

## SCHISANDRACEAE

R.M.K. Saunders<sup>1</sup> & J. Chen<sup>2</sup>

Blume, Fl. Javae, fasc. 32–33 (1830) 3, as ‘Schizandreae’, nom. cons.; Don, Gen. Hist. 1 (1831) 101, as ‘Schizandriaceae’; Ridley, Fl. Malay Penins. 1 (1922) 20, as ‘Schizandraceae’; Smith, Sargentia 7 (1947) 79; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 98; Keng, Fl. Thailand 2(2) (1972) 112; Keng, Ord. Fam. Malayan Seed Pl., ed. 3 (1983) 30; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9; Keng in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 589; Saunders, Fl. Males., ser. 1, 13 (1997) 185; Saunders, Sp. Pl. 4 (2001) 1; Heywood in Heywood et al., Fl. Pl. Fam. World (2007) 300; Xia et al., Fl. China 7 (2008) 39; Phoon, Fl. Penins. Malaysia, ser. 2, 1 (2010) 211.  
**Type:** *Schisandra* Michx.

Woody vines, monoecious or dioecious. **Leaves** alternate or ± clustered, exstipulate, petiolate; lamina simple. **Flowers** generally solitary and in the axils of leaves on ultimate branches, or in axils of fugacious bracts near base of ultimate shoots, occasionally in pairs or in clusters of up to 8, unisexual, hypogynous, few to numerous parts generally spirally arranged, pedicellate. **Tepals** free, not as distinct sepals and petals, outermost and innermost sometimes reduced. **Stamens** 4–80, sometimes ± free, fused only at base of filaments, sometimes fused into a head, or free but tightly compressed; anthers essentially basifixed, thecae dehiscent by longitudinal slits; filaments at least basally fused into modified column of variable shape. **Carpels** 12–300, developmentally conduplicate; stigmatic crest as unvascularised ‘pseudostyle’, sometimes modified into a peltate ‘pseudostigma’; ovary unilocular; ovules 2–5(–11), anatropous, ventrally attached or pendulous, bitegmic, crassinucellar. **Fruit:** aggregate of apocarps; receptacle ellipsoid to elongate; apocarps with fleshy pericarp. **Seeds** 1–5, rarely more, ventrally attached or pendulous, laterally flattened, with copious oily endosperm.

**Distribution.** If the narrower delimitation of the family (comprising *Kadsura* Kaempf. ex Juss. and *Schisandra*, but excluding *Illicium* L. (see Taxonomy below) is adopted, the family is almost exclusively East Asian, although one species of *Schisandra* is indigenous to Southeast USA and the Sierra Madre of Mexico (Saunders, Syst. Bot. Monogr. 54 (1998) 1–106; Saunders, Syst. Bot. Monogr. 58 (2000) 1–146). In Singapore, 1 genus with 2 native species.

**Ecology.** Scandent and scrambling woody vines, temperate to tropical broad-leaved or mixed forest, extending into (sub)montane (rarely montane) forest.

**Uses.** Extensively used in traditional herbal medicines.

**Taxonomy.** The family traditionally consisted of only two genera, *Kadsura* and *Schisandra* (e.g., Smith, Sargentia 7 (1947) 1–224). Since the Angiosperm Phylogeny Group classification

---

**Address:** <sup>1</sup>The University of Hong Kong, Hong Kong, People’s Republic of China; <sup>2</sup>Singapore Botanic Gardens, National Parks Board, Singapore.

**Doi:** 10.26492/fo4.2026-06; 4 September 2026 (online & print).

of 2009 (APG III, Bot. J. Linn. Soc. 161 (2009) 105–121) the delimitation of the family has expanded to include *Illicium*, which was formerly segregated in its own family. Only *Kadsura* occurs in Singapore.

