

SIX NEW SPECIES OF *SYZYGIUM* (MYRTACEAE) FROM SUMATRA

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Six new species of *Syzygium* Gaertn. from Sumatra are described and illustrated. Three are newly described, namely *Syzygium abatakum* Widodo, *S. bengkulense* Widodo and *S. ketambense* Widodo. The descriptions of the other three species, namely *Syzygium angustovatum* Widodo & Chikmawati, *S. comosum* Widodo and *S. longipetiolatum* Widodo are republished to validate their names. The conservation status of each species is proposed, following IUCN guidelines.

Keywords. Myrtaceae, new species, Sumatra, *Syzygium*.

INTRODUCTION

Sumatra is one of the largest islands in Indonesia and one of the richest in biodiversity (Whitten, 1999), although it is also among the least known. Land conversion, the development of industries, illegal logging and forest fires have caused severe pressure on the biodiversity of Sumatran habitats. *Syzygium* species are key components of Southeast Asian lowland forests, where they provide nectar, pollen and fruit as food for a wide range of insects, birds and mammals (Parnell *et al.*, 2007). These species are also of economic importance for their flowers, fruit, timber, tannins and medicinal properties (Heywood *et al.*, 2007).

In the past, Sumatra was rich in *Syzygium*, but recent conversion of land from forest to transmigration areas, rice fields and plantations has caused significant biodiversity decline. Furthermore, logging and fire have accelerated the loss of diversity of *Syzygium*. If this not addressed, Sumatra may suffer a grave loss of endemic plant diversity. Unless they are described very soon, many species of *Syzygium* may become extinct before they are known. Information on *Syzygium* in Sumatra must be updated to improve our understanding of what still exists on this island.

The names *Syzygium angustovatum* Widodo, *S. longipetiolatum* Widodo and *S. tassellum* Widodo (Widodo, 2011) were not validly published, because they did not include diagnoses or descriptions in Latin, as required by article 36.1 of the International Code of Botanical Nomenclature in effect at that time (McNeill *et al.*, 2006). These names are validly published here.

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Since 1 January 2012, it has been permissible to use either Latin or English diagnoses or descriptions (McNeill *et al.*, 2012; article 39.2). Here, we give diagnoses and complete descriptions in English.

This article is based on examination of more than 7000 specimens kept at ANDA, BIOT, BO, K, L and PUNS (Herbarium Fakultas Biologi Unsoed Purwokerto), including specimens from Sumatra and surrounding islands and countries, namely Australia, Borneo, Burma, Indochina, Java, the Moluccas, New Guinea, Peninsular Malaysia, the Philippines, Sri Lanka and Thailand.

For each species, the conservation status is proposed, following IUCN guidelines (IUCN, 2015).

SPECIES DESCRIPTIONS

1. *Syzygium abatakum* Widodo, *sp. nov.*

Close to *Syzygium pyriformum* (Blume) DC. but the leaves are elliptic to oblong, 10–20 × 5–8 cm (not 6–10 × 3–4 cm). – Type: Indonesia, North Sumatra, Sibolangit Bandar Baru, 750 m, *J.A. Lörzing* 6391 (holo BO, iso L). **Fig. 1.**

Tree 10 m tall, 10 cm dbh. *Twigs* terete-compressed, bark smooth. *Leaves* opposite, elliptic to oblong, 10–20 × 5–8 cm; upper surface olivaceous brown when dry, smooth and glossy, lower surface brownish; base cuneate, apex shortly acuminate; midrib yellowish to dark brown; major lateral veins straight, 15–25 pairs, 0.5–1.5 cm apart, minor lateral veins 1; oil dots between 2 major lateral veins c.80 per cm²; intramarginal veins 2, 3–4 mm from margin; petiole > 15 mm long with longitudinal stripes, grooved above. *Inflorescence* terminal, a simple panicle-corymb, > 60 flowers per inflorescence; peduncle terete or slightly angled, 3 mm thick. *Flowers* shortly pedicellate or sessile, pseudostipe 2–3 mm, hypanthial cup 3–4 mm, funnel-shaped. *Sepals* persistent, straight, 4, free, semicircular, 1–2 mm long. *Petals* white, 4, free, semicircular, 2–3 mm long. *Outer stamens* 7–10 mm long, 25–50 filaments, anther 0.7 mm long. *Style* c.0.8 cm long. *Fruits* unknown.

Distribution. Endemic in Sumatra.

Habitat and ecology. 100–930 m altitude.

Proposed IUCN conservation assessment. Although this species is known from several areas in Sumatra, it occurs in lowland forest that has been extensively cleared and there are no recent collections. It is likely that a significant reduction has occurred, but in the absence of more precise information about its current distribution, it is difficult to quantify. An assessment of Near Threatened would be conservative.

