

Two new records of *Litsea* (Lauraceae) from Singapore and the lectotypification of twenty-two names from several Lauraceae genera

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ABSTRACT. Two species of *Litsea* (Lauraceae) are recorded for Singapore for the first time (*Litsea spathacea* Gamble and *L. tomentosa* Blume). Both species are known only from 19th century specimens and must be considered nationally extinct in Singapore. Descriptions and notes on distribution, conservation status and ecology are given. In addition, twenty-two Lauraceae names are lectotypified: *Beilschmiedia curtisii* Gamble, *B. perakensis* Gamble; *Cinnamomum subavenium* Miq.; *Cryptocarya argentea* Gamble, *C. infectoria* (Blume) Miq., *C. tomentosa* Blume; *Lindera lucida* (Blume) Boerl., *L. malaccensis* Hook.f.; *Litsea accedens* (Blume) Boerl., *L. amara* Blume var. *attenuata* Gamble, *L. gracilis* Gamble, *L. gracilipes* Hook.f., *L. griffithii* Gamble, *L. lanceolata* (Blume) Kosterm., *L. machilifolia* Gamble, *L. machilifolia* Gamble var. *angustifolia* Gamble, *L. megacarpa* Gamble, *L. pustulata* Gamble, *L. sarawacensis* Gamble, *L. singaporensis* Gamble, *L. spathacea* Gamble, *L. umbellata* (Lour.) Merr.

Keywords. *Beilschmiedia*, *Cinnamomum*, *Cryptocarya*, *Lindera*, *Litsea*, Singapore

Introduction

Recently several genera of Lauraceae have been revised for the *Flora of Singapore* (*Beilschmiedia* Nees, *Cinnamomum* Schaeff., *Cryptocarya* R.Br., *Lindera* Thunb. and *Litsea* Lam.). The Lauraceae (Laurel Family) are of major ecological and economic importance in Southeast Asia as they comprise a major part of many forests in the region. In particular, species of the genus *Cinnamomum* are important as sources of various spices and several species have been introduced into Singapore for this purpose. In Singapore, there are two species of *Beilschmiedia* (de Kok, 2016a), five of *Cinnamomum* (de Kok, in prep.), seven of *Cryptocarya* (de Kok, 2015, 2016b), one of *Lindera* and eighteen of *Litsea* (de Kok, in prep.). These will be enumerated in the forthcoming *Flora of Singapore*. No species is endemic to Singapore. Unlike in the Lamiaceae (de Kok et al., 2016), it is relatively easy to determine if a species is native or naturalised in Singapore. Two species are recorded from Singapore for the first time: *Litsea tomentosa* Blume, and *L. spathacea* Gamble. Both species are common in the lowland forests of Peninsular Malaysia and their occurrence in Singapore is therefore not a surprise.

The revisions of Lauraceae from Singapore are based on herbarium collections made in Singapore and now housed at the Natural History Museum, London (BM), the Royal Botanic Gardens, Kew (K and K-W), the Forest Research Institute of Malaysia (KEP) and the Singapore Botanic Gardens (SING). Type material not available at those institutions was studied online via JSTOR (<https://plants.jstor.org/plants>) and accessed in July 2017. In addition to the new records for *Litsea*, twenty-two names from all of the genera revised need to be lectotypified. Barcode information is given for all specimens where available.

New species records for Singapore

Litsea spathacea Gamble, Bull. Misc. Inform. Kew 358 (1910); Ridley, Fl. Malay Penins. 3: 120 (1924); Kostermans, Bibliogr. Lauracearum 881 (1964); Kochummen in Ng, Tree Fl. Malaya 4: 165 (1989). – TYPE: [Peninsular Malaysia] Perak, Sungei Larut, July 1988, *L. Wray* 2286 (lectotype K [K000797118], designated here; isolectotype SING [SING0229222]).