## KADSURA Kaempf. ex Juss.

(from a vernacular name)

Ann. Mus. Hist. Nat. 16 (1810) 340; Blume, Fl. Javae, fasc. 32–33 (1830) 7; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 58(4) (1889) 375; King, Ann. Roy. Bot. Gard. Calcutta 3 (1891) 221; Ridley, Fl. Malay Penins. 1 (1922) 20; Smith, Sargentia 7 (1947) 156; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 99; Keng, Fl. Thailand 2(2) (1972) 112; Keng in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 591; Saunders, Fl. Males., ser. 1, 13 (1997) 190; Saunders, Gard. Bull. Singapore 48 (1998 [‘1996’]) 237; Saunders, Syst. Bot. Monogr. 54 (1998) 1; Xia et al., Fl. China 7 (2008) 39; Phoon, Fl. Penins. Malaysia, ser. 2, 1 (2010) 211. **Type:** *Kadsura japonica* (L.) Dunal.

*Sarcocarpon* Blume, Bijdr. Fl. Ned. Ind., pt 1 (1825) 21. **Type:** *Sarcocarpon scandens* Blume (= *Kadsura scandens* (Blume) Blume).

Woody lianas; monoecious. **Leaves** alternate, exstipulate; lamina papyraceous to coriaceous, elliptic to ovate, apex acute or acuminate, base cuneate (especially when young), obtuse or truncate, margins denticulate to entire; petioles with groove on adaxial surface. **Flowers** unisexual, in axils of leaves or fugacious bracts, generally solitary, occasionally with secondary flower growing in axils of prophyll, or in clusters of 2–4 growing from glomerules, occasionally cauliflorous. **Tepals** 7–24, imbricate at anthesis, outermost and innermost tepals ± reduced, suborbicular, elliptic or ovate, rarely obovate, white, cream, yellow, pink or red, outer tepals often green. **Stamens** numerous (13–80), essentially free but sometimes highly compressed into a globose or ellipsoid head, anthers either with narrow connectives and elongate filaments, or ± sessile with very broad connectives; pollen hexacolpate, distally syncolpate. **Carpels** numerous (17–c. 300), free; ovary with 2–5(–11) pendulous or ventrally attached ovules. **Fruit:** subglobose aggregate of berries attached to ellipsoid or clavate receptacle; berries ripening red or yellow. **Seeds** 1–5, smooth, hilum lateral or apical.

**Distribution.** A genus of 17 species from eastern India and Sri Lanka to southern Japan and through continental Southeast Asia and Malesia to Java and Sulawesi (Saunders, Syst. Bot. Monogr. 54 (1998) 1–106). The centre of distribution is southern China and continental Southeast Asia. In Singapore, 2 native species.

**Ecology.** Scrambling or climbing woody vines. Most species grow in (sub)tropical to submontane broad-leaved or mixed forests (to c. 1500 m), although some tropical species extend into montane forests (to c. 2400 m).

### Key to *Kadsura* species

1. Intercostal leaf venation often prominent adaxially; androeceum 8–11 mm diam., 9–11 mm high; gynoecium conical; apocarps 9.5–22(–30) × 6.5–14(–17.5) mm, sessile ..... **1. *K. scandens***  
Intercostal leaf venation often indistinct adaxially; androeceum 4–6 mm diam., 4–6 mm high; gynoecium shallowly hemispherical; apocarps (3.5–)7–11(–12) × (3.5–)6–10(–12) mm, borne on stipes (1.8–)3–11(–20) mm long ..... **2. *K. verrucosa***