Specimens examined. INDONESIA. **Aceh:** Simeulue Island, Tapak Defayan, 9 iv 1920, *Achmad* 1783 (BO, L). **North Sumatra:** Sibolangit Bandar Baru, 9 x 1925, *J.A. Lörzing* 14090 (BO, L); *loc. cit.*, *J.A. Lörzing* 4256 (BO, L); *loc. cit.*, 24 iv 1919, *J.A. Lörzing* 6391 (BO, L); Tapanuli North Nias

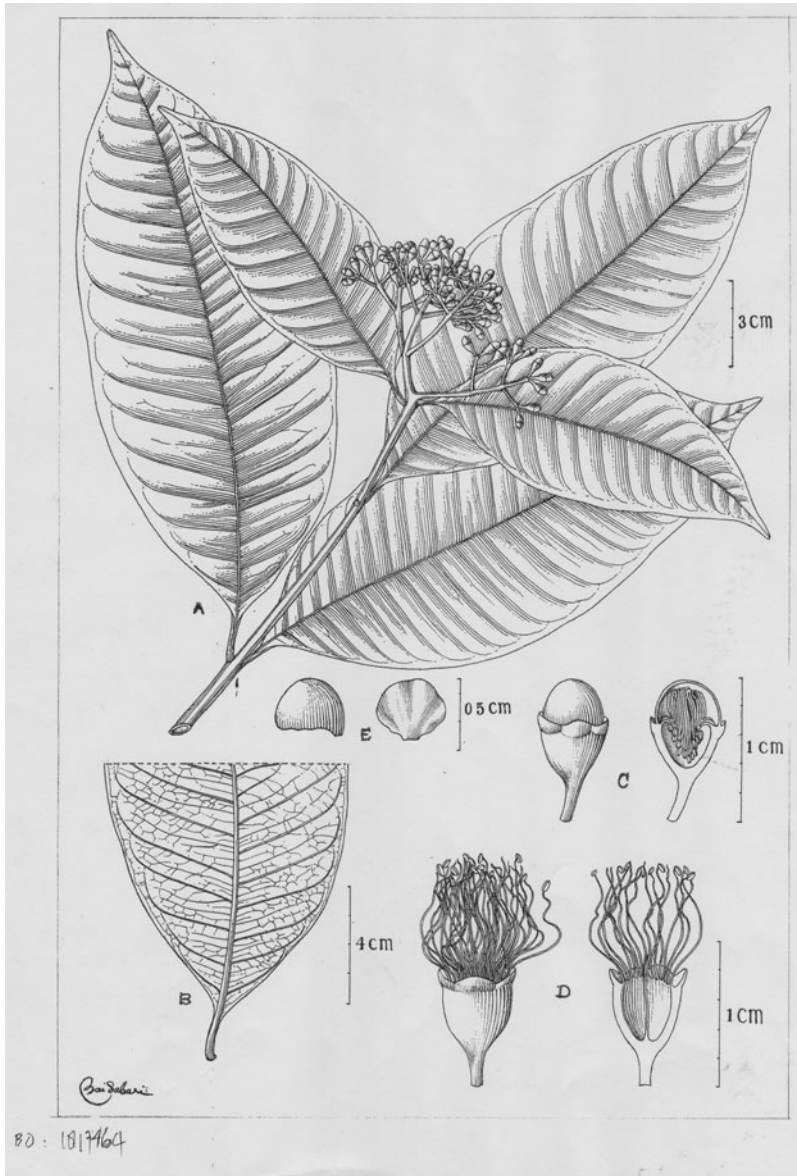


FIG. 1. *Syzygium abatakum*. A, Leafy twig and inflorescence. B, Leaf venation. C, Flower bud. D, Flower, longitudinal section. E, Petals. Drawn by Subari.

2 m, 19 vii 1928, *Choeroeddin s.n.* (BO, L). **West Sumatra:** Sijunjung Muara, *Baharoedin* 26 (bb 9066) (BO); Suliki, 3 viii 1922, *Rasad* 6 (BO); Ophir, Watu Pauk, 15 iii 1924, *St. Maharadja* 11 (BO); West Coast and Agam, 23 vii 1923, *Datoek Bungsu* 7 (BO, L). **South Sumatra:** Lematang Ulu, *P.M. Lambach* 1916 (BO, L); Rewas, *Grashoff* 1135 (BO, L).

Vernacular names. Kalek jambu (Minangkabau), kilat jambu.

Syzygium abatakum resembles *S. pyriformum*, but the upper leaf surface is shiny and olivaceous brown, and the lower part is brown when dry; the leaf base is cuneate and the leaf apex is acuminate. Furthermore, *Syzygium abatakum* is calyprate-petalled whereas *S. pyriformum* is free-petalled.

