



Lagerstroemia (Lythraceae) in Malesia

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Key words

Lagerstroemia
Lythraceae
Malesia

Abstract An enumeration of the 11 indigenous species of *Lagerstroemia* accepted for the Malesian area is presented with additionally three cultivated species. It includes descriptions of 6 species, notes, synonyms, and keys for flowering and fruiting specimens. All names are typified. Studied herbarium collections, mainly in L, are briefly mentioned.

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INTRODUCTION

Lagerstroemia L. is an almost entirely Asian genus, distributed in lowland tropical and subtropical areas from India to China and Japan, extending southeast through Malesia to N Australia. Within Asian Lythraceae it is the largest genus in species, and the only genus of true (sometimes tall) forest trees, some of commercial value. Several species are planted as ornamental trees, among which *L. indica* and *L. loudonii* which have their original distribution outside the Malesian area.

Taxonomically, *Lagerstroemia* was completely treated by Koehne (1880, 1903) and then fully revised only in 1969 by Furtado & Srisuko, accepting 53 species. The genus was treated for Indochina by Gagnepain (1921) with 27 species, and for Thailand by De Wilde et al. (2014) accepting 18 species. Unfortunately, at the time, Furtado & Srisuko (1969) could not consult the L and BO collections, but our present results, in contrast, are largely based on specimens in L. Larger Indochina is the area with most species, c. 25. Since Furtado & Srisuko (1969) the genus was neglected and the present enumeration, accepting 14 species for Malesia (including three introduced ornamental species), will serve as a basis for the forthcoming treatment of Lythraceae for Flora Malesiana. *Lagerstroemia celebica* has been conceived in a wide sense, including a large number of taxa proposed by Furtado & Srisuko (1969), now in synonymy. In the present enumeration, species descriptions are given only for *L. celebica*, *L. engleriana*, *L. paniculata*, *L. pterosepala*, *L. pustulata*, and *L. vanosii*; for descriptions of the remaining species one is referred to De Wilde & Duyfjes (2013) and De Wilde et al. (2014), for cultivated *L. subcostata* to its references. The 11 species indigenous to Malesia are alphabetically arranged and numbered, followed by three unnumbered species known in Malesia as cultivated only.

We have refrained from recognising sections, as was done by Furtado & Srisuko (1969), because these appear still difficult to define, and anyway a good knowledge of all species in the genus is required for a founded opinion.

All names are typified. The authors studied all material in BM, K, and L, and photographs of specimens published on internet of various herbaria as far as accessible. Of type specimens at least either the holotype or an isotype was seen; if only a photograph was seen this is indicated.

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TERMINOLOGY OF FLORAL PARTS

The terms *bud* (flower bud), *calyx tube*, *pseudopedicel* and some others as used in the present descriptions of *Lagerstroemia* species are not always precisely of the same meaning as in general botany. Actually, in Lythraceae the tubiform calyx (flower tube or perianth tube) is not the result of fusion of sepals, but it is rather a hypanthium (Ronse Decraene & Smets 1991). However, the terms used here most readily link up with those used by Furtado & Srisuko (1969), the authoritative latest revision of *Lagerstroemia*. For clarity, all terms used in the descriptions are explained in Fig. 1.

Lagerstroemia

Lagerstroemia L. (1759) 1068, 1076, 1372; Miq. (1856, '1855') 621; Kurz (1877) 520; Koehne (1903) 252, f. 55; Gagnep. (1921) 937; Furtado & Srisuko (1969) 186; S.A.Graham (2007) 240; W.J.de Wilde & Duyfjes (2013) 90. — Type: *Lagerstroemia indica* L.
Murtughas L. ex Kuntze (1891) 249, nom. superfl. — Type: *Lagerstroemia flos-reginae* Retz.
Fatioa DC. (1828) 88. — Type: *Fatioa napaulensis* DC. (= *Lagerstroemia parviflora* Roxb.).
Pterocalymna Turcz. (1846) 508. — Type: *Pterocalymna paniculata* Turcz. (= *Lagerstroemia paniculata* (Turcz.) S.Vidal).
Muncheausia L. (1770) 356. — Type: *Muncheausia speciosa* L. (= *Lagerstroemia speciosa* (L.) Pers.).
Adambea Lam. (1783) 39. — Type: *Adambea glabra* Lam. (= *Lagerstroemia speciosa* (L.) Pers.).
Orias Dode (1909) 232. — Type: *Orias excelsa* Dode (= *Lagerstroemia excelsa* (Dode) Chun ex S.K.Lee & L.F.Lau).

Trees or shrubs. Twigs usually 4-angled, glabrous or hairy. Leaves opposite, decussate (in herbarium specimens seemingly distichous), or alternate, petiolate; lamina simple, ovate or oblong, margin entire; stipules absent or minute, caducous. Inflorescences paniculate (dichasial in side-branches), terminal or axillary. Flowers (sub)sessile, articulate at apex of short or long ultimate branchings of the inflorescence (true pedicels), 2-bracteolate at apex, bracts small, often caducous; calyx (hypanthium) campanulate or funnel-shaped, consisting of calyx tube and pseudopedicel (i.e. the narrowed basal part of the calyx), smooth or ridged, calyx appendages (auricles) absent or present; calyx lobes (sepals) 6–9 (mostly 6), valvate, triangular, acute, often caudate (forming a nipple in bud); petals 6–9 (mostly 6), purple (pink or white), crumpled, clawed; stamens numerous, inserted near the base of the calyx tube, dimorphic in most species: 6–11 antesepalous, larger; ovary sessile, (4–)6-locular; style long, slender; stigma small, (sub)-