### 1. *Kadsura scandens* (Blume) Blume

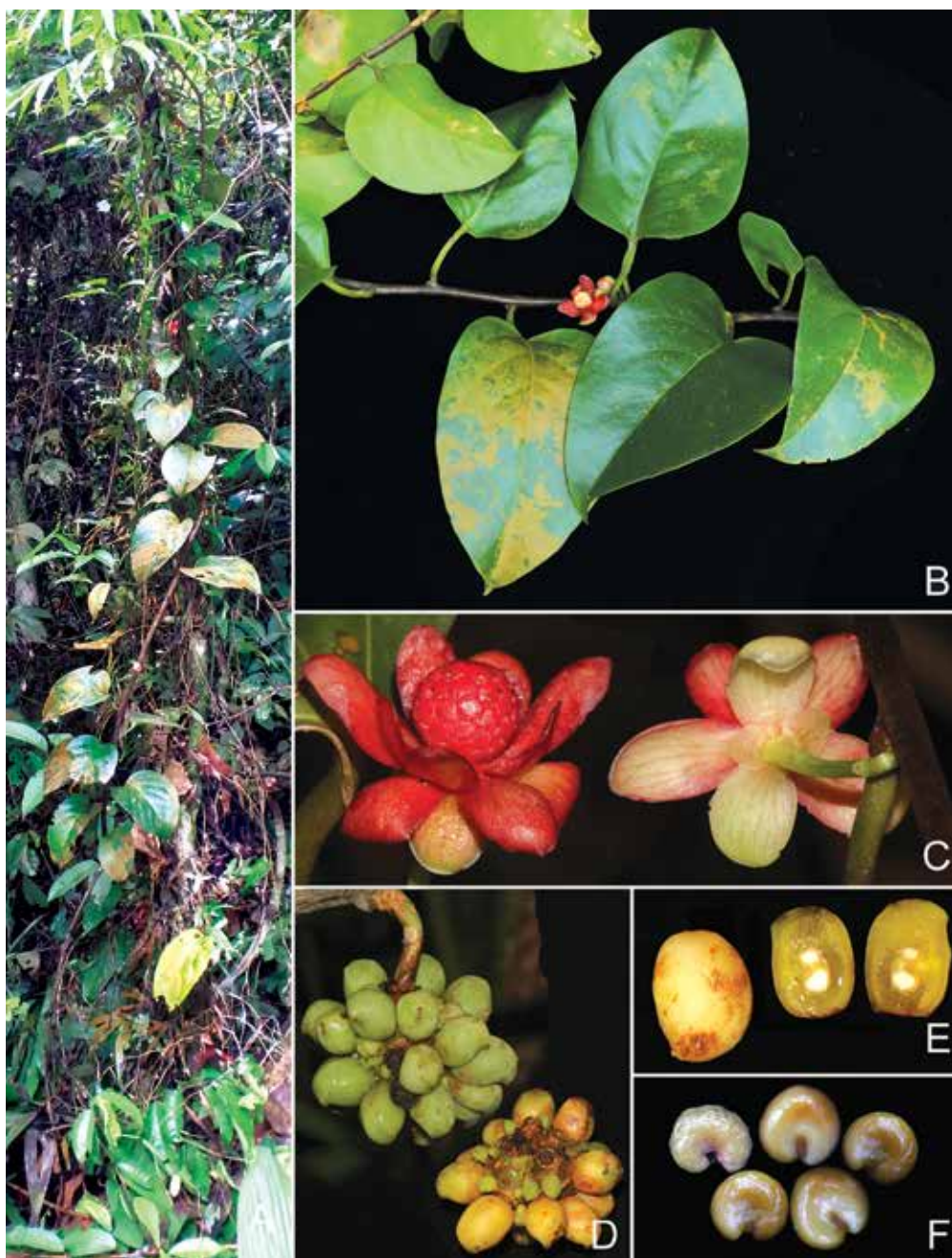
(Latin, *scandens* = scandent, climbing)