2. *Syzygium angustovatum* Widodo & Chikmawati, *sp. nov.*

Close to *Syzygium confusum* (Blume) Bakh.f. but differs in its leaf shape, which is very narrowly ovate (not oblong-lanceolate), and its petiole is not swollen. – Type: Indonesia, Riau Islands, Batam Island, 649 HB (holo BO, accession number BO 1283228). **Fig. 2.**

Syzygium angustovatum Widodo, *Syzygium Sumatra*: 59 (2011) (*nom. inval.*, no Latin description).

Tree to 8 m tall. All parts glabrous. *Twigs* terete and slightly compressed near the nodes. *Leaves* opposite, very narrowly ovate, somewhat lanceolate to linear, 20–44 × 3–5 cm, tapered gradually from below the middle to apex; upper surface blackish brown, lower surface reddish brown when dry; base broadly obtuse or rounded, apex long acute; midrib rounded below, reddish brown when dry; major lateral veins very faint on both the upper and lower surfaces, c.30 pairs, 1–2 cm apart, at an angle of 60–70° to midrib, oil dots a few per cm²; intramarginal veins faint, 1–2 mm from margin; petiole slender, 10–13 mm long, scaly, peeling off, black when dry. *Inflorescence* to 5 cm long, terminal, with up to 21 flowers; peduncle terete and 4-angled, drying dark brown. *Flowers* with short ultimate inflorescence axis, pseudostipe c.7 mm long, hypanthial cup c.10 mm long, trumpet-shaped to turbinate. *Sepals* 4, free, 3.5 × c.4 mm. *Petals* semicircular, free, c.5.5 × 5.5 mm, with a few gland dots. *Outer stamens* 15 mm long. *Style* c.20 mm long. *Ovary* 2-locular. *Fruits* campanulate, 10 mm long (immature).

Distribution. Endemic in Sumatra. Known from the type specimen only.

Habitat and ecology. Lowland forest.

Proposed IUCN conservation assessment. This species is known only from the type locality, which is in an area that has been heavily developed as a free trade zone. Its total distribution and population size are unknown. Further surveys are required to establish whether it still occurs in its type locality or on surrounding islands. Until more information is available, it should be assessed as Data Deficient.

Syzygium angustovatum also resembles *S. korthalsii* Widodo but differs in its twig, which is terete and slightly compressed below the nodes, not 4-angled or 4-winged. *Syzygium angustovatum* is characterised by its hypanthial cup, which is trumpet-shaped.