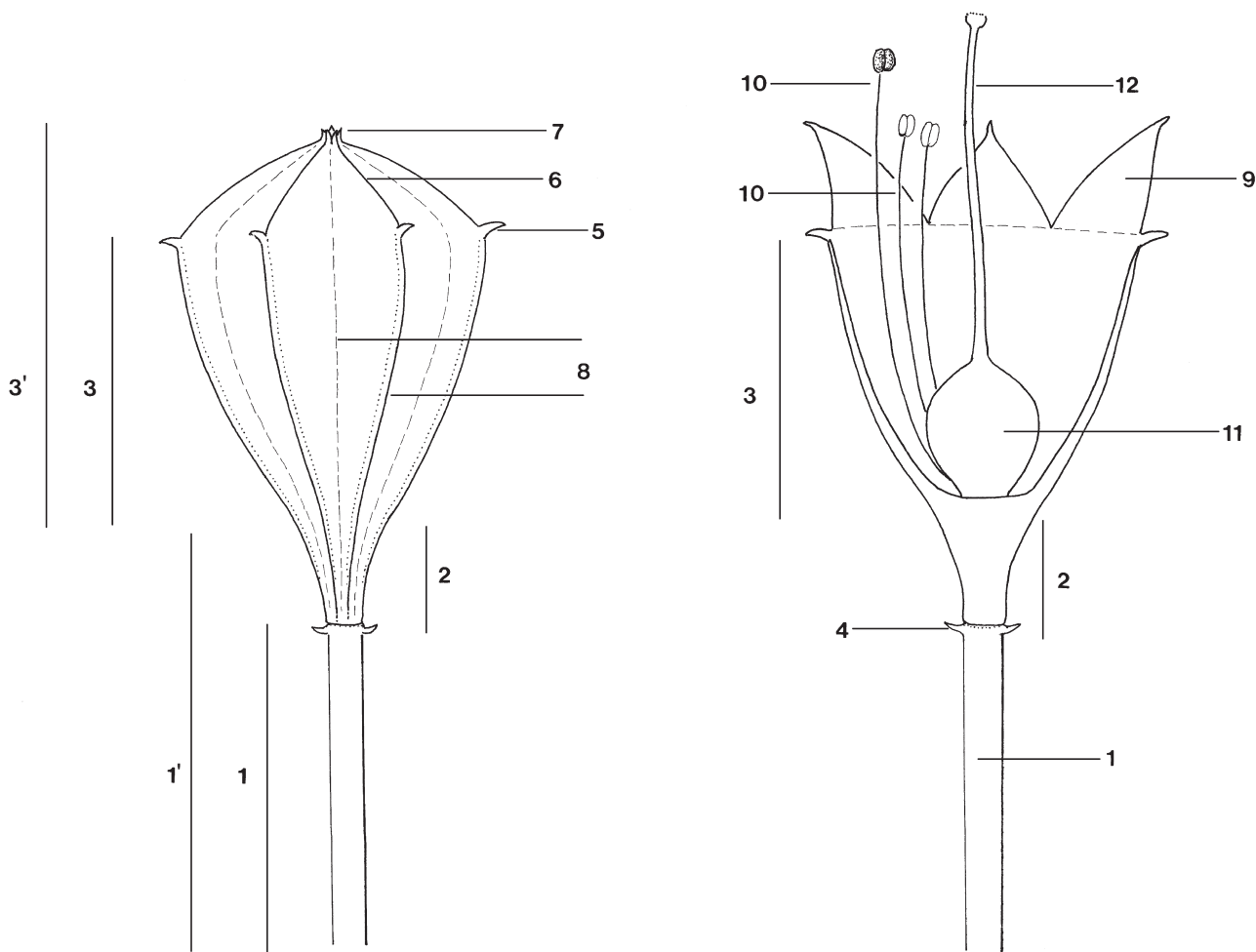


Fig. 1 Flower bud and longitudinal section of a *Lagerstroemia* flower in anthesis, schematic; petals omitted. — 1. pedicel (excluding pseudopedicel); 1'. pedicel, including pseudopedicel; 2. pseudopedicel, i.e. the narrowed pedicelliform basal part of the calyx; 3. calyx tube, here defined as excluding pseudopedicel; 3'. flower bud, i.e. comprising the calyx tube and with at apex the valvately closed calyx lobes (sepals), but without the pseudopedicel; 4. joint and bracteole(s), separating pedicel and flower (including pseudopedicel); 5. calyx appendage (or epicalyx segment), or in *Lagerstroemia* called *auricle*; 6. suture of connate (valvate) calyx lobes; 7. connate apices of calyx lobes, or *nipple*; 8. ridge on calyx tube (either only below sinuses of the calyx lobes, or also over and below the middle of the calyx lobes); 9. calyx lobe (or sepal) in open flower; 10. stamens (outer stamens frequently largest with anthers with fertile pollen); 11. ovary; 12. style and stigma.

capitate. *Fruit* a dry, near-woody *capsule*, almost free from calyx, 4–6-valved, loculicidally dehiscent, clefts usually not reaching the base. *Seeds* numerous, ± 3-angular, winged, imbricate; cotyledons rolled.

Distribution — About 50 species distributed in India east to China, Japan, southeast through Malesia to N Australia; in *Malesia*: 11 indigenous species, and three cultivated species.

Notes — 1. The most recent division into sections and sub-sections is given by Furtado & Srisuko (1969), emended by De Wilde & Duyfjes (2013). In the latter enumeration in the synonymy of sect. *Lagerstroemia* erroneously is mentioned *Velaga* Gaertn. as a genus, but this genus does not exist in *Lythraceae* and should be deleted. The reference *Lagerstroemia* sect. *velaga* (Gaertn.) Miq. in the said synonymy is erroneous and should read: *Lagerstroemia* subg. *Velaga* Miq. (1856) 622; (1858) 1090. — Lectotype (here designated): *Lagerstroemia indica* L. The valid species name *Velaga globosa* Gaertn. is a synonym of *Lagerstroemia indica*. The genus name *Velaga* Adans. belongs in *Sterculiaceae*.

2. The stamens can be either monomorphic when they are all equal in length, or dimorphic: 6–11 outer stamens antesepalous with fertile pollen, and 12 to numerous stamens antepetalous, shorter, with sterile pollen.

KEYS TO THE SPECIES OF LAGERSTROEMIA IN MALESIA

1. Key for flowering specimens

1. Shrubby treelet. Flower buds globose, 2–3 mm diam. Flowers c. 10 mm diam. Cultivated *L. subcostata*
1. Shrub or tree. Flower buds (excluding pseudopedicel) globose or obovoid (or obconical). Flowers larger, more than 10 mm diam (small in *L. vanosii*) 2
2. Buds globose, (sub)glabrous, unridged (smooth), c. 5 mm long or less. Leaves small, 3–10 cm long, (sub)sessile. Cultivated *L. indica*
2. Buds globose or obovoid (obconical), (thinly) hairy, smooth or ridged, generally more than 5 mm long. Leaves generally larger, provided with petiole 3
3. Flowers large, (40–)50 mm diam or more 4
3. Flowers smaller, c. 40 mm diam or less. 5
4. Inflorescences terminal. Petal margin subentire or gnawed. Fruit 15–25 mm long. Wild or cultivated 10. *L. speciosa*
4. Inflorescences usually lateral. Petal margin fimbriate. [Fruit smaller, 12–20 mm long.] Cultivated *L. loudonii*
5. Buds long-obconical, (sub)sessile, pseudopedicel 1 mm long or less (flower bud not sufficiently known in *L. pterosepala*). — W Malesia and Luzon 6

5. Buds obconical or subglobose, pedicelled, pseudopedicel more than 1 mm long. — W & E Malesia 8
6. Buds c. 6 mm long, smooth, not ridged, densely hairy. Calyx lobes 6. — N Peninsular Malaysia 1. *L. calyculata*
6. Buds larger, 10–15 mm long, conspicuously ridged or winged, sparsely hairy. — W Malesia or Luzon 7
7. Calyx lobes (6–)7–9. Sutures in bud ridged. — W Malesia 6. *L. ovalifolia*
7. Calyx lobes 6 (rarely 7). Sutures in bud winged. — Luzon 8. *L. pterosepala*
8. Ovary hairy. [Fruit not shagreen.] 9
8. Ovary glabrous. [Fruit shagreen.] 11
9. Calyx tube 6-ridged (sometimes 12-ridged in dry buds). Calyx lobes glabrous (always?) within. — E Malesia 3. *L. engleriana*
9. Calyx tube 10–12-ridged. — W Malesia 10
10. Calyx ridges shallow or deep; calyx lobes hairy within. Wild in Peninsular Malaysia, and widely cultivated 4. *L. floribunda*
10. Calyx ridges deep and sharp; calyx lobes glabrous within. — N Peninsula Malaysia 5. *L. langkawiensis*
11. Flowers small, c. 8 mm diam; petals including claw c. 3 mm long. — C Java 11. *L. vanosii*
11. Flowers larger, c. 15 mm diam or more; petals including claw longer, 6–20 mm long 12
12. Bud (or calyx when in flower) conspicuously winged both along ridges as well as along calyx lobe-sutures 13
12. Bud winged or not; when winged then only along calyx tube ridges, not along calyx lobe-sutures 14
13. Tree, 15–18 m tall. Inflorescences paniculate, many-flowered. Wings of calyx tube ridges simple. — Philippines (Luzon) 7. *L. paniculata*
13. Shrub or treelet. Inflorescences small, 1–3-flowered. Wings of calyx tube ridges double (always?). — Philippines (Luzon) 8. *L. pterosepala*
14. Leaves 12–17 cm long. Calyx lobes comparatively long, as long as calyx tube, lobes ± constricted (in-curved) in the basal part. Fruit 20–25 mm long. — Borneo (Sabah) 9. *L. pustulata*
14. Leaves generally smaller. Calyx lobes comparatively shorter, not constricted in the basal part. [Fruit smaller.] — Widespread in E Malesia, also Sumatra, Borneo; not in Java 2. *L. celebica*
6. Infructescences terminal. Fruit 15–25 mm long. Wild or cultivated 10. *L. speciosa*
6. Infructescences mostly lateral. Fruit smaller, 12–20 mm long. Cultivated *L. loudonii*
7. Fruiting calyx tube with 5–6 ridges. — E Malesia 3. *L. engleriana*
7. Fruiting calyx tube with 10–12 ridges. — W Malesia 8
8. Calyx ridges shallow or deep; calyx lobes hairy within. Wild and widely cultivated 4. *L. floribunda*
8. Calyx ridges deep and sharp; calyx lobes glabrous within. — N Peninsular Malaysia 5. *L. langkawiensis*
9. Fruit 20–24 mm long. Fruiting calyx lobes (rarely 6–)7–8 (–9). — W Malesia 6. *L. ovalifolia*
9. Fruit of various sizes. Fruiting calyx lobes (5–)6 (or in an odd flower 7). — W & E Malesia 10
10. Fruit small, c. 10 mm long. [Flowers small, c. 8 mm diam.] — C Java 11. *L. vanosii*
10. Fruit larger, 12–25 mm long. Fruit not known in *L. paniculata*, and doubtful in *L. pterosepala*. [Flowers larger.] 11
11. Bud (and possibly fruiting calyx) conspicuously winged along both calyx ridges as well as along the calyx lobes sutures. — Philippines (Luzon) 12
11. Bud winged or not, not winged along calyx lobe-sutures 13
12. Tree. Wings on calyx tube ridges (in flower) single; pseudopedicel present 7. *L. paniculata*
12. Shrub or small tree to 5 m. Wings on calyx tube ridges double (always?); pseudopedicel absent 8. *L. pterosepala*
13. Fruit 20–25 mm long. Leaves 12–17 cm long. — Borneo (Sabah) 9. *L. pustulata*
13. Fruit smaller, 12–20 mm long. Leaves generally smaller. — Widespread in E Malesia, also Sumatra, Borneo; not in Java 14
14. Fruit glabrous. Dry fruit surface shagreen 2. *L. celebica*
14. Fruit (apex) hairy. Fruit surface not shagreen, but sometimes resembling so. 3. *L. engleriana*

ENUMERATION OF SPECIES INDIGENOUS IN MALESIA

1. *Lagerstroemia calyculata* Kurz

Lagerstroemia calyculata Kurz (1872) 307; Furtado & Srisuko (1969) 306, f. 44; W.J.de Wilde et al. (2014) 557. — Type: Kurz, 'Martaban', not further indicated; Furtado & Srisuko l.c. saw Kurz 1344/6 (CAL) from Pegu.

