

Two New Species and Seven New Records of Lauraceae for the Flora of Laos

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Two new species of Lauraceae, *Beilschmiedia bolavenensis* and *Machilus champasakensis*, are described and illustrated based on specimens from the Bolaven Plateau, southern Laos, and *Lindera annamensis*, *Litsea ferruginea*, *L. lanceifolia*, *L. pseudoelongata*, *L. verticillata*, *Machilus angustifolia*, and *M. robusta* (all Lauraceae) are reported for the first time for the flora of Laos. Voucher specimens, photographs, ecological information, and taxonomic notes are provided for each species.

Keywords: Bolaven Plateau, flora, Indochina, Laurales, taxonomy

Lauraceae, with 54 genera and 2,500–3,500 species, are widely distributed from lowlands to highlands worldwide (Rohwer 1993). They are important components of tropical forests, especially in Southeast Asia (Kochummen & LaFrankie 1990, Sri-Ngernyung *et al.* 2003, Chong *et al.* 2016). Taxonomic inventories of Lauraceae in this region remain incomplete. Recent studies in the area have resulted in reports of many new species, including three new species of *Beilschmiedia* Nees (Nishida 2008, Liu *et al.* 2013, de Kok 2016, 2021) and seven new species of *Machilus* Nees (Yahara *et al.* 2016, de Kok 2019, Mase *et al.* 2020). Since the estimated number of herbarium collections per 100 km² is lowest in Laos among the Southeast Asian countries (Middleton *et al.* 2019), Laos is expected to have more species of Lauraceae than currently known. The most recent checklist of vascular plants in Laos by Newman *et al.* (2017 onwards, <https://padme.rbge.org.uk/laos/>) enumerated 17 genera with 80 species and 2 varieties of Lauraceae, among which five species of Lauraceae are based on our intensive field surveys from 2017 to 2019: *Actinodaphne henryi* Gamble, *A. sesquipedalis* Hook. f. & Thomson ex Meisn., *Litsea laeta* Benth. & Hook. f., *L. rotundifolia* Hemsl., and

L. phuwuaensis Ngerns. (Tagane *et al.* 2017, 2020, 2021). We here describe two new species, in *Beilschmiedia* and *Machilus*, and report seven additional species of Lauraceae new to Laos.

Taxonomic treatments

***Beilschmiedia bolavenensis* Tagane & Soulad., sp. nov.** —Fig. 1.

Similar to *Beilschmiedia wangii* of China and Vietnam in having opposite leaves, abaxially densely glandular punctate lamina, and prominent midrib on both surfaces, but differing in having terminal buds and inflorescences with appressed yellowish brown hairs (vs. densely ferruginous pubescence in *B. wangii*), larger leaves (13.5–19.2 × 5.4–7.8 cm in *B. bolavenensis* vs. 9–14 × 3.5–7 cm in *B. wangii*), shorter inflorescence (1.3–4.5 cm long vs. 4–8 cm long), shorter pedicel (2.5–4 mm long vs. ca. 1 cm long) and smaller perianth lobes (2 mm long vs. 3 mm long).

Typus. LAOS. Champasak Province, Paksong District, near Nong Luang village, alt. 1,231 m, 15°04'29.18"N, 106°12'31.22"E, 17 Dec. 2019, fl., P. Souladeth, S. Tagane, D. Kongxaysavath, S. Rueangruea, S. Suddee, Y. Suyama, E. Suzuki L3339 (holo- FOF!, iso- BKF, KAG [KAG 155704!]).