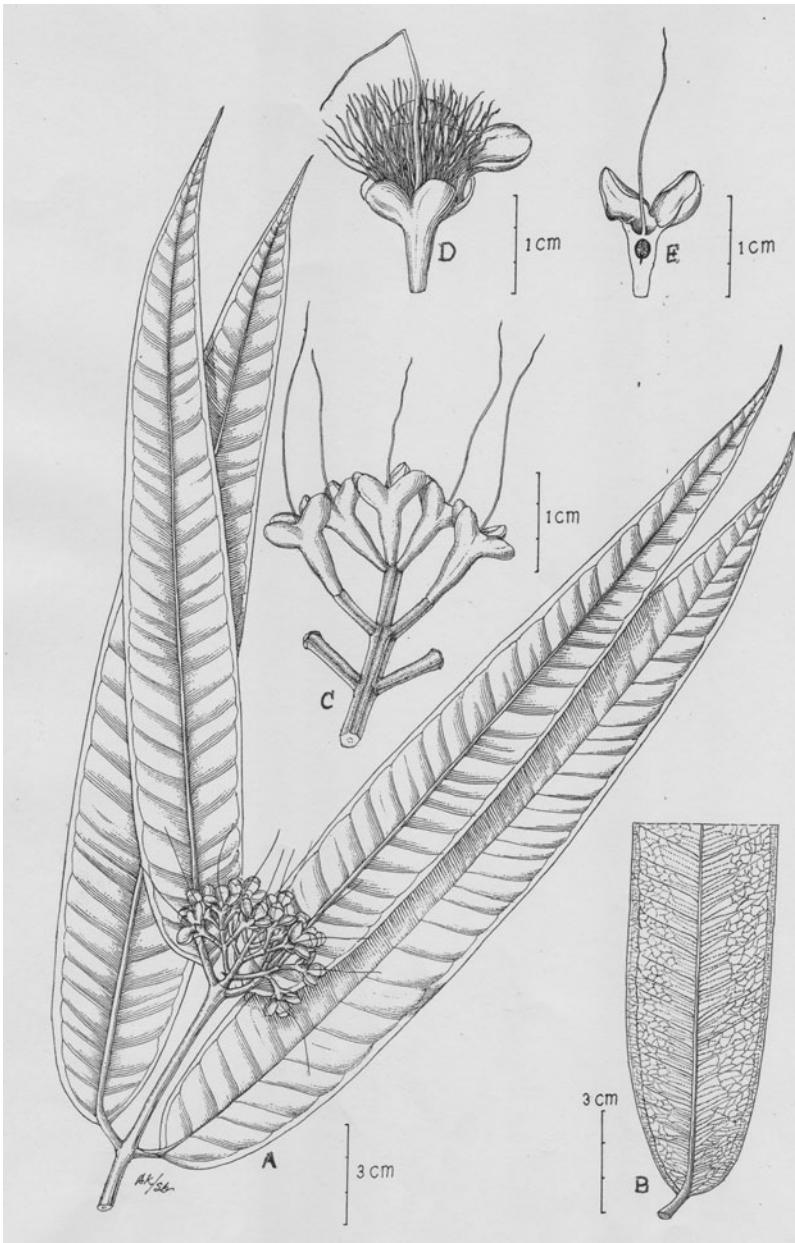


FIG. 2. *Syzygium angustovatum*. A, Leafy twig and inflorescence. B, Leaf venation. C, Inflorescence. D, Flower. E, Flower, longitudinal section. Drawn by Anne and Subari.

3. *Syzygium bengkulense* Widodo, sp. nov.

Very like *Syzygium jambos* (L.) Alston but the leaves are lanceolate to very narrowly ovate (not elliptic-lanceolate), the dried leaf colour dirty dark brown and yellowish to orangish brown (not olive green to yellowish). – Type: Indonesia, Sumatra, Bengkulu, Kepahiang, 700 m, 29 viii 1973, *Eddy D Kosih* 112 (holo BO; iso L, K).

Fig. 3.

Small tree. *Twigs* terete, smooth, bark yellowish brown, peeling irregularly or sometimes slightly scaly. *Leaves* opposite, thickly coriaceous, lanceolate to very narrowly ovate, 15–27 × 3–5.5 cm; upper surface dirty dark brown, lower surface yellowish to orangish brown when dry; base cuneate, apex acute; midrib narrowly channelled on the upper surface, rounded and impressed, raised on the lower surface; major lateral veins very faint, 9–15 pairs, 1.5–2 cm apart, curved then straightening to follow margin; minor lateral veins also very faint, at an angle of 45–60° to midrib; intramarginal veins 2, the outer c.1 mm from margin, the inner 3–4 mm from margin; petiole 6–10 mm long, not swollen, longitudinally striped. *Inflorescence* a terminal panicle, 2–3 × c.3 cm, *flowers* lax, up to 27 per inflorescence, peduncle 4-angled. *Flowers* with pedicel 3–4 mm long, bluntly 4-angled; pseudostipe 4-angled, up to 4 mm long; hypanthial cup none or 1 mm long. *Sepals* 4 persistent, free, two kinds, the longer narrower ones outside the wider ones; calyx shape semicircular and/or triangular, 3–5 × 4–6 mm wide. *Petals* 4 free, light red. Mature *stamens* and *style* not seen. *Fruits* white.

Distribution. Endemic in Sumatra. Known from the type specimen only.

Habitat and ecology. Slopes in forest, 700 m altitude.

Proposed IUCN conservation assessment. This species is known only from the type locality, which is in an area that has been subject to significant deforestation. However, without further surveys, there is insufficient information about its distribution and population size. Therefore it is assessed as Data Deficient.

Syzygium bengkulense is very like *S. jambos*, but the leaves are lanceolate to very narrowly ovate (not elliptic-lanceolate), the dried leaf colour is dirty dark brown and yellowish to orangish brown (not olive green to yellowish), the inflorescence position is terminal (not terminal and axillary) and the petals are light red (not white).

4. *Syzygium comosum* Widodo, sp. nov.

Like *Syzygium jambos* (L.) Alston but the leaves are narrower and shorter, and it is a rheophytic shrub. – Type: Indonesia, Sumatra, West Sumatra, Payakumbuh-Pakanbaru, Lubu Bangku 15 vii 1956, *M. Jacobs* 4605 (holo BO; iso L, 2 sheets).

Fig. 4.

Syzygium tassellum Widodo, *Syzygium* Sumatra: 40 (2011) (*nom. inval.*, no Latin description).