Lagerstroemia angustifolia Pierre in Laness. (1886) 322. — Lectotype (De Wilde & Duyfjes 2013): *Pierre* 4993 (holo P photo seen; iso BM, K), Vietnam.

Distribution — Myanmar, Thailand, Laos, Cambodia, Vietnam; in Malesia: Peninsular Malaysia (Perlis).

Additional specimens examined. PENINSULAR MALESIA, Perlis, Wang Kelian: Siti Munirah et al. FRI 76276, FRI 76281, FRI 76283, FRI 76284.

Notes — 1. This Indochinese species has only recently been found in Peninsular Malaysia.

2. *Lagerstroemia calyculata* is easily distinguished by flowers densely hairy, largely sessile because of short or absent pedicel and pseudopedicel, the latter absent or less than 1 mm long.

2. *Lagerstroemia celebica* Blume

Lagerstroemia celebica Blume (February 1856) 127. — Lectotype (here designated): *Forsten* s.n. (holo L L2479726; iso L L2479727), Sulawesi. *Lagerstroemia hexaptera* Miq. (April 1856) 623; (1858) 1090. — Type: *Forsten* s.n. (holo L L2479729), Sulawesi.

Lagerstroemia riedeliana Oliv. (1876) 99. — *Lagerstroemia ovalifolia* Teijsm. & Binn. var. *riedeliana* (Oliv.) Furtado & Srisuko (1969) 218, f. 10. — Type: *Riedel* s.n. (holo K K000729702), Sulawesi, Gorontalo.

2. Key for fruiting specimens

1. Fruit not shagreen¹, glabrous or hairy (when approaching the shagreen facies, then hairy) 2
1. Fruit shagreen, glabrous. Fruit not known in *L. paniculata*, and doubtful in *L. pterosepala* 9
2. Fruit small, c. 10 mm long 3
2. Fruit larger 5
3. Fruit pedunculate, fruiting pseudopedicel more than 2 mm long 4
3. Fruit (sub)sessile, fruiting pseudopedicel to 1 mm long. — N Peninsular Malaysia 1. *L. calyculata*
4. Fruit broadly ellipsoid, 5–8 mm long. Cultivated *L. subcostata*
4. Fruit subglobose, c. 10 mm long. Cultivated *L. indica*
5. Fruit (fruit apex) glabrous 6
5. Fruit (fruit apex) hairy 7

¹ The concept 'shagreen' denotes a finely granulate-striate fruit surface structure as further explained and figured in De Wilde & Duyfjes (2013).

- Lagerstroemia piriformis* Koehne (1883) 23; Yii (1996) 228. — Type: *Cuming* 1675 (holo B†; iso BM, K, L), Philippines.
- Lagerstroemia batitinan* S. Vidal (1886) 139. — *Lagerstroemia piriformis* Koehne forma *batitinan* (S. Vidal) Furtado & Srisuko (1969) 254, f. 28. — Lectotype (Furtado & Srisuko 1969): *Vidal 356 bis* (holo A n.v.; iso K, L), Philippines, Luzon, Laguna, San Antonio.
- Lagerstroemia koehneana* K. Schum. (in Schumann & Hollrung 1889) 85; Furtado & Srisuko (1969) 246, f. 24. — Type: *Hollrung 704* (holo B†; iso K, L), Papua New Guinea, Augusta River.
- Lagerstroemia ovalifolia* Teijsm. & Binn. var. *apiculata* Furtado & Srisuko (1969) 216, f. 9. — Type: *Lörzing 6407* (holo SING n.v.; iso L, U), Sumatra, N of Bandarbaroe.
- Lagerstroemia ovalifolia* Teijsm. & Binn. var. *novoguineensis* Furtado & Srisuko (1969) 220, f. 11. — Type: *Schram 6068* (holo LAE n.v.; iso A photo seen, K, L, SING n.v.), Papua, Wersar.
- Lagerstroemia crassifolia* Furtado & Srisuko (1969) 232, f. 17. — *Ahwing* SAN 47262 (holo SING n.v.; iso L, SAN n.v.), Borneo, Sabah, Gomantong Forest Reserve.
- Lagerstroemia borneensis* Furtado & Srisuko (1969) 234, f. 18. — Type: *Kostermans 10249* (holo SING n.v.; iso L), Borneo, Kalimantan, C Kutei, Belajan River.
- Lagerstroemia cristata* Furtado & Srisuko (1969) 236, f. 19. — Type: *Carr 12270* (holo SING n.v.; iso BM, K, L), Papua New Guinea, Central, Koitaki.
- Lagerstroemia inopinata* Furtado & Srisuko (1969) 238, f. 20. — Type: *Ahern 204* (holo A photo seen; iso UC photo seen), Philippines, Luzon.
- Lagerstroemia aruensis* Furtado & Srisuko (1969) 240, f. 21. — Type: *Neth. Ind. For. Service bb 25424* (holo A photo seen; iso L, SING n.v.), Moluccas, Aru Isl., Pulau Kobroor.
- Lagerstroemia alatulata* Furtado & Srisuko (1969) 242, f. 22. — Type: *Sulit 8173* (holo A photo seen), Philippines, Luzon, Mt Makiling.
- Lagerstroemia moluccana* Furtado & Srisuko (1969) 244, f. 23. — Type: *Tangkilisan 108* (ex. *Kostermans = bb 33802*) (holo SING n.v.; iso BM, L), Moluccas, Morotai.
- Lagerstroemia piriformis* Koehne var. *valleculata* Furtado & Srisuko (1969) 250, f. 26. — Type: *Carr 12043* (holo SING n.v.; iso A photo seen, BM, K, L), Papua New Guinea, Central, Koitaki.
- Lagerstroemia piriformis* Koehne var. *callosa* Furtado & Srisuko (1969) 252, f. 27. — Type: *Darbyshire 928* (holo LAE n.v.; iso K, L, PNH n.v.), Papua New Guinea, Central, Maipa Village.

Trees 8–42 m tall; bark smooth, grey or pale brown. *Leaves*: petiole 0.2–0.8 cm long; lamina glabrous or minutely hairy (glabrescent), especially on nerves, 3–12 by 2–5 cm; lateral nerves 5–8 on each side; intercostal venation reticulate. *Inflorescences* terminal, few- or many-flowered, lax, 7–20 by 7–15 cm, minutely grey-hairy. *Flowers*: bud minutely hairy, obovoid, 9–12 mm long, c. 5 mm diam, nipple absent or minute; pseudopedicel 1–10 mm long; *calyx tube* 5–8 mm long, 6-ridged, ridges superficial or ± angular, straight, usually extending on the pseudopedicel; *calyx lobes* (sepals) 6, with the sutures (in bud) flat or wholly or partly ± thickened or furrowed, not winged, lobes variously finely short-hairy within, 2–4 mm long; *petals* white or pale purplish, (broadly) elliptic, 6–10 mm long (including 2–5 mm long claw), margin entire or minutely fimbriate; *stamens* radially dimorphic, filaments white; *ovary* glabrous, style white. *Capsules* grey-brown, glabrous, shagreen, (10–)12–20 mm long, with or without short beak, (4–5–)6-valved; *fruiting calyx* 6-ridged, lobes thin, glabrous (glabrescent) within, patent or reflexed; *fruiting pseudopedicel* (1–)2–10 mm long.

Distribution — Sumatra, Borneo, Philippines, Sulawesi, Moluccas, New Guinea.