Tree or shrub 4.5–15 m tall; dbh 7–30 cm. **Twigs** slender to stout 2.7–9 mm thick, grey (brown), angled to round in cross-section, densely hairy, glabrescent; hairs appressed, yellowish; terminal leaf bud 2–6.3 mm long, lanceolate to ovate, apex acute, velutinous. **Leaves** alternate. **Leaf blade** elliptic to oblanceolate or obovate, 11–29 × 4–12 cm, apex (broadly) acute, base cuneate, margins straight, blade membranous to thinly leathery, secondary veins 9–14 pairs, curving near margin and sometimes brochidodromous, tertiary veins scalariform-reticulate; upper surface glossy, dark green, glabrous with a few hairs on midrib, midrib sunken, secondary veins raised, tertiary veins distinct; lower surface green with yellowish midrib, glaucous, glabrous to sparsely hairy, always some hairs present on midrib, midrib and secondary veins raised, tertiary nerves distinct. Petiole slender to slightly swollen, half-terete, 10–25 mm long, sparsely hairy. **Inflorescence** 1–4 cm long, formed of clusters of umbels in axils of leaves or along branchlets, umbels 6–7.5 mm in diam., pale yellow-green or greenish white; bracts 5, usually imbricate, (sub)orbicular, concave, 5–6.5 × 5–6 mm, velutinous outside. **Male flowers** white, 6–8 in each umbel; tepals 5–6, elliptic-lanceolate, subequal, 1.5–4 × 0.8–1 mm, hairy; stamens 8–14, unequal; filaments 1–5 mm long, a few hairs present; anthers 0.5–1.5 mm long, yellow. **Female flowers** 3–6 in each umbel; tepals 5–6, elliptic-lanceolate, subequal, 2–3 × 0.9–3 mm, sparsely hairy; staminodes 7–12, linear, 0.5–3 mm long, glabrous; ovary ovoid, 0.5–1 mm in diam., glabrous; style 1–2 mm long; stigma peltate. Infructescence of 1–3 fruits. **Fruits** globose to elliptic 15–20 × 11–14 mm, smooth, glabrous, red or purplish when mature; cupule shallow, 13–15 mm in diam., 6–7.2 mm high, glabrous, margin entire or undulate, surface smooth; fruiting pedicel 5–10 mm long, slightly thickened, 1.7–2.6 mm thick.

Distribution. Peninsular Malaysia and Singapore. In Singapore, it is only reported from two specimens both without a locality or date (Cantley's Collector s.n. (SING); Unknown s.n. (BM)).

Ecology. In the rest of its range growing in lowland and hill forests, sometimes along rivers, from 90–975 m altitude. Flowering all year round; fruiting from February to March.

Conservation. Least Concern (LC) globally, this species is widespread and has been collected over a wide area in the last 20 years (see also IUCN, 2017). In Singapore, it has been collected only twice, in the late 19th or early 20th century, and must, therefore, be considered to be nationally extinct.

Notes. There are eleven different gatherings, which are usually duplicated in several herbaria, available for lectotypification for this name. As Gamble was working at K when he wrote his paper (Gamble, 1910), the K specimen of the gathering: *L. Wray* 2286 (K000797118) is designated here as the lectotype.

As mentioned above, it is only known from Singapore by two specimens, one at SING, collected by *Cantley's Collector*, without a collection number, while a specimen with no collector's name and number is housed at BM. Cantley worked in Peninsular Malaysia and Singapore in the 1880's. During this time, he had a collector (M.V. Alvins) who also made collections for him from the same area, Alvins' labelling is said to be inadequate (only giving the state for localities) and sometimes incorrect (Van Steenis-Kruseman, 1950: 100). The label on the BM collection is from the early 20th century. It seems likely, therefore, that both these specimens were collected in the period between 1880 and 1900, with a question mark about the accuracy of the locality of Cantley's Collector (M.V. Alvins). The species is common in the lowlands of Peninsular Malaysia, but is not known from open vegetation. It is, therefore, not surprising that it used to grow in Singapore and that it now no longer does. However, the species is difficult to recognise as it is morphologically similar to the very common *Litsea umbellata* (Lour.) Merr. and could, therefore, have been overlooked in surveys.

Litsea tomentosa Blume, Bijdr. Fl. Ned. Ind. 11: 566 (1826); Gamble, J. Asiat. Soc. Bengal 75: 132 (1912); Ridley, Fl. Malay Penins. 3: 115 (1924); Backer & Bakhuizen, Fl. Java (Spermatoph.) 1: 125 (1963); Kostermans, Bibliogr. Lauracearum 886 (1964); Kochummen in Ng, Tree Fl. Malaya 4: 165 (1989); Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33: 90 (2011). – TYPE: [Indonesia] Java, *C.L. Blume s.n.* (lectotype K [K000815822], designated by Ngernsaengsaruy et al. (2011: 90)).