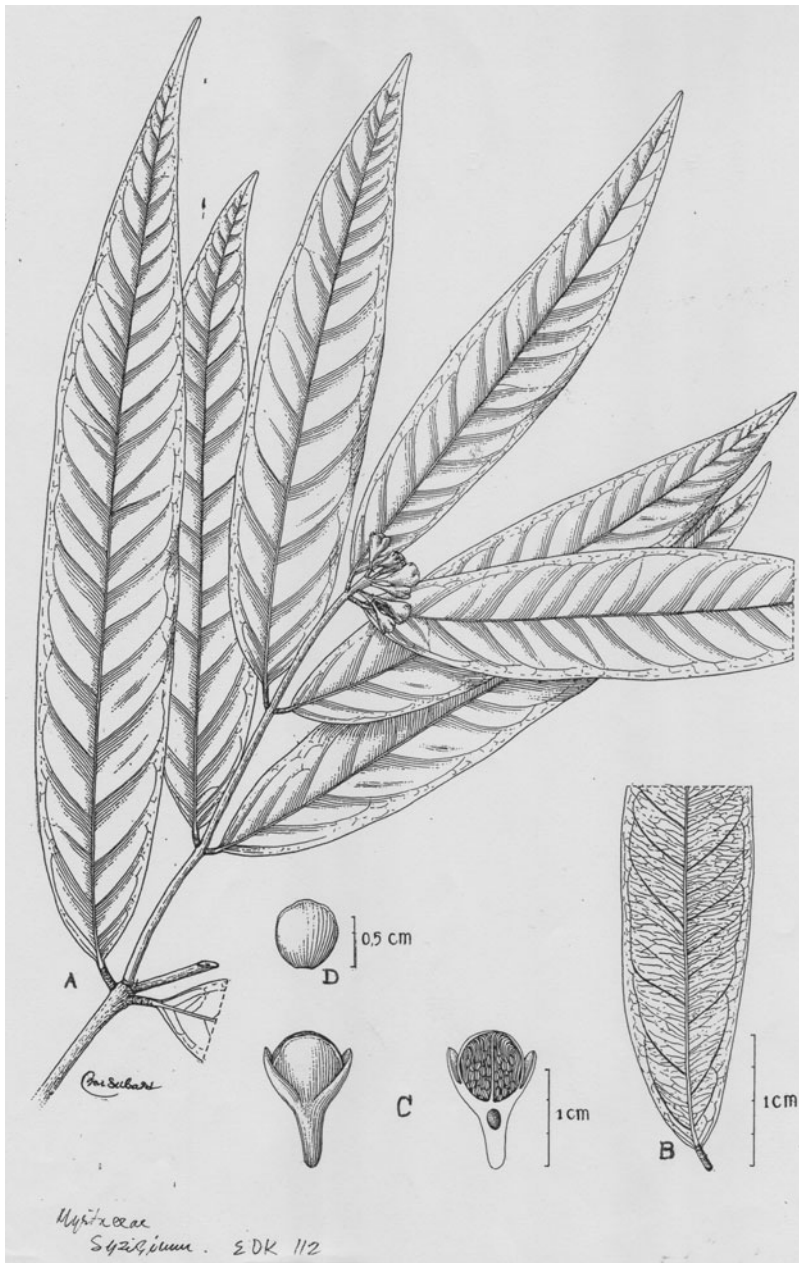


FIG. 3. *Syzygium bengkulense*. A, Leafy twig and inflorescence. B, Leaf venation. C, Flower buds. D, Petal from Eddy D Kosih 112 (BO). Drawn by Subari.