Additional specimens examined. SUMATRA, Palembang: *Grashoff 1092*; Lampong: *Forbes 2705*. — BORNEO, Sabah: *Singh & Eging SAN 51859*; E Kalimantan: *Ambri et al. 1632*, *Endert 2073*, *2311*, *Kostermans 5046*, *5485*, *9627*, *10214*, *21051*, *34660*, *Neth. Ind. For. Service bb 29270*, *Sidiyasa 13001*, *Zainal 1452*; S Kalimantan: *Kessler et al. 1620*. — PHILIPPINES, Mindoro: *Conklin PNH 39234*, *Ridsdale 1147*; Luzon: *Barbon et al. PPI 2143*, *Forbes & Escritor BS 20832*, *Gaerlan et al. PPI 2738*, *Mendoza PNH 97804*, *Reynolds & Majaducan PPI 24813*; Samar: *Ramos & Pascasio 1705*, *Sherfesse et al. FB 21049*; Leyte: *Edaño PNH 11964*; Mindanao: *Frake PNH 38442*, *Gaerlan et al. PPI 39234*, *Hallier 4552*, *Mendoza & Convocar PNH 10415*, *Miranda FB 17992*, *Oliveros & Belen FB 23333*, *Ramos & Pascasio BS 34776*, *Reillo BS 16088*, *Soejarto et al. 8142*, *Soria et al. FB 24488*, *Stone et al. PPI 12132*. — SULAWESI, Manado: *De Vogel 2573*, *Koorders 17758*, *17760*, *17761*,

17762, *17763*. — LESSER SUNDA ISLANDS, Sumbawa: *Colfs 201*. — MOLUCCAS, Morotai: *Kostermans 614*, *Tangkilisan (exp. Kostermans) bb 33726*, *bb 33878*; Halmahera: *Bangun et al. 141*, *186*, *Gushilman et al. 27*, *334*, *Idjan & Mochtar 135*, *Mahroji et al. 144*, *Pleyte 199*; Ternate: *Béguin 1609*, *Bish 5*; Bacan: *De Vogel 3892*; Aru Isl.: *Buwalda 5290*. — PAPUA, near Sorong: *Iwanggin BW 5661*, *Moll BW 11664*, *Schram BW 13264*; Freeport: *Johns et al. 9651*. — PAPUA NEW GUINEA, West Sepik: *Darbyshire & Hoogland 8037*; East Sepik: *Hoogland & Craven 10552*, *Millar NGF 35137*, *Millar & Dockrill NGF 35173*, *Regelado & Takeuchi 1478*, *Takeuchi & Wiakabu 10129*, *Takeuchi & Regelado 10264*; Madang: *Hoogland 4868*, *4908*, *5073*, *Kerenga & Lelean LAE 73895*; Southern Highlands: *Gillison & Kairo NGF 25785*; Gulf: *Galore NGF 41132*, *Schodde & Craven 4682*, *Takeuchi & Kulang 11513*; Northern: *Millar NGF 23520*, *Saunders 2*; Central: *Carr 12628*, *Eddowes & Kumul NGF 13081*, *Henty NGF 38537*, *Henty & Lelean NGF 41891*, *Kanis 1001*, *Millar NGF 48619*, *Unknown NGF 2806*; Eastern: *Jacobs 9157*.

Notes — 1. *Lagerstroemia celebica* is here widely conceived as it appeared impossible to the authors to discriminate between the many taxa which are at present put into synonymy. In our opinion the synonyms of widespread *L. celebica* are the reflexion of the, often local, variation mainly in the elaboration of the ridges on the calyx tube and (in bud) the ornamentation on the sutures of the calyx lobes. As yet we cannot trace and reproduce the distinctions as propounded by Furtado & Srisuko (1969). Possibly in the future, when more material from all areas may have become available, and especially by fieldwork, a more obvious division could be discerned.

In New Guinea noteworthy variation in fruit is seen: the collection *Millar NGF 23520* (Northern Province) deviates in having a long smooth pseudopedicel, to 10 mm long, and *Takeuchi & Kulang 11513* (Gulf Province) deviates in having small fruits c. 10 mm long with only 4–5 valves. These collections link up with *L. celebica*, in a broad sense, but more similar collections are needed for assessing a possibly different taxonomic status.

2. The species *L. paniculata* and *L. pterosepala* are accepted in the present treatment; they link up with forms of *L. celebica* with pronounced ridges on the calyx tube and sepal sutures, but in the former two species the wings on the sepal sutures (in bud) are much more obvious.

3. *Lagerstroemia engleriana* Koehne

- Lagerstroemia engleriana* Koehne (March 1883) 24; (1903) 267; Furtado & Srisuko (1969) 299. — Type: *Zeyl* (is *Zeye* in *Naumann*, see note 2) *s.n.* (holo B†). Neotype (here designated): *Boschproefstation bb 11128* (holo L), Lesser Sunda Islands, Timor, Kupang.
- Lagerstroemia archeriana* F.M. Bailey (July 1883, see note 3) 196, 809; Koehne (August 1883) 408; Furtado & Srisuko (1969) 299; Hewson (1990) 112. — Type: *Baird s.n.* (holo BRI-A90023033 photo seen), Australia, Queensland, Palmer River.
- Lagerstroemia subsessilifolia* Koehne (1903) 267; Furtado & Srisuko (1969) 222. — Type: *Hann 47* (holo B? n.v.; iso K), Australia, Queensland, Cape York.
- Lagerstroemia dielsiana* Mansf. (1927) 24; Furtado & Srisuko (1969) 296. — Type: *Ledermann 6505* (holo B†), Papua New Guinea, Sepik.
- Lagerstroemia floribunda* auct. non Jack: Blume (1856) 126, t. 41B (based on the cited figure, drawn from material from Timor, depicting flowers and fruit, and clearly representing *L. engleriana*, but material from Timor collected before 1856 is not in L).

Shrubs or trees 3–12 m tall; bark creamy grey or pale brown, smooth, peeling. *Leaves*: petiole (0.1–)0.3–0.6 cm long; lamina brown-hairy on both surfaces, glabrescent, oblong or elliptic or lanceolate, 7–17 by 4–9 cm; lateral nerves 5–11 on each side; intercostal venation reticulate. *Inflorescences* terminal, lax, broadly or narrowly pyramidal, 4–40 cm long, grey or rust coloured hairy. *Flowers*: bud obconical, c. 1 mm nipped at apex, 10–12 mm long; pseudopedicel 3–4 mm long; *calyx tube* c. 6 mm long, 6-ridged, with a small inwards bent auricle at each sinus, *calyx lobes* (sepals) 6, glabrous or possibly at apex somewhat hairy within, c. 3 mm long; *petals* pink-purplish, broadly elliptic, c. 16 mm long (including c. 5 mm long claw);

stamens numerous, radially dimorphic; *ovary* hairy. *Capsules* (grey) hairy at least at apex, not shagreen but often approaching this facies, drying (brown-)black, 15–18 mm long, (4–)5-valved; *fruiting calyx* 6-ridged; calyx lobes glabrous within; fruiting pseudopedicel 2–10 mm long.

Distribution — Eastern Malesia and Australia (Queensland); *in Malesia*: Sulawesi, Lesser Sunda Islands (Timor), Moluccas (Tanimbar isl. (Jamdena Isl.)), Papua New Guinea.

Additional specimens examined. SULAWESI, C Sulawesi, Kabaena Isl.: Widjaja 664. — LESSER SUNDA ISLANDS, Timor: Kooy 317, 872, *Neth. Ind. For. Service* bb 21416, bb 27083, *Schmutz* 2321, *Wiradinata* 2997. — MOLUCCAS, Tanimbar Isl.: *Buwalda* 4170, *Neth. Ind. For. Service* bb 24246, *Van Borssum Waalkes* 3249. — PAPUA NEW GUINEA, Western: *Brass* 6239, *Ridsdale* NGF 33750; Western Highlands: *Kerenga & Landsberg LAE* 56788; Central: *Carr* 1142, *Frodin & Ilagi UPNG* 4237, *Frodin UPNG* 607, *Gebo UPNG* 278, *Gillison NGF* 22130, *Gray NGF* 12907, *Havel NGF* 17377, *Pullen* 6890, *Sarangi NGF* 36401, *Schodde* 2645, *Vinas & Naoni UPNG* 7629, *Womersley NGF* 43880; Morobe: *Brass* 32313, *Womersley* 4746.

Notes — 1. *Lagerstroemia engleriana* is apparently a tree of monsoon forest.

2. As explained in Van Steenis-Kruseman (1950) 380, 591.

3. See 'Brisbane Courier' of 13 August 1883.

4. *Lagerstroemia floribunda* Jack

Lagerstroemia floribunda Jack (1820) 38; Blume (1856) 126, p.p., for the type only; Gagnep. (1921) 953; Craib (1931) 721; Backer (1964) 256; Furtado & Srisuko (1969) 329, f. 55–56; W.J.de Wilde et al. (2014) 563. — Type: *Jack s.n.*, Pulau Pinang, not extant. Neotype (Furtado & Srisuko 1969): *King s.n.* (holo SING n.v.), Peninsular Malaysia, Penang.

Lagerstroemia floribunda Jack var. *brevifolia* Craib (1931) 722; Furtado & Srisuko (1969) 331. — Type: *Kerr 11028* (holo BM; iso BK, K), Thailand, Krung Thep Maha Nakhon, Bangkok.

Lagerstroemia floribunda Jack var. *subecostata* Craib (1931) 722; Furtado & Srisuko (1969) 333. — Type: *Kerr 13618* (holo BM; iso K), Thailand, Songkhla, Padang Besar.

Lagerstroemia anisoptera Koehne (1883) 407; Gagnep. (1921) 952; Furtado & Srisuko (1969) 321, f. 51. — Type: *De Lanessan s.n.* (not found), Vietnam, Pulo Condor.