Tree 6–40 m tall; dbh 7–40 cm, buttresses extending out to 60 cm; bark smooth, lenticellate, greyish or light brown to black, inner bark red brown, wood yellow. *Twigs* slender to stout 3.8–12 mm thick, round or angular in cross-section, velutinous, glabrescent; hairs appressed to patent, yellowish; terminal leaf bud 5.5–8.3 mm

long, ovate, apex acuminate, velutinous. **Leaves** spiral, crowded toward the apices of the branchlets. **Leaf blade** elliptic to oblanceolate, 8–40 × 4–16 cm, apex acute to obtuse, base cuneate to rarely rounded, sometimes asymmetric, margins straight, blade chartaceous, secondary veins 11–16 pairs, curving and sometimes brochidodromous, tertiary veins scalariform-finely reticulate; upper surface green, glabrous with densely hairy midrib and secondary veins, midrib raised to sunken, secondary veins shallowly sunken, tertiary veins faint; lower surface glaucous, sparsely hairy to densely so on major veins, midrib and secondary veins raised, tertiary veins distinct. Petiole half-terete, 10–55 mm long, velutinous, glabrescent; hairs appressed to patent, yellowish. **Inflorescence** 1.5–3 cm long, formed of clusters of umbels along branchlets, velutinous, umbels 12–20 mm in diam.; bracts 4–5, suborbicular or broadly ovate, concave, 5–6 × 4–5 mm, velutinous outside. **Male flowers** 5–6 in each umbel; tepals 9–12, lanceolate, unequal, 4–6 × 1.5–2 mm, sparsely hairy; stamens 24–30, unequal; filaments 2–5 mm long, sparsely hairy; anthers 1–1.5 mm long. **Female flowers** 5–6 in each umbel, tepals 8–12, lanceolate, 2–3.1 × 1–1.3 mm, densely hairy; staminodes 26–30, linear, 1.5–3.8 mm long, sparsely hairy; ovary ovoid, 1–1.5 mm in diam., glabrous; style 1.5–2 mm long; stigma peltate. **Fruits** (sub)globose, 1.6–2.2 × 2–2.1 cm, smooth, glabrous, glossy, red when mature; cupule shallow, 11–15 × 1.5–3 mm, sparsely hairy, margin entire, surface warty; fruiting pedicels 7–9.6 mm long, not swollen, 4.3–5.8 mm thick, sparsely hairy.

Vernacular names. *Medang taudok* (Malay).

Distribution. Peninsular Thailand, Malaysia (Peninsular and Borneo), Singapore, Indonesia (Borneo, Sumatra and Java) and the Philippines. In Singapore, it has been collected only once, at Tanglin (*H.N. Ridley s.n.*, Upper Tanglin, behind barracks, 1893).

Ecology. Throughout its range in open areas in disturbed lowland forests, between 0–750 m altitude. Flowering from February to June; fruiting from September to December.

Conservation. Least Concern (LC) globally, this species is widespread and has been collected over a wide area in the last 20 years. In Singapore, it has only been collected once, in the late 19th century, and must therefore be considered to be nationally extinct.

Notes. This species has not previously been recorded for Singapore, where it is only known from a single specimen, collected by H.N. Ridley in 1893, from upper Tanglin, behind the barracks. The species is common in the lowlands of Peninsular Malaysia and on the islands of the Sunda shelf and can occur in open areas as well as in disturbed forests. It is, therefore, not surprising that it used to grow in Singapore, but given that it can adapt to open vegetation, it is perhaps surprising that it no longer does. The species is very distinctive with its broad hairy leaves which are crowded near the apex of the young twigs. It is unlikely that it has been overlooked in botanical surveys.

Lectotypifications

Beilschmiedia curtisii Gamble, Bull. Misc. Inform. Kew 148 (1910). – TYPE: Singapore, Garden Jungle, July 1896, *H.N. Ridley 8075* (lectotype K [K001083364], designated here; isolectotype SING [SING 0219777]).

At least two gatherings are mentioned in the original description of *Beilschmiedia curtisii* Gamble (Gamble, 1910: 148): *C. Curtis 1015* and *H.N. Ridley 8075*. As Curtis numbered species rather than gatherings, there is no guarantee that all *Curtis 1015* specimens are from the same collection event, despite all having the same locality: Government Hill. The Curtis collections are, therefore, not selected for lectotypification. As Gamble was working at Kew at the time he described this species, the K specimen of *H.N. Ridley 8075* is designated here as the lectotype.

