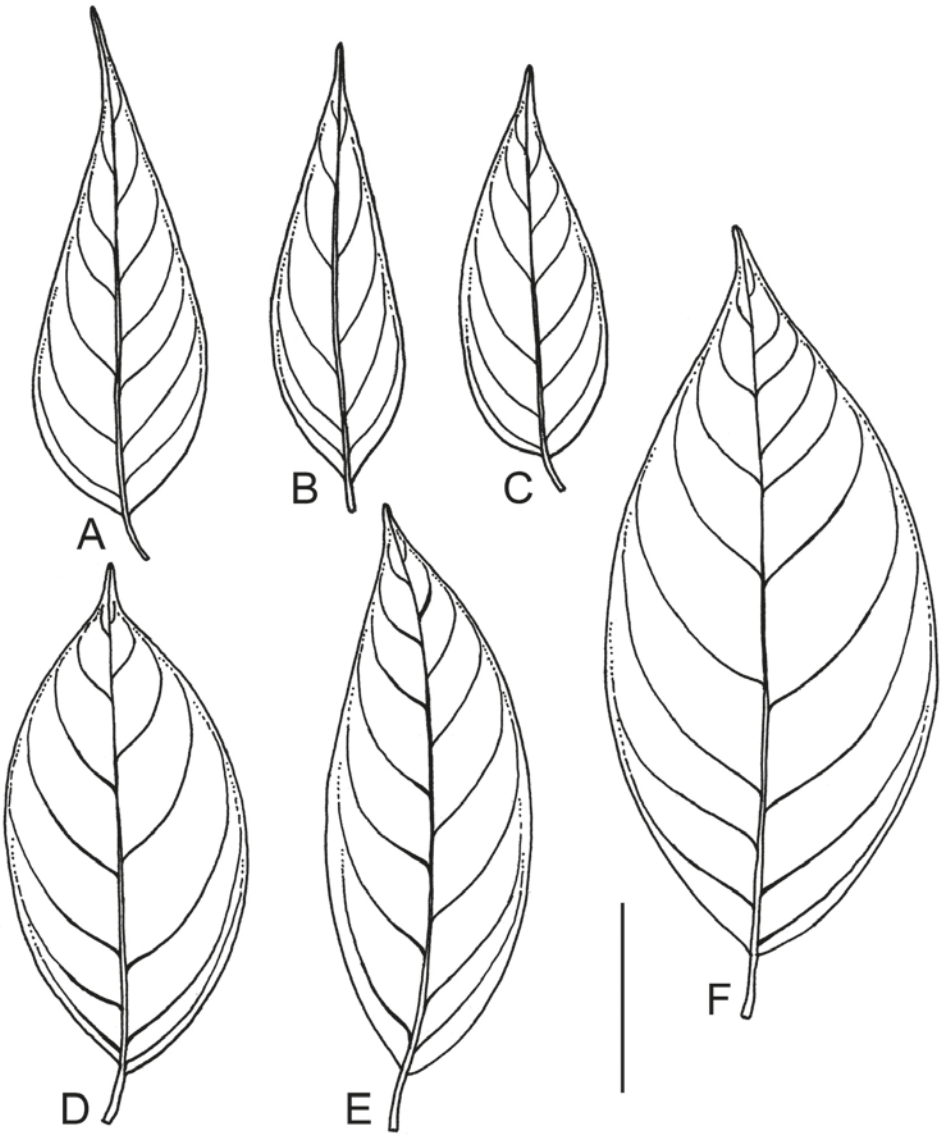

Fig. 4. Comparison of leaf shape of *Maesa ramentacea* (Roxb.) A.DC. s.s. and *M. leptobotrya* Hance in Peninsular Malaysia and Singapore. **A–C.** *Maesa ramentacea*. From Peninsular Malaysia; A from Langkawi, *Curtis 2554* (SING0076077); B from Langkawi, *Fox 12693* (SING0075068); C from Perlis, Chuping, *Ridley 14937* (SING0076419). **D–F.** *Maesa leptobotrya*. D from Peninsular Malaysia, Endau-Rompin, *Yao et al. FRI 74352* (K000606459); E from Singapore, Bukit Kallang, *Lai 95* (SING 0014428); F from Singapore, Bukit Timah, *Maxwell 82-63* (SING0014423). Scale bar = 5 cm. Drawn by T.M.A. Utteridge.