Fl. Javae, fasc. 32–33 (1830) 9, t. 1; Miquel, Fl. Ned. Ind. 1(2), fasc. 1 (1858) 19; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 58(4) (1889) 375; King, Ann. Roy. Bot. Gard. Calcutta 3 (1891) 221, pl. 71; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 38; Backer, Schoolfl. Java (1911) 16; Koorders, Exkurs.-Fl. Java 2 (1912) 242; Ridley, Fl. Malay Penins. 1 (1922) 20, fig. 5; Smith, Sargentia 7 (1947) 199, p.p.; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 99; van Steenis, Mountain Fl. Java (1972) pl. 29: 3; Keng, Gard. Bull. Singapore 27 (1974) 68, p.p.; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9, fig. 9.1, p.p.; Turner, Gard. Bull. Singapore 45 (1993) 212, p.p.; Saunders, Fl. Males., ser. 1, 13 (1997) 198, fig. 1; Saunders, Gard. Bull. Singapore 48 (1998 [‘1996’]) 238, fig. 1; Saunders, Syst. Bot. Monogr. 54 (1998) 72, fig. 3: B, fig. 34; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 214, p.p.; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 52, 181, 207, p.p.; Phoon, Fl. Penins. Malaysia, ser. 2, 1 (2010) 216, pl. 16: B; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 76, p.p.; Chen et al., Gard. Bull. Singapore 73 (2021) 295; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 718. **Basionym:** *Sarcocarpon scandens* Blume, Bijdr. Fl. Ned. Ind., pt 1 (1825) 21. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype L [L0038277], designated by Saunders, Fl. Males., ser. 1, 13 (1997) 199; isoelectotypes BM [BM000548435], HBG [HBG-510745], K [K000681704], NY [NY00030333]). **Epitype:** *Kostermans 21837*, Indonesia, Java, Ujung Kulon Reserve [Ujung Kulon Nature Reserve], Mt Pajung, 10 December 1964 (epitype K [K001278785], designated by Chen et al., Gard. Bull. Singapore 73 (2021) 295; isoelectotype L [L0275834]). **Fig. 1.**

*Kadsura cauliflora* Blume, Fl. Javae, fasc. 32–33 (1830) 11, t. 2; Miquel, Fl. Ned. Ind. 1(2), fasc. 1 (1858) 19; Backer, Schoolfl. Java (1911) 17. **Type:** *Blume s.n.*, [Indonesia], Java, ‘montis Burangrang’ [Mt Boerangrang] (lectotype L [L0038275], designated by Saunders, Fl. Males., ser. 1, 13 (1997) 199; isoelectotypes HBG [HBG-510744], K [K000681703], L [L0038273, L0038274, L0038276]).

*Schisandra ovalifolia* P.Parm., Bull. Sci. France Belgique 27(2) (1896) 237, 312, as ‘*Schizandra*’. **Type:** *Beccari PS 667*, [Indonesia], Sumatra, Ajer Mantjoer, Padang, August 1878 (lectotype K [K000681702], designated by Smith, Sargentia 7 (1947) 200; isoelectotypes BM [BM000548434], FI [FI018919], L [L0038272]).

Woody vines. **Leaves:** lamina papyraceous to coriaceous, 5–16(–19) µm thick, elliptic to ovate, (9–)10–15(–21) × (4.5–)5–9(–15) cm, length:width ratio (1.3–)1.4–2.1(–2.4), apex acute to acuminate, base obtuse to truncate (cuneate in younger leaves), margin entire; secondary veins 4–6(–8), arcuate, intercostal venation often prominent adaxially, prominent abaxially; petiole (7.5–)11.5–30(–48) mm long, 1.2–2.3(–2.8) mm diam. **Flowers** either borne solitary in axils of leaves (occasionally with secondary flower borne in axil of prophyll) or in



**Figure 1.** *Kadsura scandens* (Blume) Blume. **A.** Habit. **B.** Leafy twig with axillary flowers. **C.** Female flower, front view (left) and back view (right). **D.** Fruit showing the sessile apocarps. **E.** Intact apocarp (left) and sectioned apocarp (right). **F.** Seeds. (A–F from Singapore, A & B, Nee Soon, *Lua SING2015-125*; C, Bukit Timah, *Chen et al. JH80*; D–F, Bukit Timah, *Chen et al. JH86*. Photos: A, H.K. Lua; B & E, P.K.F. Leong; C, D & F, X.Y. Ng).