Beilschmiedia perakensis Gamble, Bull. Misc. Inform. Kew 149 (1910). – TYPE: [Peninsular Malaysia] Perak, *King's Collector 10026* (lectotype K [K000768677], designated here; isolectotypes K [K001098151, K001098153]).

Several gatherings are mentioned in the original description of *Beilschmiedia perakensis* Gamble (Gamble, 1910: 149): *B. Scortechini s.n.* and *King's Collector 8489, 10026* and *10432*, which are all very similar. Of these, one of the K specimens of *King's Collector 10026* [K000768677] is designated here as the lectotype.

Cinnamomum subavenium Miq., Fl. Ned. Ind. 1: 90 (1858). – TYPE: [Indonesia] Sumatra, Solok, *J.E. Teijsmann s.n.* (lectotype U [U0002677], designated here; isolectotypes BO, U [U0002678]).

Only one gathering is mentioned in the original description of *Cinnamomum subavenium* Miq. (Miquel, 1858: 90): *Teijsmann*, Sumatra, Solok '*Madang koelit manis*'. At U, two sheets collected by Teijsmann have this locality and the same local name and sheet number, *HB1037*. One specimen has a few flowers and a very young fruit, while the other is sterile. The fertile specimen, U0002677, is therefore designated here as the lectotype.

Cryptocarya argentea Gamble, Bull. Misc. Inform. Kew 144 (1910). – *Cryptocarya kurzii* var. *argentea* (Gamble) Airy Shaw, Bull. Misc. Inform. Kew 535 (1939). – TYPE: [Peninsular Malaysia] Perak, Aug 1885, *King's Collector 7966* (lectotype K [K001084384], designated here; isolectotypes BM [BM001124600], K [K001084383], P [P00745434], SING [SING0059162]).

Only one gathering was mentioned in the original description of *Cryptocarya argentea* Gamble (Gamble, 1910: 144–145): *King's Collector 7966*. As Gamble was working at Kew at the time he wrote this article, one of the two K specimens is selected as the lectotype. As sheet K001084384 has more immature fruits than K001084383, it is designated here as the lectotype.

Cryptocarya infectoria (Blume) Miq., Fl. Ned. Ind. 1: 924 (1858). – *Cylicodaphne infectoria* Blume, Mus. Bot. 2: 11 (1856). – TYPE: In Archipelago Indico, F.A.C. Waitz s.n. (lectotype L [L0036159] designated here; isolectotypes L [L0036157, L0036158]).

In the original description, Blume (1856) mentioned only the F.A.C. Waitz gathering, of which there are three sheets available at L for lectotypification. One sheet, L0036159, has one whole immature fruit and a further dissected immature one, the second sheet, L0036158, has only an immature fruit, and the last sheet, L0036157, is sterile. The first specimen is designated here as the lectotype.

Cryptocarya tomentosa Blume, Mus. Bot. 1(21): 335 (1851). – TYPE: [Indonesia] Java, Patuhae, C.L. Blume s.n. (lectotype L [L0036276] designated here; isolectotype L [L0036277]).

In the original description, Blume (1851) mentioned two different gatherings: one from the mountain Patuhae on Java and one from South Borneo. In L, two specimens of the former can be identified, L0036276 and L0036277, and one possible one from Borneo, L0036282. The specimen L0036276 has an old (but not original) label clearly stating that it was collected at Patuhae, while the second specimen, L0036277, is much smaller than the first and its label is more recent. The Borneo specimen has no collection data. The specimen from Java with the older label is designated here as the lectotype [L0036276].

Lindera lucida (Blume) Boerl., Handl. Fl. Ned. Ind. 3: 147 (1900). – *Litsea lucida* Blume, Bijdr. Fl. Ned. Ind. 11: 562 (1826). – TYPE: [Indonesia] Java, C.L. Blume s.n. (lectotype L [L0036501], designated here).

In the original description, Blume (1826) only mentioned that the type specimen came from Java. Several gatherings from Java are present at L which Blume saw and which could be used for lectotypification (L0036495, L0036496, L0036497, L0036498, L0036499, L0036500, L0036501, L0036502). One of these is almost sterile, L0036495, while the others have several inflorescences with flowers. Sheet L0036501 bears an original handwritten note with the local name, which is also mentioned in the original description and so this specimen is designated here as the lectotype.