Trees, to 12 m tall. Twigs reddish brown, glabrous. Terminal buds to 3 mm long, covered with appressed yellowish brown hairs. Leaves oppo-

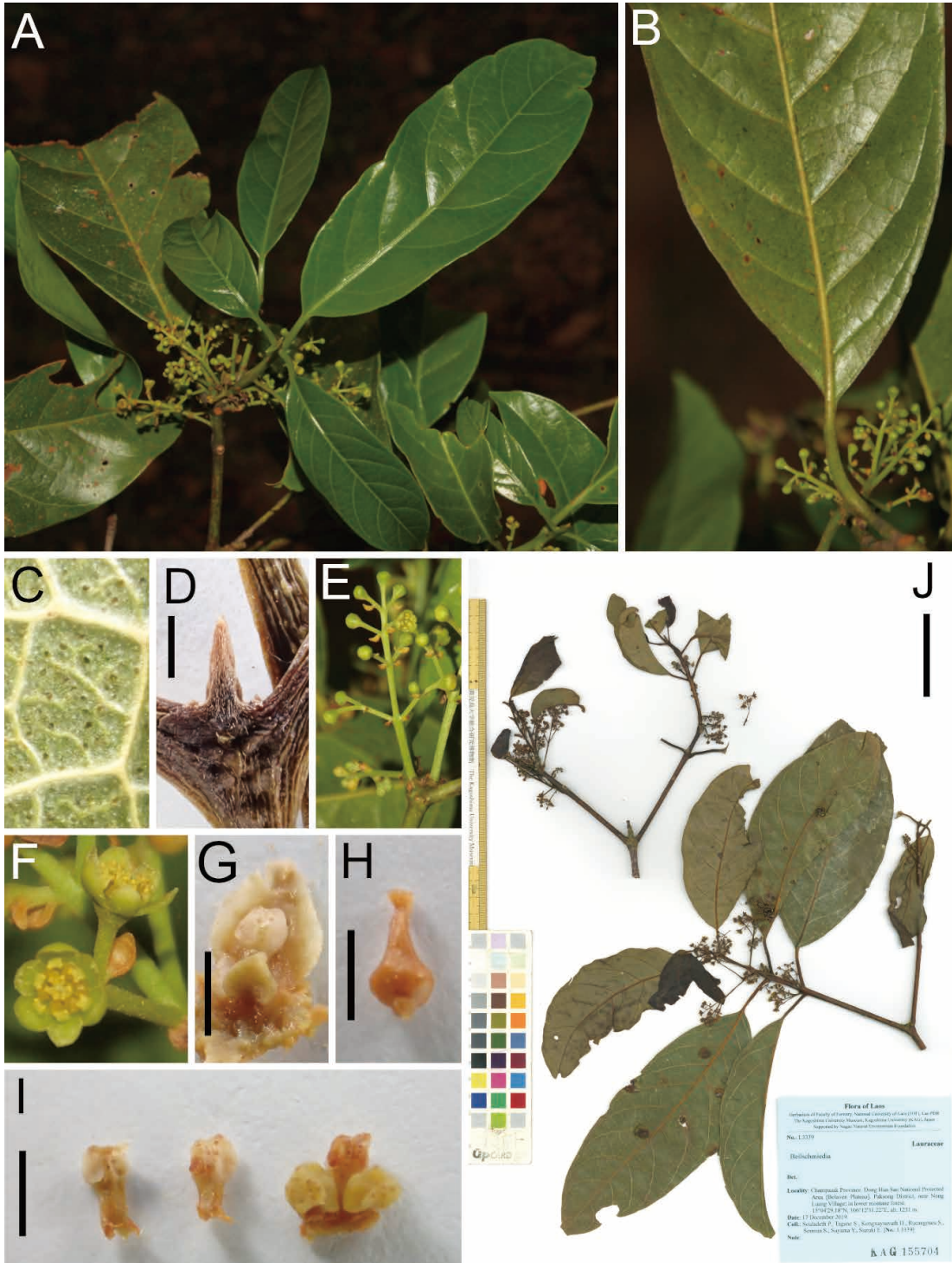


FIG. 1. *Beilschmiedia bolavenensis* Tagane & Soulad. **A**, flowering branch. **B**, portion of lower leaf surface. **C**, punctate lower leaf surface. **D**, terminal bud. **E**, inflorescence. **F**, flowers. **G**, staminode, anther of 2nd whorl and perianth lobe., **H**, pistil. **I**, anthers of 1st (left), 2nd (middle) and 3rd (right) whorls. **J**, isotype *P. Souladeth et al.* L3339 (KAG). Photos A, B, E–J from *P. Souladeth et al.* L3339, C & D from *S. Tagane et al.* L2104. Scale bars D, G–I = 1 mm, J = 5 cm.