Lagerstroemia turbinata Koehne (1883) 34. — Lectotype (De Wilde & Duyfjes 2013): *Maingay 653/2* (holo L), Peninsular Malaysia (possibly Penang).

a. var. *floribunda*

Distribution — Myanmar, Thailand, Cambodia, Laos, Vietnam; *in Malesia*: Peninsular Malaysia. Widely cultivated as an ornamental tree.

Additional specimens examined. PENINSULAR MALAYSIA, Perlis: *Kochummen FRI 2017*, *Wong et al. FRI 32104*; Kedah: *Bray FRI 11788*, *Chan FRI 6748*, *Everett FRI 13709*, *FRI 13717*, *FRI 13718*, *Salleh KEP 90004*, *KEP 91704*, *Sidek bin Kiah 360*, *373*, *Van Balgooy 2275* (Langkawi), *Whitmore FRI 12950* (Langkawi), *FRI 15003* (Langkawi); Perak: *Saw FRI 34477*; Selangor: *Teo & P 166*.

Notes — 1. The collection *Nedi & Idjan 450* (L) from W Java is not annotated as found as cultivated.

2. The synonym *L. anisoptera* concerns a plant from Vietnam (not seen) with stronger developed ridges below the sinuses of the calyx lobes. Similar plants are also known from S and W Thailand and Peninsular Malaysia, but we think they merge with the typical *L. floribunda* var. *floribunda*.

b. var. *cuspidata* Wall. ex C.B. Clarke

Lagerstroemia floribunda var. *cuspidata* Wall. ex C.B. Clarke (1879) 577. — *Lagerstroemia cuspidata* (Wall. ex C.B. Clarke) Craib (1931) 721. — Type: *Wallich 2116* (holo K), Myanmar, Amherst.

Lagerstroemia siamica Gagnep. (1918) 361; (1921) 950, f. 102: 3; Furtado & Srisuko (1969) 324, f. 53. — Type: *Pierre 819* (not found), Thailand, Mu-eang Pran.

Distribution — Myanmar, Thailand; *in Malesia*: northern Peninsular Malesia (Langkawi).

Additional specimens examined. PENINSULAR MALAYSIA, Kedah (Langkawi): *Chin 2157*, *Whitmore FRI 15002*.

5. *Lagerstroemia langkawiensis* Furtado & Srisuko

Lagerstroemia langkawiensis Furtado & Srisuko (1969) 327, f. 54; W.J.de Wilde & Duyfjes (2013) 96; W.J.de Wilde et al. (2014) 567, f. 6. — Type: *Henderson 29119* (holo SING n.v.), Peninsular Malaysia, Langkawi, Pulau Timon.

Distribution — Peninsular Malaysia (Langkawi).

Additional specimens examined. PENINSULAR MALAYSIA, Kedah (Langkawi): *Chin & Chia 2133*, *Van Balgooy 2322*, *Whitmore FRI 15074*.

6. *Lagerstroemia ovalifolia* Teijsm. & Binn. — Fig. 2

Lagerstroemia ovalifolia Teijsm. & Binn. (1851) 306; (1855) 410; Gagnep. (1921) 945; Craib (1931) 725; Backer (1964) 256; Furtado & Srisuko (1969) 210, p.p.; B. Everett & Whitmore (1973) 280, f. 1; W.J.de Wilde et al. (2014) 573. — Type: *Teijsmann & Binnendijk s.n.* (holo BO n.v.; iso L L2479644 & L2479645, U Hort. bot 039040), W Java, Bantam.

Lagerstroemia ovalifolia Teijsm. & Binn. var. *exapiculata* Furtado & Srisuko (1969) 213, f. 7: B¹–B⁶, 8. — Type: *Burkill & Haniff SING 17179* (holo SING n.v.), Peninsular Malaysia, Pahang.

Lagerstroemia ovalifolia Teijsm. & Binn. var. *minor* Furtado & Srisuko (1969) 216, f. 7: C. — Type: *Boden-Kloss 12300* (holo SING n.v.; iso BM, UC n.v.), Sumatra, Mentawai Archipelago.

Lagerstroemia ovalifolia Teijsm. & Binn. var. *ruptilus* Furtado & Srisuko (1969) 215, f. 7: D¹–D³. — Type: *Lakshnakara 836* (holo BM; iso K), Thailand, Narathiwat, To Mo.

Distribution — Thailand, Vietnam; *in Malesia*: Sumatra, Peninsular Malaysia (Pahang), W Java.

Additional specimens examined. SUMATRA, *Boschproefstation* bb 4151, bb 9357, *de Wilde & Duyfjes 20419*, *Lörzing 5168*, *Rahmat si Troes 2473*, *3565*; Mentawai Isl. (Siberut): *Iboet 64*. — PENINSULAR MALAYSIA, Kedah: *Chew 171*; Perak: *King's collector 8701*, *10532*, *Whitmore FRI 574*; Pahang: *Kochummen FRI 2055*; Selangor: *Vethevelu FRI 29658*; Johor: *Whitmore FRI 3862*. — JAVA, *Koorders 4411*, *Koorders s.n.* (L2479650), *Teijsmann s.n.* (L2479646) – *cult.*, *Teijsmann & Binnendijk 86*, *s.n.* (L2479644), *s.n.* (L2479645), *Zollinger s.n.* (L2479643).

Notes — 1. *Lagerstroemia ovalifolia* differs from all other Malesian species in having (6–)7–9 calyx lobes (sepals), 6 in the other species.

2. Furtado & Srisuko (1969) had a different conception of *L. ovalifolia* as the present authors, who convey part of it, namely var. *apiculata*, var. *riedeliana*, and var. *novoguineensis*, to *L. celebica*.

3. In herbarium specimens the leaves below are sometimes conspicuously dark chocolate-coloured, contrasting with the upper surface.

7. *Lagerstroemia paniculata* (Turcz.) S. Vidal

Lagerstroemia paniculata (Turcz.) S. Vidal (1885) 39, 115; Koehne (1903) 268; Furtado & Srisuko (1969) 228, f. 15. — *Pterocalymna paniculata* Turcz. (1846) 508. — *Lagerstroemia calycina* Koehne (1883) 25; (1898) 14, f. 5: W, X. — Type: *Cuming 1188* (holo LE n.v.; iso E photo seen, K, L (2 sheets)), Philippines, Luzon, see note for the epithet *calycina*.

Trees 15–18 m tall; bark not recorded. *Leaves*: petiole 0.5–1 cm long; *lamina* glabrous on upper surface, lower surface glabrous but slightly hairy on midvein, 6–17 by 3–7 cm; lateral veins 8–11 per side; intercostal venation reticulate. *Inflorescences* terminal, lax, 10–30 cm long, minutely hairy when young. *Flowers*: bud minutely hairy, turbinate, c. 8–12 mm long, to 1 mm long nipped; pseudopedicel 3–5 mm long; *calyx tube* 6-ridged, ridges conspicuously winged both along ridges as well as along calyx lobe-sutures, without auricles between the calyx lobes; *calyx*