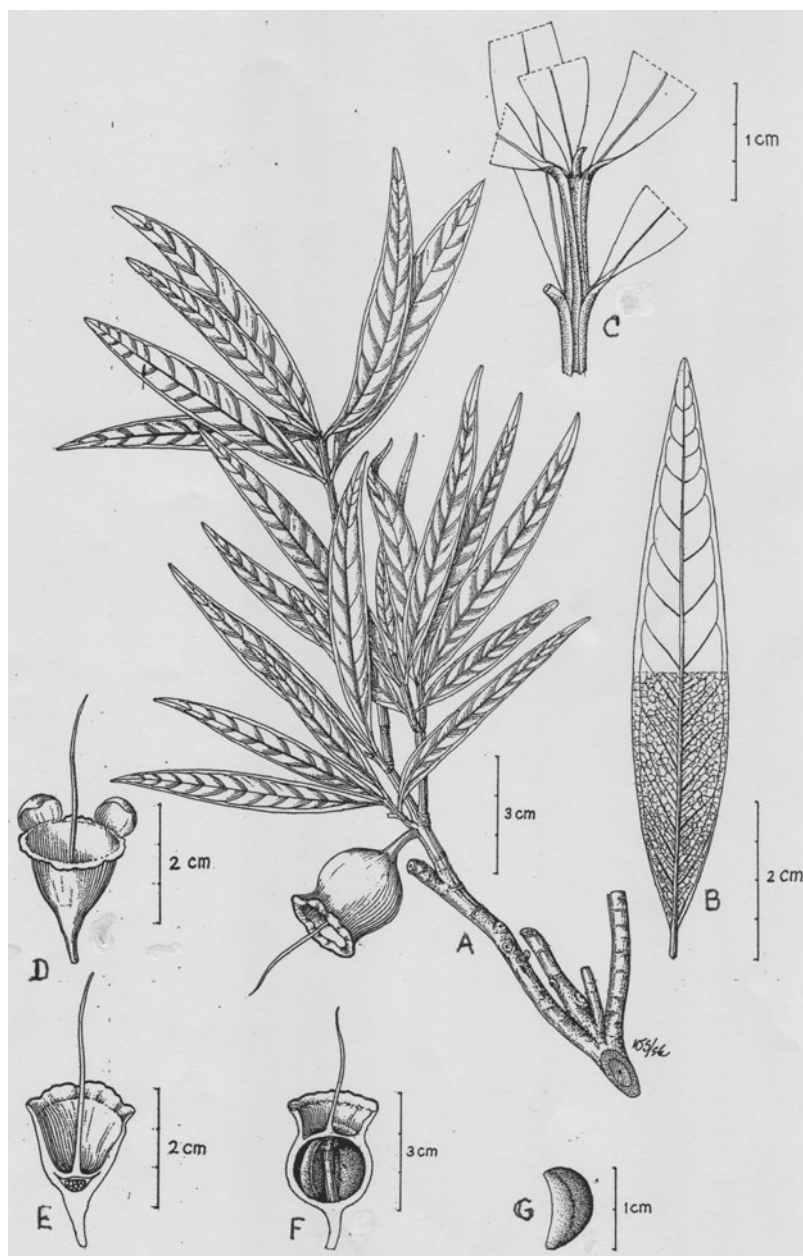


FIG. 4. *Syzygium comosum*. A, Leafy twig and fruit. B, Leaf venation. C, Winged twig and leaf arrangement. D, Hypanthial cup. E, Hypanthial cup, longitudinal section. F, Fruit, longitudinal section. G, Seed. Drawn by Wahyu and Subari.

Rheophytic shrub, 1–3 m tall, < 5 cm dbh. All parts glabrous. Old twigs terete, young ones 4-angled. Bark smooth, not peeling, greyish. *Leaves* 3-verticillate or whorled, distally crowded and clustered, narrowly lanceolate, 7–14 × 0.5–1.6 cm, usually dark brown above and brown beneath when dry; base cuneate, apex acute, tip very narrowly rounded; midrib narrowly furrowed on the upper surface, slender and raised below, yellowish or reddish brown when dry; major lateral veins 13–15 pairs, 1–1.5 cm apart, faint on both surfaces, straight and curved, at an angle of c.45° to the midrib, oil dots none or a few between the two major lateral veins; intramarginal vein 1, straight, faint, 1–2 mm from margin; petiole slender, not swollen, 3–5 mm long, drying blackish. *Inflorescences* terminal and axillary, simple or solitary, to 5 cm long; peduncle and branches terete. *Flowers* with ultimate inflorescence axis c.3 mm long; pseudostipe c.3 mm long; hypanthial cup c.10 mm long. *Sepals* c.5 × c.7 mm. *Petals* not seen. *Stamens* not seen. *Style* c.20 mm long. *Fruits* globose, c.2 cm diameter, drying dull dark purple or blackish.

Distribution. Endemic in Sumatra.

Habitat and ecology. Near streams, 400–800 m altitude.

Proposed IUCN conservation assessment. There is insufficient information about the distribution and population size of this species to determine its conservation status. Therefore it is assessed as Data Deficient; further fieldwork is required to determine if it is still extant in its known localities and if it occurs in the surrounding areas.

Specimens examined. INDONESIA. **West Sumatra:** from Payakumbuh 28 km towards Pekanbaru and Lubu Bangku; Padang above Teluk Kabung Mt Sungur Raja Agam, 15 vii 1956, *Jacobs* 4605 (BO, L); 7 vi 1953, *van Borssum Waalkes* 1607 (BO).

Syzygium comosum is very like *S. jambos*, but the leaves are narrower and shorter and it is a rheophytic shrub. It is also like *Syzygium salicoides* (Ridl.) I.M. Turner and *S. vrieseanum* (Miq.) Amshoff, but it differs from the former in its fruits, which are much larger, and from the latter in its habit, which is a shrub and the leaf upper surface drying dark brown not yellowish grey. The epithet *comosum* describes the leaves, which are crowded near the ends of the twigs, like tassels.