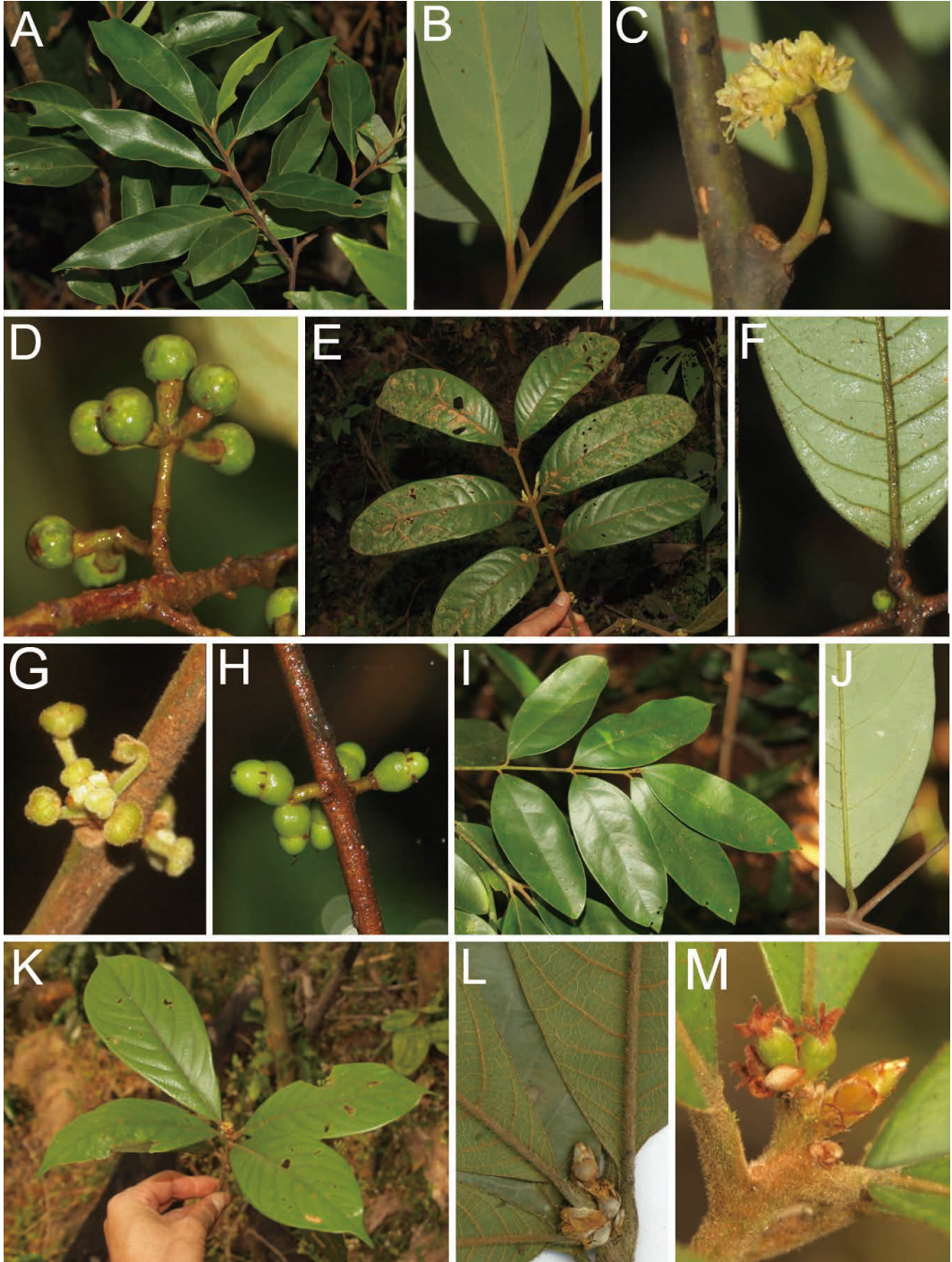


FIG. 2. *Litsea annamensis* H. Liu. **A**, branch. **B**, portion of lower leaf surface. **C**, pistillate inflorescence. **D**, infructescence. *Litsea ferruginea* (Blume) Blume. **E**, branches. **F**, portion of lower leaf surface. *Litsea lancifolia* (Roxb. ex Nees) Benth. & Hook. f. ex Fern.-Vill. **I**, leafy branch. **J**, portion of lower leaf surface. *Litsea pseudoelongata* Kosterm. **K**, branch. **L**, terminal bud and portion of lower leaf surface. **M**, shoot apex showing terminal scaly bud and sessile pistillate flowers. Photos A–C from *S. Tagane et al.* L2060, D from *P. Souladeth et al.* L2795, E & G from *P. Souladeth et al.* L3373, F & H from *P. Souladeth et al.* L2901, I & J from *S. Tagane et al.* L2192, K–M from *P. Souladeth et al.* L3333.

site; petioles 1.5–2.4 cm long, reddish brown or blackish brown, glabrous; blades ovate-elliptic, 13.5–19.2 × 5.4–7.8 cm, papery to thinly leathery, glabrous, dark yellowish green adaxially, dark yellowish green or dull brownish yellow abaxially, densely glandular punctate abaxially, base cuneate, margin entire, apex short acuminate, midrib slightly prominent adaxially, prominent abaxially, secondary veins 9–11 pairs prominent on both surfaces, tertiary veins reticulate, prominent on both surfaces. Inflorescences