Lindera malaccensis Hook.f., Fl. Brit. India [J.D. Hooker] 5: 183 (1886). – TYPE: ‘Peninsular Malaysia and Birma’, *W. Griffith* [*Kew Distribution no.*] 4297 (lectotype K [K000815598], designated here).

Several gatherings are mentioned in the original description of *Lindera malaccensis* Hook.f. (Hooker, 1886: 183): *W. Griffith* [*Kew Distribution no.* 4297]; *A.C. Maingay* 1988 [*Kew Distribution no.* 1257]; *A.C. Maingay* 3095 [*Kew Distribution no.* 1257]; *A.C. Maingay* 1781 [*Kew Distribution no.* 1257]; *A.C. Maingay*, [*Kew Distribution no.* 1272]. As Hooker worked at Kew, the K specimens are most suitable for lectotypification. Of these, only the *Griffith* specimen [*Kew Distribution no.* 4297] has the characteristic card with flower dissections, notes and signature of Gamble and it is designated here as the lectotype.

Litsea accedens (Blume) Boerl., Handl. Fl. Ned. Ind. 3: 145 (1900). – *Tetranthera accedens* Blume, Mus. Bot. 1(24): 383 (1851). – TYPE: [Indonesia, Sulawesi] Celebes, Tondano, July 1840, *E.A. Forsten s.n.* (lectotype L [L0036569], designated here; isolectotypes L [L0036568, L0036570]).

In the original description of *Tetranthera accedens* Blume (Blume, 1851) no mention is made of any collectors or numbers but two localities are given: Borneo and Celebes. It appears that he was referring to the following gatherings: *Korthals s.n.* from Borneo [U0002782] and *Forsten s.n.* from Tondano (now in Sulawesi Utara), collected in July 1840 [L0036568, L0036569, L0036570]. Most of these collections are sterile. The one *Forsten* gathering with flowers, L0036569, is designated here as the lectotype.

Litsea amara Blume var. *attenuata* Gamble, J. Asiat. Soc. Bengal 75: 142 (1912). – TYPE: [Peninsular Malaysia] Malacca, Batu Tiga, 1892, *R. Derry* 990 (lectotype K [K000797034], designated here; isolectotypes BM, SING [SING0229216]).

There are ten gatherings mentioned in the original description of *Litsea amara* Blume var. *attenuata* Gamble (Gamble, 1912: 142): *H.N. Ridley* 2265, 9473, 13781; *King’s Collector* 4614, 8750, 10142; *Burn-Murdoch* 4; *A.C. Maingay* 1266, 1278; *R. Derry* 990. These are all very similar to one another and as Gamble was working at K the time, the K specimen of *R. Derry* 990 is designated here as the lectotype.

Litsea gracilis Gamble, Bull. Misc. Inform. Kew 317 (1910). – TYPE: [Peninsular Malaysia] Perak, Ulu Temango, July 1909, *H.N. Ridley* 14603 (lectotype K [K000797038], designated here; isolectotypes K [K000797039], SING [SING0055927]).

There are two sheets at K of the one gathering cited in the original description of *Litsea gracilis* Gamble (Gamble, 1910: 317). The sheet bearing a card with notes, dissections and the signature of Gamble, K000797038, is designated here as the lectotype.

Litsea gracilipes Hook.f., Fl. Brit. India [J.D. Hooker] 5: 159 (1886). – TYPE: [Peninsular Malaysia] Malacca, *W. Griffith [Kew Distribution no.] 4311* (lectotype K [K000797135], designated here; isolectotypes K [K000797136], P [P00745274])

In the original description of this name, only one gathering, with male flowers, was cited: *W. Griffith [Kew Distribution no. 4311]* from Malacca (Hooker, 1886: 159–160). In K, two specimens of this gathering are present, K000797136 and K000797135, and the one with the dissection of male flowers and notes on the sheet, K000797135, is designated here as the lectotype.

Litsea griffithii Gamble, J. Asiat. Soc. Bengal 75: 187–188 (1912). – TYPE: Singapore, Reservoir Woods, 1893, *H.N. Ridley 4823* (lectotype K, designated here; isolectotype SING [SING0043342]).

In the original description of this name, many Peninsular Malaysian, Singaporean and Sumatran gatherings are mentioned: *Burn-Murdock 282 (Ridley 14284)*, *Forbes 1762*, *W. Griffith [4285]*, *King's Collector 5865, 8573*, *King & Hullett s.n.*, *Maingay 12521*, *Ridley 4823, 5569*, and *Wray 2757* (Gamble, 1912: 187–188). The gathering from the Reservoir Woods in Singapore, *Ridley 4823*, housed at K, is designated here as the lectotype.