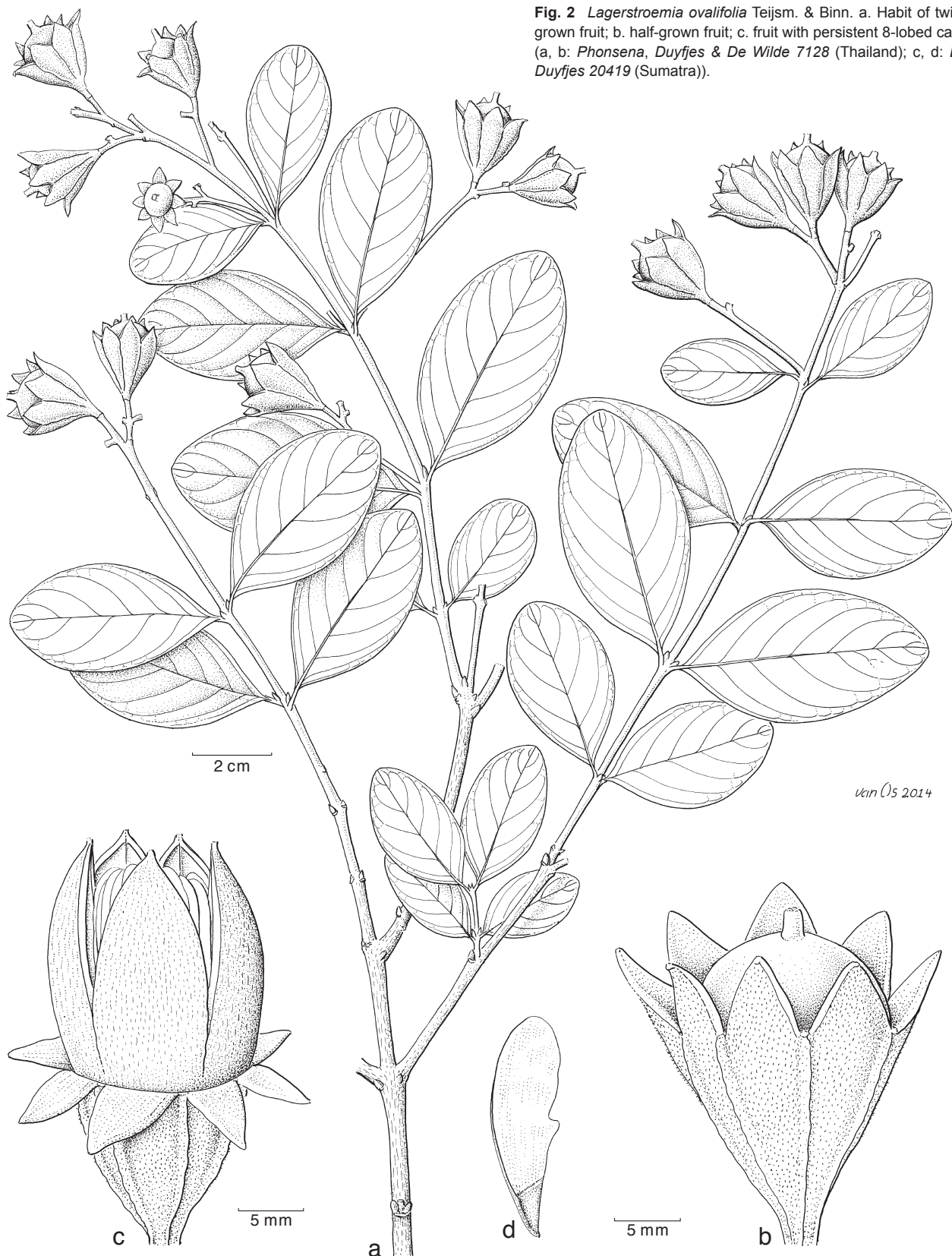


Fig. 2 *Lagerstroemia ovalifolia* Teijsm. & Binn. a. Habit of twig with half-grown fruit; b. half-grown fruit; c. fruit with persistent 8-lobed calyx; d. seed (a, b: Phonsena, Duyfjes & De Wilde 7128 (Thailand); c, d: De Wilde & Duyfjes 20419 (Sumatra)).

lobes (sepals) 6, glabrous within, c. 3 mm long; *petals* showy, pinkish to violet, elliptic-oblong, c. 7 mm long (including c. 2 mm long claw), margin undulate; stamens \pm radially dimorphic; ovary glabrous. *Capsules* unknown (but aspect likely shagreen).

Distribution — Philippines (Luzon), known from 3 collections: the type, *Roso s.n.*, and *Sulit PNH 22870*.

Note — The name *L. calycina* Koehne (1883) was according to its author based on *Pterocalymna calycina* Turcz. (1846), but the latter binomial is not extant on the place cited. As its type allegedly is the same as that of *L. paniculata* it should be

regarded as an isonym, treated as such by Furtado & Srisuko (1969).

8. *Lagerstroemia pterosepala* Furtado & Srisuko

Lagerstroemia pterosepala Furtado & Srisuko (1969) 230, f. 16. — Type: *Adduru FB 21959* (holo A photo seen), Philippines, Luzon.

Treelet (probably); young branches slightly winged along the edges; bark not recorded. *Leaves*: petiole 0.1–0.3 cm long; *lamina* glabrous on both surfaces, but lower midvein somewhat

hairy, (obovate)elliptic, 5–8 cm long; lateral veins 5–7 on each side; intercostal venation reticulate. *Inflorescences* terminal, 3–6 cm long, 1–3-flowered, minutely grey-hairy. *Flowers*: bud clavate, c. 10 mm long; pseudopedicel indistinct, c. 1 mm long; *calyx tube* with 6(–7) double winged ridges, wings chartaceous, crispate-undulate, c. 2 mm out, continuing along the calyx lobe margins; *calyx lobes* (sepals) 6, slightly hairy within, 4–5 mm long; *petals* rhombic, c. 10 mm long (including 1–2 mm long claw); stamens radially dimorphic (6–7 outer stamens longer than numerous inner ones); ovary glabrous, subglobose. *Capsules* not known with certainty (see note 2): 1–3 per infructescence, brown, glabrous, shagreen, broadly ellipsoid, 15–20 by 17–18 mm, apex broadly rounded, 4(–5)-valved; *fruiting calyx* glabrescent from minute hairs, broadly obturbinate, c. 10 by 20 mm, sharply 6(–7)-ridged, with 6(–7) reflexed lobes, ridges (1–)2 mm out, wings on ridges and calyx sutures not seen, presumably broken off; fruiting pseudopedicel absent.

Distribution — Philippines, northern Luzon, known from three collections: the type, *Ridsdale 1889* (L), and *Clemens 15815* (UC, not found).

Notes — 1. *Lagerstroemia pterosepala* is close to *L. paniculata*, the latter also from Luzon. Apart from differences in the flower, *L. pterosepala* is a shrub and possibly an ecologically (e.g. from poor soil) defined taxon. It may be related to *L. paniculata* in a similar way as *L. noei* Craib to *L. cochinchinensis* Pierre in Thailand.

2. The collection *Ridsdale 1889* (Luzon, Bulacan, environs Sibul Springs, N15°10' E121°04', 450 m altitude) with large fruit, appeared difficult to identify. It clearly belongs to the group with the here variably conceived *L. celebica*, especially its most closely resembling species *L. ovalifolia*, but it cannot go with either of these. *Lagerstroemia ovalifolia* has 7–9 calyx lobes and 5–6 fruit valves, *L. celebica* usually has smaller fruits, usually with 6 valves and a distinct pseudopedicel. Provisionally we assume that it represents the fruit of *L. pterosepala* of which the fruit to date was unknown.

9. *Lagerstroemia pustulata* Furtado & Srisuko

Lagerstroemia pustulata Furtado & Srisuko (1969) 222, f. 12; Yii (1996) 228. — Type: *Muin Chai SAN 26006* (holo SING n.v.; iso K, L, SAN n.v., SAR n.v.), Borneo, Sabah, Lahad Datu.

Tree c. 17 m tall; bark smooth, white. *Leaves*: petiole c. 1 cm long; *lamina* glabrous on both surfaces, elliptic, 12–17 cm long; lateral veins 10–12 on each side; intercostal venation scalariform. *Inflorescences* terminal, lax, to 35 cm long, moderately-flowered, minutely hairy, glabrescent. *Flowers*: bud ± obovoid, finely hairy, c. 12 mm long, c. 7 mm diam, nipple and sutures of calyx lobes in bud not seen; pseudopedicel 5–7 mm long; *calyx tube* 5–7 mm long, 6-ridged, the ridges slightly winged and somewhat decurrent into the pseudopedicel; *calyx lobes* (sepals) 6, long-triangular, erect, 5–6 mm long, constricted (incurved) in the basal part, sparsely hairy within, margin ± thickened; *petals* elliptic, 15–20 mm long (including 5–10 mm long claw); *stamens* numerous, subequal; *ovary* glabrous, ovate. *Capsules* oblong or subglobose, 20–25 mm long, c. 2 mm beaked at apex, shagreen; *fruiting calyx* 6-ridged, ridges somewhat winged and decurrent into the 8–10 mm long fruiting pseudopedicel; calyx lobes 5–8 mm long, ± glabrous within.

Distribution — Endemic to Borneo (Sabah (Lahad Datu)), only known from the type.

Notes — 1. *Lagerstroemia pustulata* is distinguished by e.g. the relatively long calyx lobes (sepals) in flower looking constricted because of retroflexed margins, the long leaves, 12–17 cm, and the large fruit, to 25 mm long.

2. The leaves and flower buds are described (Furtado & Srisuko 1969) as 'pustulate', but we cannot see what is actually meant.

10. *Lagerstroemia speciosa* (L.) Pers.

Lagerstroemia speciosa (L.) Pers. (1807) 72; Furtado & Srisuko (1969) 264, f. 29A; P.H.Hó (1992) 25, f. 3662; S.Gardner et al. (2000) 206, 450; Yii (1996) 230; W.J.de Wilde et al. (2014) 574. — *Munchausia speciosa* L. (1770) 357, t. 2. — Lectotype (Dar 1975): Herb. Linn. No. 939.1 (LINN), 'Habitat in Java, China'.

Adambea glabra Lam. (1783) 39. — Type: Rheede (1683) t. 20 & 21, India. *Lagerstroemia flos-reginae* Retz. (1789) 25; C.B.Clarke (1879) 577; Backer (1964) 256. — Type: not indicated.

Lagerstroemia reginae Roxb. (1796) 46, pl. 65, Furtado & Srisuko (1969) 261, f. 29B. — Type: *Roxburgh s.n.* (holo K, K000729731, right hand specimen, lectotype, here designated), northern India, Circars.