paniculate, in axil of leaves, 1.3–4.5 cm long; peduncle (0.2–) 0.8–1.3 cm long, with short light brown hairs; bracts obovate or ovate, ca. 2 mm long, apex obtuse to rounded, margin ciliate, with short light brown hairs on both surfaces. Pedicels 2.5–4 mm long, with short light brown hairs. Flowers yellowish green (*in vivo*), 3–4 mm in diam. Tepals 6, subequal, ovate, ca. 2.1 × 1.7–1.9 mm long, glandular punctate, adaxially glabrous, abaxially covered with light brown hairs, hairs denser near base, margin ciliate. Stamens 9, 3-whorled, ca. 1.1 mm long, anthers ca. 0.7 mm long, glandular punctate, 2-celled, filaments ca. 0.4 mm long, glabrous, stamens of 3rd whorl with a pair of glands at base; glands distorted sagittate or reniform, ca. 0.5 mm long, glandular punctate, stalked, stalk to 0.1 mm long, glabrous. Staminalodes 3, sagittate, ca. 0.6 mm long, subsessile. Ovary subglobose, 0.6–0.9 mm in diam., glabrous, style 0.6–0.8 mm long, glabrous, stigma capitate. Fruits not seen.

Etymology. The species epithet is derived from the type locality, Bolaven Plateau.

Distribution. Laos (endemic to Bolaven Plateau).

Habitat and Ecology. In lower montane forests; 1,200–1,300 m elev.

Vernacular name. Soy Makdouk Bolaven (ສ້ອຍໝາກດູກບໍລະເວນ) (nov.). Meaning: *Beilschmiedia* of Bolaven (locality name) in Laos.