axils of fugacious bracts, occasionally cauliflorous. **Tepals** 10–18(–24), white, pale yellow or red, outer segments occasionally pale green, tinged red; outermost segment 1.5–3.8 × 2.0–3.3 mm; innermost 4.3–7.3(–10.5) × 2.9–6.2 mm, reduced; largest (7.4–)9–16(–18.9) × (4.7–)7–12(–14.3) mm. **Male flowers** with 24–52 stamens tightly compressed into a globose or ellipsoid head, 8–11 mm diam., 9–11 mm high, anthers ± sessile, connectives broad, with dorso-laterally positioned thecae. **Female flowers** with a conical gynoecium of 50–82(–110) carpels; pseudostigma broad, subpeltate. **Fruit** with 40–93 apocarps (possibly more); apocarp a berry, obovoid, ripening red or yellow, 9.5–22(–30) × 6.5–14(–17.5) mm, sessile, apex often beaked. **Seeds** 1–2 per berry, pyriform, discoid or reniform, (4.5–)5–8.5(–10) × (4–)5–9(–11) mm.

**Distribution.** Peninsular Malaysia, Sumatra, Java and Bali. In Singapore, known from Kranji (*Ridley s.n.*, 1894, SING [SING0025838]), Bukit Timah (*Ridley s.n.*, 1894, SING [SING0025839]; *Mhd Nur SFN 26103*, 27 Oct 1932, SING [SING0025841]; *Chen et al. JH 86*, 22 Jun 2021, SING [SING0291122]) and Nee Soon (*Lua SING2015-125*, 8 May 2015, SING [SING0232273]).

**Ecology.** In primary forest in Singapore. Across its range, in tropical lowland to montane forest to 2400 m.

**Conservation assessment.** Globally, not assessed. In Singapore, assessed as Critically Endangered (CR/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 58, 511).

**Uses.** *Kadsura scandens* is reported to have a variety of medicinal uses. Decoctions of the roots and/or stems are used as a lotion to combat rheumatism or as an expectorant; the sap is drunk as a remedy for urinary problems, abdominal pains and diarrhoea, or applied to alleviate skin diseases; and the bark is further used to combat fevers (Burkill, Dict. Econ. Prod. Malay Penins., ed. 2, 2 (1966) 1296; Perry, Med. Pl. E. & S.E. Asia (1980) 382). The fruit are also reported to be edible, although rather astringent.