5. *Syzygium ketambense* Widodo, sp. nov.

Similar to *Syzygium blumei* (Steud.) Merr. & L.M. Perry, from which it differs in having elliptic-oblong leaves; cuneate (not subcordate) leaf bases; longer, more slender, not sessile, black petioles and thicker, longer peduncles. – Type: Indonesia, Sumatra, Aceh, Ketambe Research Station, 700 m, 11 iii 1982, *Kramadibrata* 332 (holo BO). **Fig. 5.**

Tree. *Twigs* terete, bark peeling off, pale yellow. *Leaves* opposite, elliptic-oblong, 8.5–13.5 × 2.8–4.5 cm, yellowish olive when dry; base cuneate, apex shortly acuminate; midrib flat above, narrowly furrowed; major lateral veins 8–9 pairs, 1–1.5 cm apart, direction at an angle of 60–70° to midrib, straight and curved; minor lateral veins 1–2;

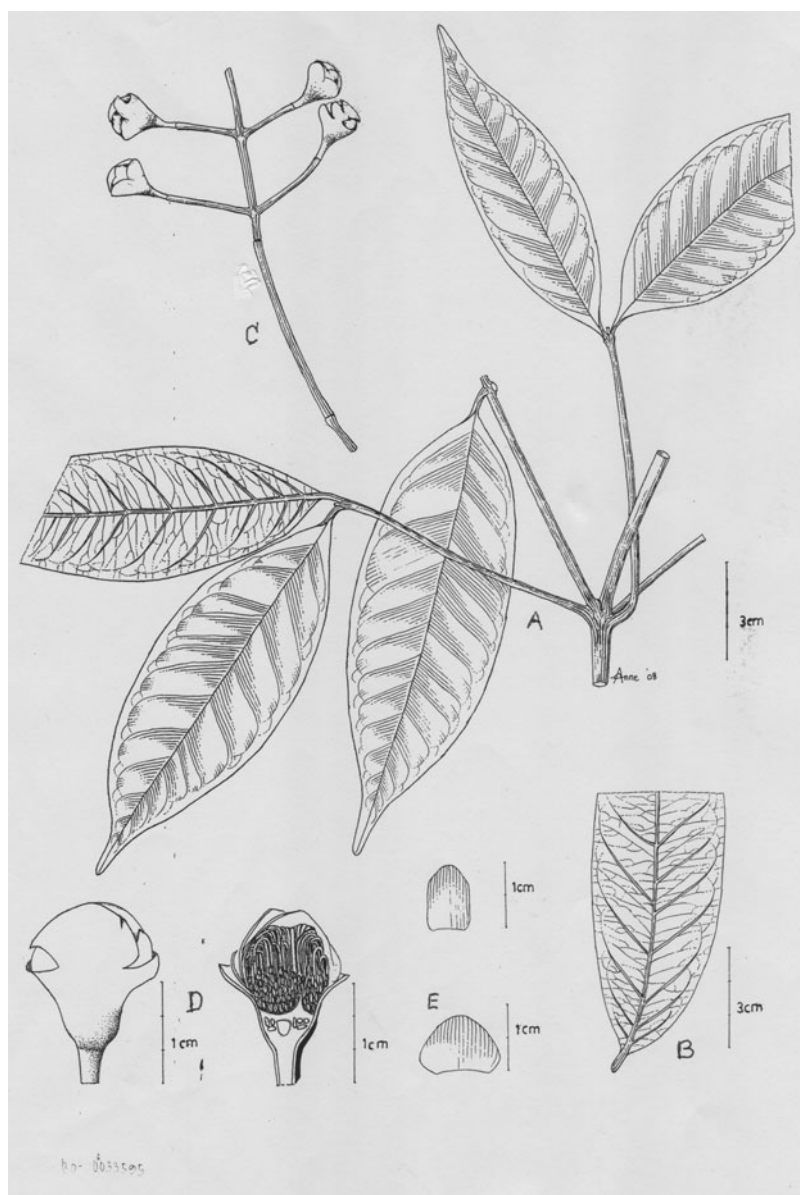


FIG. 5. *Syzygium ketambense*. A, Leafy twig. B, Leaf venation. C, Inflorescence. D, Flower buds. E, Petals. A–E from K. Kramadibrata 332. Drawn by Anne.

oil dots between 2 major lateral veins numerous; intramarginal veins 2, 2–3 mm from margin; petiole 5–8 mm long, drying black. *Inflorescences* to 13 × c.8 cm; terminal and axillary panicles, with 9–21 lax flowers each; peduncle terete or slightly 4-angled, thick. *Flowers* ultimate inflorescence axis to 2.6 cm long; pseudostipe 4–5 mm; hypanthial cup c.8 mm, funnel-shaped. *Sepals* persistent, 4, free, semicircular, 2.5–7 × 7–10 mm, oil

dots > 80 per cm², margin hyaline. *Petals* 4, free, semicircular, 5–10 × 5–7 mm, oil dots > 100 per petal, greenish white. *Stamens* > 100, c.1.2 cm long, anther c.1 mm long. *Style* c.1.5 cm long. *Ovary* 2-locular. *Fruits* unknown.