Note. *Beilschmiedia* in Laos was poorly

known, but a revision by de Kok (2021) reported five species in the country: *Beilschmiedia clarkei* Hook.f., *B. kunstleri* Gamble, *B. laotica* Kosterm. ex de Kok, *B. lucidula* (Miq.) Kosterm., and *B. roxburghiana* Nees. Among them, *B. bolavenensis* is most similar to *B. lucidula* in having opposite leaves, but distinguished by its terminal buds covered with appressed yellowish brown hairs (vs. glabrous), densely glandular punctate lower leaf surfaces (vs. not punctate), and tepals covered with light brown hairs (vs. glabrous).

During our field surveys on the Bolaven Plateau, we collected five species of *Beilschmiedia* that did not match previously recorded species in vegetative characteristics. Among them, only *B. bolavenensis* is described here, since specimens of the others lack flowers and fruits. Further surveys to collect fertile material are necessary before we are able to identify them.

Additional specimens examined. Champasak Province, Paksong District, near Nong Luang Village, alt. 1,248 m, 15°04'19.26"N, 106°12'38.67"E, 10 Dec. 2018, ster., S. Tagane et al. L2014 (FOF!, FU, KAG [KAG 128116!]); Nord du Pakson, plateau de Boloven, 30-10-1928, alt. 1,200–1,300 m, E. Poilane 16220 (P [P0213 2505], image!).

Lindera annamensis H. Liu, Laurac. Chine et Indochine: 127 (1932). —Fig. 2A–D.

Distribution. Laos, Vietnam.

Habitat and Ecology in Bolaven. Lower montane forest edges, roadsides; 1,220–1,340 m elev.

Vernacular name. Lindara Kan-daeng (ລິນດາງຄາງແດງ) (nov.). Meaning: *Lindera* with reddish twigs.

Note. Four species of *Lindera* are known from Laos; *L. annamensis*, *L. hamiltonii* Kosterm., *L. spirei* Lecomte, *in sched.* (*L. polyantha* auct. non (Blume) Boerl., in Liou 1934), and *L. tonkinensis* Lecomte. Among them, *L. annamensis* is most similar to *L. spirei* in leaf shape and size, but differs in having lenticellate twigs reddish brown when dry (vs. black when dry and without

lenticels in *L. spirei*) and longer peduncles, 5–6 mm long in staminate flowers (vs. less than 3 mm long).

Specimens examined. LAOS. Champasak Province, Paksong District, near Nong Luang village: alt. 1,337 m, 15°08'02"N, 106°14'11"E, 3 July 2019, fr., *P. Souladeth et al. L2795* (FOF!, FU!, KAG [KAG129084!]); alt. 1,231 m, 15°04'29.18"N, 106°12'31.22"E, 17 Dec. 2019, pistillate fl., *P. Souladeth et al. L3287* (BKF, FOF!, KAG [KAG155652!]); 1,221 m, 15°04'36.61"N, 106°12'31.69"E, 11 Dec. 2018, staminate fl., *S. Tagane et al. L2060* (FOF!, FU, KAG [KAG128161!]).

Litsea ferruginea (Blume) Blume, Bijdr. Fl. Ned. Ind. 11: 561 (1826); Dao, Fl. Vietnam 20: 383 (2017), excluding *L. ferruginea* var. *annamensis* (H.Liu) Dao, Fl. Vietnam 20: 385 (2017). —Fig. 2E–H.

Distribution. Australia, Laos, Indonesia, Malaysia, Singapore, Vietnam.

Habitat and Ecology in Bolaven. Lower montane forests, 1,240–1,270 m elev.

Vernacular name. Mee Java (ໝີ່ຈາວາ) (nov.). Meaning: *Litsea* of Java Island in Indonesia.

Note. *Litsea ferruginea* (type Java) is widely distributed in the Malesian region, extending to Australia in the south, with a disjunct occurrence in Vietnam. In southern Vietnam, some Malesian elements, including *L. ferruginea*, are remote from their main range of distribution (Averyanov *et al.* 2003, Tagane *et al.* 2016). The presence of *L. ferruginea* provides evidence that some Malesian elements in southern Vietnam may extend their distribution to Laos.