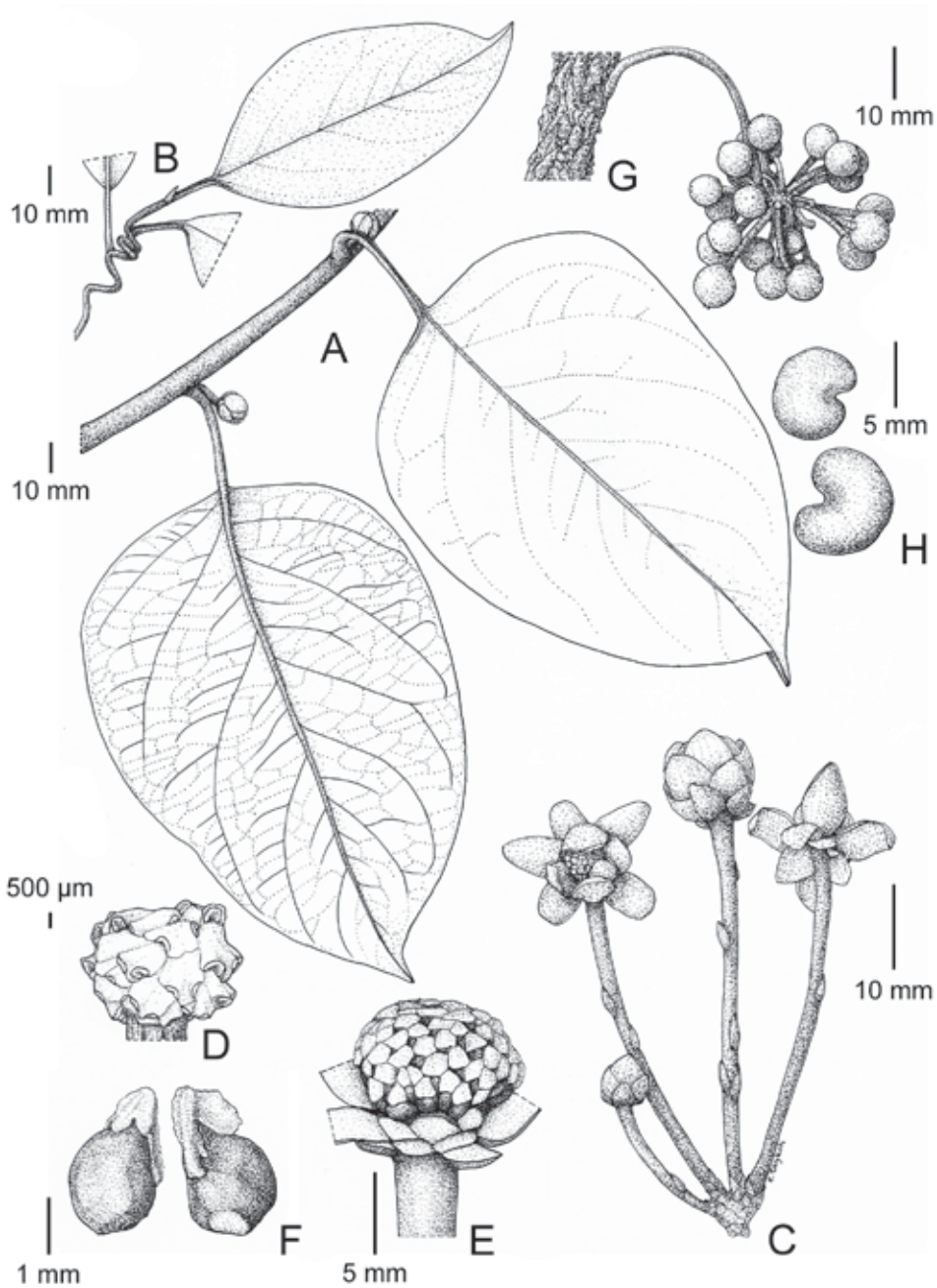
**Vernacular name.** *Akar dama-dama* (NParks' Flora & Fauna Web, 2026).

## 2. *Kadsura verrucosa* (Gagnep.) A.C.Sm.

(Latin, *verrucosus* = verrucose, warty; referring to the raised lenticels on the stem of the type specimen)

Sargentia 7 (1947) 195; Saunders, Fl. Males., ser. 1, 13 (1997) 201; Saunders, Syst. Bot. Monogr. 54 (1998) 77; Phoon, Fl. Penins. Malaysia, ser. 2, 1 (2010) 217; Chen et al., Gard. Bull. Singapore 73 (2021) 300; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 718. **Basionym:** *Schisandra verrucosa* Gagnep., [Fl. Indo-Chine, Suppl. (1938) 56, as '*Schizandra*', nom. inval.] Notul. Syst. (Paris) 8 (1939) 66, as '*Schizandra*'. **Type:** *Poilane 25429*, [Vietnam], Tonkin, Binh Lu, 28 March 1936 (lectotype P [P00210522], designated by Saunders, Fl. Males., ser. 1, 13 (1997) 201; isoelectotypes A [A00039144], B [B 10 0278201], K [K000442170], P [P00207186, P00210523]). **Fig. 2, 3.**





**Figure 2.** *Kadsura verrucosa* (Gagnep.) A.C.Sm. **A.** Habit. **B.** Twining stem. **C.** Flowers. **D.** Androecium. **E.** Gynoecium. **F.** Carpels, showing pseudostigmas. **G.** Cauliflorous fruit. **H.** Seeds. (A–H from Singapore, A, C, E & F, Bukit Timah, *Lim et al. SING2018-477*; B, Nee Soon, *Ali Ibrahim et al. SING2013-230*; D, Bukit Timah, *Niissalo et al. SING2019-446*; G & H, Rifle Range Forest, *Lim & Ng SING2018-651*. Drawn by E. Tay-Koh).