Provisional IUCN conservation assessment. Globally Least Concern (LC) following IUCN Standards and Petitions Committee (2019) guidelines as this species is widespread with a very a large EOO and with recent collections from throughout its distributional range. Although historic collections from Singapore place the species across the island, nearly all recent collections have been from the Central Catchment (with a single collection from the Western Catchment) and the species is assessed here as Vulnerable (VU/D) in Singapore based on an estimate of fewer than 1000 plants in the country.

Specimens examined. SINGAPORE: Singapore Bld., Jan 1881, *King's Collector 1219* (SING); Central Catchment Area, 5 May 1992, *Keng et al. 724* (SINU). **Changi:** Apr 1889, *Ridley s.n.* (SING); Changi Reserve, 11 Mar 1889, *Goodenough 151* (K, SING). **MacRitchie:** MacRitchie Reservoir, 21 Jan 1956, *Gilliland 5023* (SINU); ibidem, boardwalk - Chemperai Trail, 15 Sep 2011, *Boo SING2011-365* (K, SING); MacRitchie NR, 15 Dec 1960, *Keng 3012* (SINU); MacRitchie near Lornie Road, 8 Dec 1960, *Keng & Jumali 3002* (SINU); Upper MacRitchie Reservoir, south of the Island Club, 4 Feb 1982, *Maxwell 82-28* (AAU, SING); MacRitchie Reservoir Park from Little Sister of the Poor, 10 Oct 1995, *Tang & Sidek 987* (SING). **Nee Soon:** Nee Soon, near the road to Upper Peirce reservoir, along the pipe line, 3 Dec 1981, *Maxwell 81-240* (AAU, SING); Nee Soon Pipeline, 24 Aug 2012, *Leong & Pannell SING2012-369* (K, SING). **Peirce:** Peirce Reservoir by lake, 19 Mar 1981, *Mhd Shah & Ali MS 4086* (SING); Sector 29, Botanical survey of the nature reserves [between Upper Peirce and Peirce Reservoirs], 4 Jun 1992, *Tan et al. NRS 1249* (SING, SINU). **Seletar:** 25 Jun 1890, *Ridley 1644* (SING); 1891, *Goodenough 2805* (SING); Mandai Reservoir near lakes, 27 Jan 1977, *Samsuri 1387* (SING [2 sheets]); Mandai Road, Seletar Reservoir, s.a., *Mhd Shah MS 2374* (SING); Seletar Reservoir, 15 Sep 1960, *Kadim bin Tassim 513* (A, BO, K, L, SAR, SING); ibidem, 20 Jan 1977, *Maxwell 77-47* (AAU, L [2 sheets], SINU); ibidem, 7 Jan 1962, *Togashi 621721* (AAU); ibidem, Mandai Road, 4 Mar 1971, *Mhd Shah & Shukor MS 2374* (SING). **Western Catchment:** 11 May 2004, *Leong et al. WC 96* (SING).