Specimens examined. LAOS. Champasak Province, Paksong District, near Nong Luang village: alt. 1,263 m, 15°03'42.49"N, 106°12'34.75"E, 17 Dec. 2019, fl. bud, *P. Souladeth et al. L3373* (BKF, FOF!, KAG [KAG155737!]); alt. 1,248 m, 15°04'19.26"N, 106°12'38.67"E, 10 Dec. 2018, fl. bud, *S. Tagane et al. L1930* (FOF, FU, KAG [KAG128034!]); same locality, same date, ster., *S. Tagane et al. L1942* (FOF!, FU, KAG [KAG128046!]); same locality, 4 July 2019, young fr., *P. Souladeth et al. L2901* (FOF!, KAG [KAG129180!], TNS).

Litsea lancifolia (Roxb. ex Nees) Benth. & Hook. f. ex Fern.-Vill., Nov. App.: 181 (1880). —Fig. 2I–J.

Distribution. Bhutan, China, India, Laos, Philippines, Singapore, Thailand, Vietnam.

Habitat and Ecology. In semi-dry seasonal evergreen forest.

Vernacular name. Mee Mon (ໝີ່ໝັ່ນ) (nov.). Meaning: *Litsea* with dirty-white leaves abaxially.

Note. In Indochina, three species of *Litsea* have (sub)opposite leaves; *L. balansae* Lecomte, *L. ferruginea* Blume, and *L. lancifolia* (Roxb. ex Nees) Fern.-Vill., among which the latter two are in Bolaven. Whereas *Litsea ferruginea* grows in lower montane forests (alt. 1,240–1,270 m) on the Bolaven plateau, *L. lancifolia* occurs in semi-dry seasonal evergreen forests in the lowlands (alt. 158 m). *Litsea lancifolia* is distinguished from *L. ferruginea* by its chartaceous leaves (vs. thinly leathery), fewer secondary veins (6–8 pairs vs. 10–15 pairs), and shorter petioles [3–5(–8) mm vs. 9–17 mm].

Specimens examined. LAOS. Champasak Province. alt. 158 m, 14°53'44.73"N, 106°01'02.36"E, 13 Dec. 2018, ster., *S. Tagane et al. L2192* (FOF!, FU, KAG [KAG128292!]).

Litsea pseudoelongata Kosterm., Nat. Hist. Bull. Siam Soc. 25(3–4): 38 (1975), non H. Liu. —Fig. 2K–M.

Distribution. Laos, Thailand.

Habitat and Ecology in Bolaven. Lower montane forests.

Phenology. Flowering specimens were collected in December.

Vernacular name. Mee Ta-ket (ໝີ່ຕາເັດ) (nov.). Meaning: *Litsea* with scaly buds.

Note. *Litsea pseudoelongata* is characterized by its perulate buds (terminal buds bearing scales), tomentose leaves, abaxially scalariform-reticulate, and prominent tertiary veins and sessile inflorescences (Ngernsaengsaruy *et al.* 2011). It has been considered endemic to Thailand, where it occurs in lower montane forests, occasionally by streams at 900–1,300 m, in Loei Province (Phu Kradueng, Phu Luang), northeast Thailand (Nernsaengsaruy *et al.* 2011), and at 1,380–1,590 m, in Chanthaburi Province (Khao Soi Dao), southeast Thailand (voucher specimens: *S. Tagane et al.* T2716 & T2557, BKF, FU). On the Bolaven Plateau, *L. pseudoelongata* was collected in lower montane forests.

Specimens examined. LAOS. Champasak Province: Paksong District, near Nong Luang Village, alt. 1,248 m, 15°04'19.26"N, 106°12'38.67"E, 23 Jan. 2019, ster., *S. Tagane et al.* L1984 (FOF!, FU, KAG [KAG128086!]); alt. 1,147 m, 15°04'02.6"N, 106°12'29.9"E, 17 Dec. 2019, pistillate fl., *P. Souladeth et al.* L3333 (BKF, FOF!, KAG [KAG155698!]); Vat Phou, Phou Khao, 15°52'27"N, 105°47'27"E, 30 Nov. 1998, staminate fl., *J. Munzinger & F. Engelman s.n.* (P [P00217388], image!).