Litsea lanceolata (Blume) Kosterm., Reinwardtia 7: 348 (1968). – *Aperula lanceolata* Blume, Mus. Bot. 1(27): 367 (1851). – TYPE: [Indonesia] Java, *C.L. Blume s.n.* (lectotype U [U0002822], designated here; isolectotype U [U0002823]).

In the original publication of this name, Blume (1851: 367) gave the collection data only ‘*in Java*’. There are two possible sheets available at U for lectotypification, one only has a single sterile leaf [U0002823] and the other has a twig with several leaves and a few small inflorescences [U0002822]. The latter is designated here as the lectotype.

Litsea machilifolia Gamble, Bull. Misc. Inform. Kew 320 (1910); Ng, Gard. Bull. Singapore 57: 234 (2005). – TYPE: [Peninsular Malaysia] Penang, Moniot Road, June 1886, *C. Curtis 795* (lectotype SING [SING 0068773], first step designated by Ng (2005), second step lectotypification designated here).

In their paper dealing with the species of *Litsea* from Thailand, Ngernsaengsaruy et al. (2011: 70) selected *Ridley 4706* at K as the lectotype of *L. machilifolia*. However, six years before, Ng (2005: 238), in his paper dealing with the species from Borneo, had already selected a different specimen (Penang, *Curtis 795* at SING) as the lectotype for this name. There are, however, two sheets at SING with this number and locality: Penang, Moniot Road, April 1886, *Curtis 795* [SING 0055932] with flowers, and Penang, Moniot Road, July 1886, *Curtis 795* [SING 0068773] with fruits. As only one of these can serve as the type, and as fruits are more important than flowers in species recognition within *Litsea*, the fruiting specimen is designated here in a second step lectotypification (see McNeill et al., 2012: Art. 9.17, Ex. 12).

Litsea machilifolia Gamble var. *angustifolia* Gamble, J. Asiat. Soc. Bengal 75: 172 (1912). – TYPE: [Peninsular Malaysia] Perak, Larut, Nov. 1884, *King's Collector 6815* (lectotype K designated here; isolectotypes SING [SING0229214, SING0229215]).

In his description of this variety, Gamble (1912: 172) mentioned thirteen very similar separate gatherings, for which there are often duplicates in several other herbaria. As Gamble was working at K when he wrote his paper, the K specimen of *King's Collector 6815* is designated here as the lectotype.

Litsea megacarpa Gamble, Bull. Misc. Inform. Kew 364 (1910). – TYPE: Singapore, at Toas, 1894, *H.N. Ridley 6456* (lectotype K, designated here; isolectotypes BM, SING [SING0013205])

Twenty very similar gatherings, for which there are often duplicates in several herbaria, were cited by Gamble when he published the name *Litsea megacarpa* (Gamble, 1910: 364–365): *Curtis 2511*; *Wray 2337, 2730*; *Scortechini 265, 270, 589*; *King's Collector 3697, 6076, 6124, 6155, 6237, 6409, 6567, 6613, 6689, 6774, 6866, 7204*; *Ridley 6455* and *7621*. As Gamble was working at K when he wrote this paper, the K specimen of the gathering from Singapore, Toas, 1894, *Ridley 6456* is designated here as the lectotype.

Litsea pustulata Gamble, Bull. Misc. Inform. Kew 359 (1910). – TYPE: [Peninsular Malaysia] Perak, Larut, Nov. 1883, *King's Collector 5140* (lectotype K [K0000797089], designated here; isolectotype K).

Several morphologically very similar gatherings were mentioned in the original description of *Litsea pustulata* by Gamble (1910: 359–360): *King's Collector 2544, 3418* and *5140*. The specimen with the most fruits of *King's Collector 5140* housed at K is designated here as the lectotype.

Litsea sarawacensis Gamble, Bull. Misc. Inform. Kew 365 (1910). – TYPE: Singapore, Reservoir Woods, July 1893, *H.N. Ridley* 4817 (lectotype K [K000797140], designated here; isolectotypes B, SING [SING 0011250]).