**Figure 3.** *Kadsura verrucosa* (Gagnep.) A.C.Sm. **A.** Habit. **B.** Leafy twigs. **C.** Female flowers (left) and male flower (right). **D.** Fruit comprising stipitate apocarps. **E.** Cross-section of an apocarp. **F.** Seeds. (A–E from Singapore, A, Bukit Timah; B (top twigs), MacRitchie, *Leong et al. MR2014-040*, B (bottom twig), MacRitchie; C (left), Bukit Timah, *Lim et al. SING2018-447*, C (right), Pasir Panjang Nursery; D–F, Rifle Range Forest, *Lim & Ng SING2018-651*. Photos: A, B & C (left), P.K.F. Leong; C (right), D–F, X.Y. Ng).

*Kadsura cauliflora* auct. non Blume: King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 58(4) (1889) 375; King, Ann. Roy. Bot. Gard. Calcutta 3 (1891) 222, pl. 72; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 38; Ridley, Fl. Malay Penins. 1 (1922) 20.

*Kadsura scandens* auct. non (Blume) Blume: Smith, Sargentia 7 (1947) 199, p.p.; Keng, Gard. Bull. Singapore 27 (1974) 68, p.p.; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9, p.p.; Turner, Gard. Bull. Singapore 45 (1993) 212, p.p.; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 214, p.p.; Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 225, p.p.; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 52, 181, 207, p.p.; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 76, p.p.

Woody vines. **Leaves:** lamina coriaceous, (5–)8–12(–20) µm thick, elliptic to ovate, (8.5–)10–15(–21) × 4–12.5(–14) cm, length:width ratio (1.1–)1.4–2.1(–2.8), apex acute to acuminate, base obtuse to truncate, margin entire; secondary veins (4–)5–7(–8), arcuate, intercostal venation often indistinct adaxially, prominent abaxially; petiole (14–)15.5–30(–60) mm long, (1.1–)1.3–3(–3.7) mm diam. **Flowers** either borne solitary in axils of leaves or in axils of fugacious bracts, occasionally cauliflorous. **Tepals** 12–16(–19), yellow, cream or pink; outermost segment 2–3.5 × 1.8–4.7 mm; innermost 5–8(–16) × 3.4–6.2(–10.3) mm, reduced; largest 11.3–15(–21.5) × 9.6–14(–19.7) mm. **Male flowers** with 32–57 stamens tightly compressed into a globose or ellipsoid head, androecium 4–6 mm diam., 4–6 mm high, anthers ± sessile, connectives broad, with dorso-laterally positioned thecae. **Female flowers** with a shallowly hemispherical gynoecium of (20–)44–55 carpels; pseudostigma broad, subpeltate. **Fruit** with 20–50 apocarps (possibly more); apocarp a berry, globose, ripening red or yellow, (3.5–)7–11(–12) × (3.5–)6–10(–12) mm, borne on stipes, (1.8–)3–11(–20) mm long, apex rounded. **Seeds** 1–2 per berry, discoid to reniform, 5–8 × 5–6.6(–7.8) mm.

**Distribution.** Continental Southeast Asia, Peninsular Malaysia, Sumatra and Java. In Singapore, known from Singapore Botanic Gardens’ Rain Forest (*Ridley s.n.*, May 1892, SING [SING0299507]), Old Upper Thomson Road (*Ali Ibrahim et al. SING2013-230*, 1 Sep 2013, SING [SING0202321]), MacRitchie (*Leong et al. MR 2014-040*, 1 Jul 2014, SING [SING0205624]; *Lim & Ng SING2018-651*, 14 Jun 2018, SING [SING0273946]) and Bukit Timah (*Lim et al. SING2018-447*, 30 Apr 2018, SING [SING0274233]).

**Ecology.** In primary and secondary forest in Singapore. Across its range, in tropical lowland to submontane forest to 1300 m, rarely montane forests to 2000 m.

**Conservation assessment.** Globally, not assessed. In Singapore, assessed as Critically Endangered (CR/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 511).