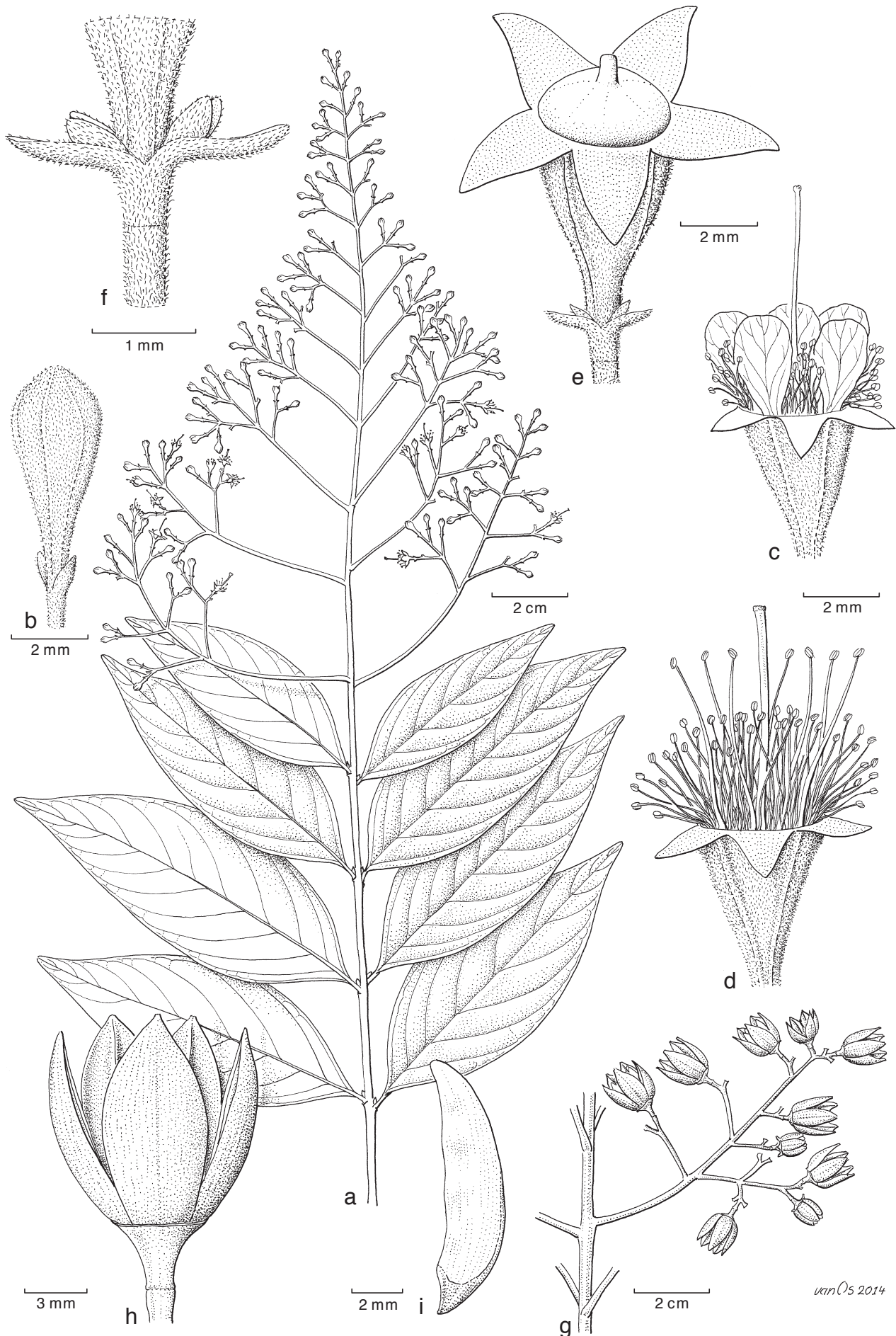
?*Lagerstroemia punctata* Blume (1856) 126. — Type: not found, 'Archipelago indico'.

Distribution — India, Myanmar, China (Yunnan), Cambodia, Laos, Vietnam (probably only cultivated); in Malesia: Sumatra, Peninsular Malaysia, Borneo (Kalimantan, Sarawak, Sabah), Java, Lesser Sunda Islands, Philippines, Sulawesi, Moluccas, and New Guinea. Widely cultivated as an ornamental tree.

Uses — Cultivated as an ornamental. The wood is employed as timber.

Additional specimens examined. SUMATRA, N Sumatra: Lörzing 11824; S Sumatra: *Boschproefstation 820, bb 8466, Grashoff 188, 1087, Iboet 310, 351, Semangoes 1, Yates 2128.* — PENINSULAR MALAYSIA, Kedah: *Chan FRI 6702, Whitmore FRI 12973*; Perak: *Chelliah KEP 98661, Everett FRI 13783, King's collector 6189, Whitmore FRI 15769*; Kelantan: *Stone 11796, Stone et al. 15187*; Terengganu: *Sinclair et al. SF 40740*; Pahang: *Burkill 2123, Cheng Ang Khoon FRI 23388, Hardial & Nor 29, Kadim & Mahmood 112, Ng FRI 20877, FRI 27042, Whitmore FRI 15393, FRI 32857*; Selangor: *Cheng Ang Khoon FRI 23495, FRI 27542, Ng FRI 6273, FRI 6332, Teo & P 206, Vethevelu FRI 25243.* — JAVA, W Java: *Backer 6000, 17088, De Vogel 1366, Hochreutiner 2510, Koorders 40510, Sinclair 10005, Utja & Wasijat 6631, Van Balgooy 2813 (cultiv.), Van Borssum Waalkes 314, Van Kregten 27, Wirawan 389*; C Java: *Koorders 26925*; E Java: *Backer 26839, Hoogerwerf 273, Jacobs 4946, Koorders 4423, 22687.* — LESSER SUNDA ISLANDS, Bali: *Sarip 201, Van Dillewijn 639, Sumbawa: Colfs 183, Danimihardja 2211, Elbert 3532, 3543, 3699, 3864, 3922, 4162*; Flores: *Kostermans & Wirawan 242, Verheijen 2232*; Timor: *Posthumus 3374, Wiradinata 2997.* — BORNEO, Sarawak: *Ashton S 21478*; Sabah: *Ampuria Jawanting SAN 42124, Philip SAN 89548*; W Kalimantan: *Boschproefstation bb 13571, Winkler 12, Zulkarnain & Giesen 366*; E Kalimantan: *Ambri & Arifin 921, Ender 1402, Kostermans 4381*; S Kalimantan: *Arifin et al. 1081, Giesen 7, Kessler et al. 1681, Korthals s.n. L2486832.* — PHILIPPINES, Palawan: *Curran FB 4160, Mendoza PNH 91512, Podzorski SMHI 937, Ridsdale SMHI 341, SMHI 341A, Species Blancoanae (Merrill) 377*; Luzon: *Comision de la Flora Forestal 785, 786, 787, 1366, Ramos 1882*; Samar: *Castro PNH 5822*; Mindanao: *Elgincolin FB 28151, Frake PNH 38409, Hallier 4302, Mendoza PNH 42270.* — SULAWESI, N Sulawesi: *Neth. Ind. For. Service bb 20017*; C Sulawesi: *Amir 45, Prawiroatmodjo & Soewoko s.n. L2487688*; S Sulawesi: *Neth. Ind. For. Service bb 21605, Noerkas (Van Vuuren) 134, 275, Teijsmann 11815.* — MOLUCCAS, Aru Isl.: *Van Balgooy 6724.* — PAPUA, *Versteegh BW 4857.* — PAPUA NEW GUINEA, Western: *Brass 8160, Millar NGF 35356, Pullen 7376, 7431*; New Britain: *Haas NGF 167.*

Note — The collection *Van Balgooy 6724*, from Aru Isl. links up with e.g. *Versteegh BW 4857* and *Brass 8160* from S New Guinea. The latter two are separately discussed by Furtado & Srisuko (1969) as having a deviating distribution under *L. reginae* Roxb. These collections deviate in rather pronounced ridges on the calyx tube and thickenings of the calyx lobes along the sutures in the bud. However, they easily fall within the overall variation in widespread *L. speciosa*.



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Fig. 3 *Lagerstroemia vanosii* W.J.de Wilde & Duyfjes. a. Habit of flowering twig; b. flower bud; c. flower; d. ditto, petals dropped off; e. ditto, petals and stamens dropped off, showing developing fruit; f. basal part of flower bud and pedicel, note 'bracteoles' with minute axillary buds; g. part of infructescence; h. old fruit, calyx withered away; i. seed (a–f: Koorders 39478; g–i: Koorders 20043).