In the original description of *Litsea sarawacensis* Gamble (Gamble, 1910: 365–366), several morphological very similar gatherings were cited: *Ridley* 4817; *Beccari* 905, 1475, 1708, 1796; *Havilland* 3077 and 3646. The K sheet of the gathering from Singapore, *Ridley* 4817, is designated here as the lectotype.

Litsea singaporensis Gamble, Bull. Misc. Inform. Kew 358 (1910). – TYPE: Singapore, Garden Jungle, Nov. 1892, *H.N. Ridley* 4135 (lectotype K, designated here; isolectotypes BM, SING [SING0000630]).

Numerous gatherings were mentioned in the original description of *Litsea singaporensis* by Gamble (1910: 358): *H.N. Ridley* 2118, 3372, 3894, 4135, 4826, 5065, 5736, 5738, 9075 and *R.W. Hullett* 5738. I was unable to locate two of these (*H.N. Ridley* 2118 and *R.W. Hullett* 5738). As Gamble was working at Kew at the time he wrote this article, the K specimen of *H.N. Ridley* 4135 is designated here as the lectotype.

Litsea umbellata (Lour.) Merr., Philipp. J. Sci. 14: 242 (1919). – *Hexanthus umbellatus* Lour., Fl. Cochinch. 196 (1790). – TYPE: Cochinchina, *Loureiro s.n.* (lectotype BM [BM000951060], designated here; isolectotype BM [BM000951061]).

Two sheets of type material of *Hexanthus umbellatus* are extant at BM. One has flowers, leaves and twigs [BM000951060] and the other has several loose leaves, a twig and some flowers [BM000951061]. The first sheet is designated here as the lectotype.

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References

- Blume, C.L. (1826). *Bijdragen tot de Flora van Nederlansch Indië*, 11^e stuk. Batavia: Ter Lands Drukkerij.
- Blume, C.L. (1851). *Museum Botanicum Lugduno-Batavum*, vol. 1. Leiden: E.J. Brill.
- Blume, C.L. (1856). *Museum Botanicum Lugduno-Batavum*, vol. 2. Leiden: E.J. Brill.

- De Kok, R.P.J. (2015). *Cryptocarya nitens* (Lauraceae), a new species record for Singapore. *Gard. Bull. Singapore* 67: 253–260.
- De Kok, R.P.J. (2016a). A revision of *Beilschmiedia* (Lauraceae) of Peninsular Malaysia. *Blumea* 61: 147–164.
- De Kok, R.P.J. (2016b). A revision of *Cryptocarya* R.Br. (Lauraceae) of Peninsular Malaysia. *Kew Bull.* 71(7): 1–16.
- De Kok, R., Sengun, S. & Bramley G.L.C. (2016). Two new records for the Lamiaceae of Singapore. *Gard. Bull. Singapore* 67: 189–200.
- Gamble, J.S. (1910). New Lauraceae from the Malayan region I. *Bull. Misc. Inform. Kew*: 142–153.
- Gamble, J.S. (1912). Materials for a Flora of the Malayan Peninsula no 22. *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 75: 1–204.
- Hooker, J.D. (1886). *Flora British India*, vol. 5. London: L. Reeve.
- IUCN (2017). *The IUCN Red List of Threatened Species*, version 2017-1. <http://www.iucnredlist.org>. Accessed 1 Jul. 2017.
- McNeill, J., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (2012). *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code)*. *Regnum Vegetabile*, vol. 154. Königstein: Koeltz Scientific Books.
- Miquel, F.A.W. (1858). *Flora van Nederlandsch Indie*, vol. 1(1), part 6. Amsterdam: C.G. Van der Post and Utrecht: C. Van der Post Jr.
- Ng, F.S.P. (2005). Taxonomic Notes on Bornean *Litsea*, *Lindera*, *Neolitsea* and *Iteadaphne* (Lauraceae). *Gard. Bull. Singapore* 57: 217–246.
- Ngernsaengsarua, C., Middleton, D.J. & Chayamarit, K. (2011). A revision of the genus *Litsea* Lam. (Lauraceae) in Thailand. *Thai Forest Bull., Bot.* 39: 40–119.
- Van Steenis-Kruseman, M.J. (1950). Malaysian plant collectors and collections: being a cyclopaedia of botanical exploration in Malaysia and a guide to the concerned literature up to the year 1950. In: van Steenis, C.G.G.J. (ed.) *Flora Malesiana*, ser. 1, vol. 1, pp. 3–639. Jakarta: Noordhoff-Kolff N.V.