Notes. *Maesa sumatrana* is very distinctive with the following combination of character states: scrambling habit (usually described as a climber or liana on collecting labels), the lack of hairs throughout (rarely sparsely hairy on the adaxial midrib and along the bracteole margins), the ovate to ovate-elliptic entire leaves with rounded leaf bases, the elongating inflorescences and the fruits which, although fleshy and white when mature, are spherical when dry. In addition, in the field the species usually exhibits a somewhat 'messy' habit when scrambling over vegetation and the leaves are a glossy green in vivo and usually dry a pale sandy-brown colour in the herbarium. *Maesa sumatrana* is usually glabrous throughout except for sparsely hairy bracteole margins; some specimens are very sparsely hairy on the adaxial midrib but this has not been found to correlate to any particular region or population. Note, of the nearly 600 specimens of *Maesa sumatrana* the author has examined from its entire range, the specimen *Maxwell 82-28*, from an open area in disturbed forest at MacRitchie Reservoir, is unique in having serrulate leaf margins and ovate or elliptic reproductive shoot leaves – the specimen is assumed to be a habitat form because it corresponds to *M. sumatrana* in all other characters, especially the habit, inflorescence morphology and indumentum.

The species has been confused with *Maesa ramentacea* s.s. on account of the leaf shape and the drying colour, but that tree species is not found in Singapore. In Peninsular Malaysia there are two other scrambling species, *Maesa fraseriana* Utteridge and *M. macrothyrsa* Miq., but these have yet to be collected in Singapore (and *M. fraseriana* is endemic to Fraser's Hill). *Maesa sumatrana* can be confused with other climbing Primulaceae, especially members of the genus *Embelia* Burm.f., but that genus always has superior ovaries and the flowers lack paired bracteoles on the pedicel; when sterile, *Maesa* spp. can be distinguished from other tropical Primulaceae in the glandular lines running through the leaves (other Primulaceae have dots).

In Scheffer (1867), two candidate names for *Maesa* species can be assigned to non-self-supporting species (excluding *Maesa ovata* A.DC. - an illegitimate name based on Wallich material), viz. *M. sumatrana* and *M. polyantha* Scheff., because of the axillary and terminal inflorescences Scheffer uses as key characters (these are diagnostic for the reproductive shoot morphology of scrambling species). *Maesa polyantha* was based on a Korthals collection from Borneo (and is best placed as a synonym of *M. macrothyrsa* Miq.). *Maesa sumatrana* was based on a Korthals specimen from Sumatra, and there are several entire-leaved Korthals specimens with large axillary and terminal inflorescences from Sumatra as possible candidates for the type although there is only one specimen with '*Maesa sumatrana*' annotated on the label by Scheffer. As all other candidate Korthals specimens at BO and L are determined as *Maesa ovata* in what appears to be Scheffer's hand (i.e., BO-1795880, L.2636712, L.2636713 and L.2636726), the one remaining specimen labelled as *Maesa sumatrana* is taken to be the holotype.

De Candolle (1834: 133), in his discussion of *Maesa ovata* A.DC., distinguished it from *M. ramentacea* s.s. because of the strongly elongated inflorescences, longer pedicels and larger fruits, but also noted the leaf shape. Unfortunately, the plate of *Maesa ovata* in De Candolle (1834, t. IV) is of two species — *M. sumatrana* in the background (i.e., De Candolle's *M. ovata*) with cordate leaf bases and elongating inflorescences (appearing terminal), and *M. ramentacea* in the foreground with elliptic leaves and shorter, strictly, axillary inflorescences. The specimen in the East India Company (EIC) Herbarium at Kew is selected as the lectotype, specifically the sheet with the original collecting ticket. De Candolle, in the introduction to his review of the natural order Myrsineae, states that 'during a visit to England, with the view of assisting Dr. Wallich...this celebrated botanist did me the honour of entrusting to me the care of describing several new species...', and it is assumed here that the EIC material is the original material studied by De Candolle before duplicates were distributed.

ACKNOWLEDGEMENTS. I would like to thank Himmah Rustiami for help in finding material in BO, Serena Lee for sourcing photographs of *Maesa sumatrana* and Avelinah Julius for sourcing the photograph of *M. leptobotrya.* I would like to thank the reviewers who made many useful and pertinent suggestions to improve the manuscript, and the Editor who has helped clarify several key points to help finalise the article for publication.

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