11. *Lagerstroemia vanosii* W.J.de Wilde & Duyfjes — Fig. 3

Lagerstroemia vanosii W.J.de Wilde & Duyfjes (2013) 96. — Type: *Koorders 39478* (holo L; iso BO n.v.), Java, Banjoemas Province.

Treelet; stem and bark not recorded. *Twigs* (below inflorescence) subterete, c. 2.5 mm diam. *Leaves* (sub)opposite; petiole 3–6 mm long; lamina glabrous on both surfaces, drying grey-green or dark chocolate-coloured below, elliptic, 6–10 by 2–4.5 cm; lateral veins 5–6(–7) on each side, intercostal venation finely reticulate. *Inflorescences* terminal, broadly paniculate, 15–20 cm long, densely minutely grey-hairy, hairs simple. *Flowers*: bud minutely hairy, obconical, with broadly rounded apex, 3–3.5 by 3 mm; pseudopedicel 1–1.5 mm long; *calyx tube* c. 2.5 mm long, tube and pseudopedicel distinctly (5–)6-ridged (not winged); *calyx lobes* (sepals) 6, glabrous within, triangular, c. 1.5 mm long, auricles in the sinuses absent; *petals* white, (narrowly) elliptic, c. 3 mm long (including c. 0.5 mm long claw), margin entire; *ovary* glabrous; stamens radially dimorphic (the outer 5–6 longer than the numerous inner ones). *Capsules* glabrous, outer surface drying shagreen, broadly ovoid, 10–12 mm long, (4–)5-valved; *fruiting calyx* c. 3 mm long, 5–6-ridged (not winged), calyx lobes glabrous within, somewhat reflexed, auricles absent; fruiting pseudopedicel c. 2 mm long.

Distribution — C Java, SW of Banyumas, Nusa Kambangan ('Banjoemas Province'), known from the type and from *Koorders 20043*, and *Koorders 24643*.

Notes — 1. *Lagerstroemia vanosii* is somewhat similar to *L. ovalifolia*, of which the petals, including the claw, are 15–20 mm long, while those of *L. vanosii* are among the smallest known in *Lagerstroemia*, including claw their length is c. 3 mm.

2. *Lagerstroemia vanosii* was recently described on old material and it was never collected again. The specimens concerned were neglected in the Flora of Java. It is an endemic lowland species, apparently restricted to limestone, flowering was recorded in March and fruiting in September.

SPECIES KNOWN IN MALESIA ONLY IN CULTIVATION***Lagerstroemia indica* L.**

Lagerstroemia indica L. (1759) 1076; (1762) 734; Gagnep. (1921) 940; Craib (1931) 724; Backer (1964) 256; Furtado & Srisuko (1969) 190, f. 1; H.N.Qin & S.A.Graham (2007) 278; H.N.Qin et al. (2008) f. 295: 1–2. — Lectotype (Merrill 1917): 'Tsjinkin' in Rumphius (1755) 61, t. 28, f. 1.

Lagerstroemia chinensis L. (1759) 1076. — Type: not indicated. *Velaga globosa* Gaertn. (1791) 246, t. 133. — Type: Gaertner t. 133.

Distribution — Himalayan regions, China, Indochina, Japan, furthermore widely cultivated all over the world; *in Malesia*: introduced as an ornamental shrub or small tree.

***Lagerstroemia loudonii* Teijsm. & Binn.**

Lagerstroemia loudonii Teijsm. & Binn. (1863) 425 ('*loudoni*'); Gagnep. (1921) 954; Craib (1931) 724; Backer (1964) 256; Furtado & Srisuko (1969) 303, f. 43; P.H.Hô (1992) 27, f. 3669; S.Gardner et al. (2000) 202, 441; W.J.de Wilde & Duyfjes (2013) 98. — *Lagerstroemia tomentosa* C.Presl var. *loudonii* (Teijsm. & Binn.) C.B.Clarke (1879) 578. — Type: *Teijsmann 5938* (holo U), Thailand, Prachuap Khiri Khan, Boekit Petjaboerie.

Distribution — *Lagerstroemia loudonii* is endemic to Thailand where also cultivated as an ornamental tree; *in Malesia*: cultivated in W Java, but no collections seen except several from Botanical Garden Bogor.

Notes — 1. *Lagerstroemia loudonii* is readily recognised by the fimbriate (upper) margin of the petals.

2. Furtado & Srisuko (1969) agree with Craib (1931) in that *L. rottleri* C.B.Clarke is a synonym of *L. loudonii*. The type of *L. rottleri* is apparently a Rottler collection from Madras area.

We have seen the photograph (K000729603) of this collection (filed under *L. indica*), but on the sheet no locality is indicated. We cannot confirm its identity with *L. loudonii*; possibly it represents a different species, known only by its type.

***Lagerstroemia subcostata* Koehne**

Lagerstroemia subcostata Koehne (1883) 20; Backer (1964) 255; Furtado & Srisuko (1969) 281, f. 35a, 35b: a; T.C.Huang (1993) 876, pl. 435; H.N.Qin & S.A.Graham (2007) 281; H.N.Qin et al. (2008) f. 300: 1–5. — Lectotype (here designated): *Oldham 119/2* (holo GH GH00099295 photo seen), China, Taiwan.

Notes — 1. *Lagerstroemia subcostata* from China (and Taiwan) was included in the Flora of Java (Backer 1964) as locally cultivated, but we think it is only sporadically grown in botanic gardens. The flowers are recorded as fragrant. From Malesia we have seen only *Schuurman 134* (L, flowers), cultivated in the botanic garden at Bogor, and *Steiner 1811-A (= PNH 40084)* (L, fruit), cultivated in Los Baños.

2. Both *L. subcostata* and *L. indica* have a narrow annulus in the throat of the calyx tube, a character shared with some more Chinese species.

Acknowledgements The present synopsis was greatly facilitated by the revision of the genus by Furtado & Srisuko (1969). It is mainly based on the collections at Leiden (L) with addition of the materials in BK, BKF, BM, E, and K, and with comparison with numerous photographs of herbarium specimens on-line from A, K, P, and UC; all these sources are gratefully acknowledged. We thank especially Phongsak Phonsena (BKF) with whom we made repeatedly fieldtrips in Thailand studying the seven *Lagerstroemia* species that also occur in Malesia, and we thank Jan van Os (L) who prepared the drawings.

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INDEX OF NAMES

Accepted names are in roman type; synonyms are in *italics*. Numbers refer to the species number as used in this article; (intr) refers to taxa known only in cultivation.

<i>Adambea</i> = Lagerstroemia	Lagerstroemia (cont.)	Lagerstroemia (cont.)	pustulata 9
<i>glabra</i> 10	<i>cuspidata</i> 4b	<i>loudonii</i> (intr)	<i>reginae</i> 10
<i>Fatioa</i> = Lagerstroemia	<i>dielsiana</i> 3	<i>moluccana</i> 2	<i>riedeliana</i> 2
Lagerstroemia	<i>engleriana</i> 3	<i>ovalifolia</i> 6	<i>siamica</i> 4b
<i>alatulata</i> 2	<i>floribunda</i> 4	var. <i>apiculata</i> 2	<i>speciosa</i> 10
<i>anisoptera</i> 4	var. <i>brevifolia</i> 4	var. <i>exapiculata</i> 6	<i>subcostata</i> (intr)
<i>archeriana</i> 3	var. <i>cuspidata</i> 4b	var. <i>minor</i> 6	<i>subsessilifolia</i> 3
<i>aruensis</i> 2	var. <i>floribunda</i> 4a	var. <i>novoguineensis</i> 2	<i>tomentosa</i>
<i>angustifolia</i> 1	var. <i>subcostata</i> 4	var. <i>riedeliana</i> 2	var. <i>loudonii</i> (intr-loudonii)
<i>batitanan</i> 2	<i>floribunda</i> auct. 3	var. <i>ruptilis</i> 6	<i>turbinata</i> 4
<i>borneensis</i> 2	<i>flos-reginae</i> 10	<i>paniculata</i> 7	<i>vanosii</i> = 11
<i>calycina</i> 7	<i>grandiflora</i> = Duabanga	<i>piriformis</i> 2	<i>Munchausea</i> = Lagerstroemia
<i>calyculata</i> 1	<i>hexaptera</i> 2	forma <i>batitanan</i> 2	<i>speciosa</i> 10
<i>celebica</i> 2	<i>indica</i> (intr)	var. <i>callosa</i> 2	<i>Murtughas</i> = Lagerstroemia
<i>chinensis</i> (intr-indica)	<i>inopinata</i> 2	var. <i>valleculata</i> 2	<i>Pterocalymna</i> = Lagerstroemia
<i>crassifolia</i> 2	<i>koehneana</i> 2	<i>pterosepala</i> 8	<i>paniculata</i> 7
<i>cristata</i> 2	<i>langkawiensis</i> 5	? <i>punctata</i> 10	<i>Velaga</i> = Sterculiaceae
			<i>Velaga globosa</i> (intr-indica)