Distribution. Endemic in Sumatra. Known from the type specimen only.

Habitat and ecology. Mountainous land.

Proposed IUCN conservation assessment. This should be either Data Deficient, because it is known only from a single specimen and there is no other information about its distribution or population size, or Least Concern, because there are no identified threats, and it grows in a relatively well-preserved area.

Syzygium ketambense is most similar to *S. blumei* and *S. astronioides* (C.B.Rob.) Merr. It differs from the former in having elliptic-oblong leaves; cuneate, not subcordate, leaf bases; longer, more slender, not subsessile, black petioles; and thicker, longer peduncles. It differs from the latter in having the leaves drying yellowish not dark brown, much larger flowers, and free petals. The specific characters of *Syzygium ketambense* are the large panicle up to 13 cm long, with large hypanthium up to 1 cm diameter, long ultimate inflorescence axis up to 2.5 cm long and midrib with oil dots.

6. *Syzygium longipetiolatum* Widodo, sp. nov.

Similar to *Syzygium tahanense* (Ridl.) I.M.Turner but a medium-sized tree up to 26 m tall and 26 cm diameter, not a shrub, and much longer petioles. – Type: Indonesia, Sumatra, South Sumatra, Banyuasin, 15 m, *Boschproefstation n 1.29T 1P.32* (holo BO).

Syzygium longipetiolatum Widodo, *Syzygium Sumatra*: 80 (2011), fig. 39 (*nom. inval.*, no Latin description).

Tree to 26 m tall, 26 cm dbh. All parts glabrous. *Twigs* usually terete. *Leaves* opposite, obovate, ovate, or elliptic, 4–10 × 5–8 cm, brownish yellow when dry; base obtuse, apex obtuse with short acumen; midrib impressed above, raised below, drying dark brown; major lateral veins faint, straight and curved, 6–8 pairs, 1–1.5 cm apart, at an angle of 55–65° to midrib; minor lateral veins 2–3 between major laterals; oil dots between 2 major lateral veins a few per cm²; intramarginal veins 2, 1–2 mm from margin; petiole 15–20 mm long, slender, black when dry. *Inflorescences* terminal and axillary fascicles, to 6 cm long, very dense, > 60 flowers per inflorescence, peduncle terete. *Flowers* with ultimate inflorescence axis or pedicel sessile to 3 mm long; pseudostipe to 10 mm long; hypanthial cup 12–17 mm long, funnel-shaped. *Sepals* 4, free, semicircular and semitriangular, 2–3 × c.5 mm. *Petals* 4, free, semicircular, 3–4 × c.6 mm. *Stamens* > 100, 6–10 mm long, anther 1 mm long. *Style* c.12 mm long. *Ovary* 2-locular. *Fruits* globose, 10–15 mm diameter.

Distribution. Endemic in Sumatra, North and South Sumatra provinces.

Habitat and ecology. Lowland forest, 0–75 m altitude.

Proposed IUCN conservation assessment. Although this species is known from several areas in Sumatra, it occurs in lowland forest that has been extensively cleared and there are no recent collections. It is likely that a significant reduction has occurred, but in the absence of more precise information about its current distribution, it is difficult to quantify. An assessment of Near Threatened would be conservative.

Specimens examined. INDONESIA. **North Sumatra:** Maware Duwe, Sibolangit *Iwaan T3 P 542* (BO); *Bb T 798* (BO, L); *Endert 217* (BO), *E.iP 914* (BO), *915* (BO), *129^E* (BO), *iP 798* (BO, L); *Thorenaar 29 T2 P32* (BO, L); *Iwaan 1298 Zip 798* (BO); **South Sumatra:** Palembang Lematang Iilir, Banyuasin, Kebunkelon *Dorst 29* (BO, L). *T2 P.32* (BO, L); *Teijsmann 3786 A* (BO, L); *Bümmemeijer 6* (BO, L).

Vernacular name. Kelat rawang.

Syzygium longipetiolatum is similar to *S. tahanense*, but it is a medium-sized tree up to 26 m tall and 26 cm diameter, not a shrub. It has longer petioles, up to 2 cm long and drying black not reddish brown. It also differs in its pseudostipe size, which is up to 10 mm long, not 1 mm long.

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