Litsea verticillata Hance, J. Bot. 21: 356 (1883). —Fig. 3A–C.

Distribution. Cambodia, China, Laos, Thailand, Vietnam.

Habitat and Ecology in Bolaven. Lower montane forests, 1,240–1,290 m elev.

Phenology. Flowering specimens collected in July and December, fruiting specimens in December.

Vernacular name. Mee Latsamy (ເມັລັດສະໝີ) (nov.). Meaning: *Litsea* with verticillate leaves.

Note. *Litsea verticillata* is easily distinguished from the other species of *Litsea* by its subverticillate leaves with petioles less than 1 cm long.

Specimens examined. LAOS. Champasak Province: Paksong District near Nong Luang Village: alt. 1,290 m, 15°03'38.56"N, 106°12'28.68"E, 17 Dec. 2019, pistillate

fl., *P. Souladeth et al.* L3363 (BKF, FOF!, KAG [KAG 155728!]), alt. 1,257 m, 15°04'40.46"N, 106°12'22.05"E, 3 July 2019, staminate fl., *P. Souladeth et al.* L2808 (FOF!, KAG [KAG129097!]); alt. 1,246 m, 15°04'12'44.53"N, 106°12'27.06"E, 9 Dec. 2018, fr., *S. Tagane et al.* L1923 (FOF!, FU, KAG [KAG128027!]); 1,200 m, 25 Nov. 1938, ster., *E. Poilane s.n.* (P [P01976452], image!).

Machilus angustifolia Mase, Tagane & Yahara, Acta Phytotax. Geobot. 71: 96. —Fig. 3D–L.

Trees, evergreen, to 12 m tall. Current year's twigs ca. 1–1.2 mm in diam., blackish brown, sparsely with sparse appressed white hairs, soon glabrous, old twigs grayish brown. Terminal buds naked, with dense grayish hairs. Leaves alternate, spirally arranged, usually with 2–6 clustered near apex of twigs; petioles (0.2–)0.5–1.6 cm long, reddish brown, young twigs with sparse white hairs, soon glabrous; blades oblanceolate, (0.9–)4.6–11.7 × (0.7–)1.1–3 cm, length/width ratio 3.6–5, chartaceous, adaxially dark grayish brown to dark greenish brown, abaxially reddish brown to light yellowish brown, glabrous adaxially, with short appressed hairs abaxially (visible under magnification), base cuneate, margin entire, apex acuminate to acute, adaxial midrib sunken, abaxial midrib prominent, secondary veins (6–)10–11 pairs, tertiary veins reticulate, slightly foveolate adaxially. Inflorescences paniculate, usually arising from near base of new branchlets, rarely subterminal, 6–13.5 cm long, with 3–5 lateral branches, peduncle 2.6–7.5 cm long, reddish brown, sparsely hairy, rachis light yellowish brown, sparsely hairy; bracts caducous, not seen. Pedicels 2–4.5 mm long, glabrous. Flowers light yellowish green (*in vivo*), 3–3.5 mm in diam.; perianth lobes 6, subequal, ovate-orbicular, ca. 1.8 × 1.7 mm, apex obtuse, glabrous except margin ciliate. Stamens 9, subequal, 1.3–1.5 mm long, anthers ca. 0.6 mm long, 4-celled; upper 2-cells of 2nd and 3rd whorls mostly undeveloped (rudimental, without pollen), filaments 0.7–0.9 mm long, glands of 3rd whorl stipitate, reniform, ca. 0.5 mm long; staminodes 3, sagittate, ca. 0.4 mm long, stipitate, hairy at base. Ovary ovoid-ellipsoid, ca. 1.1 mm long, ca. 0.8

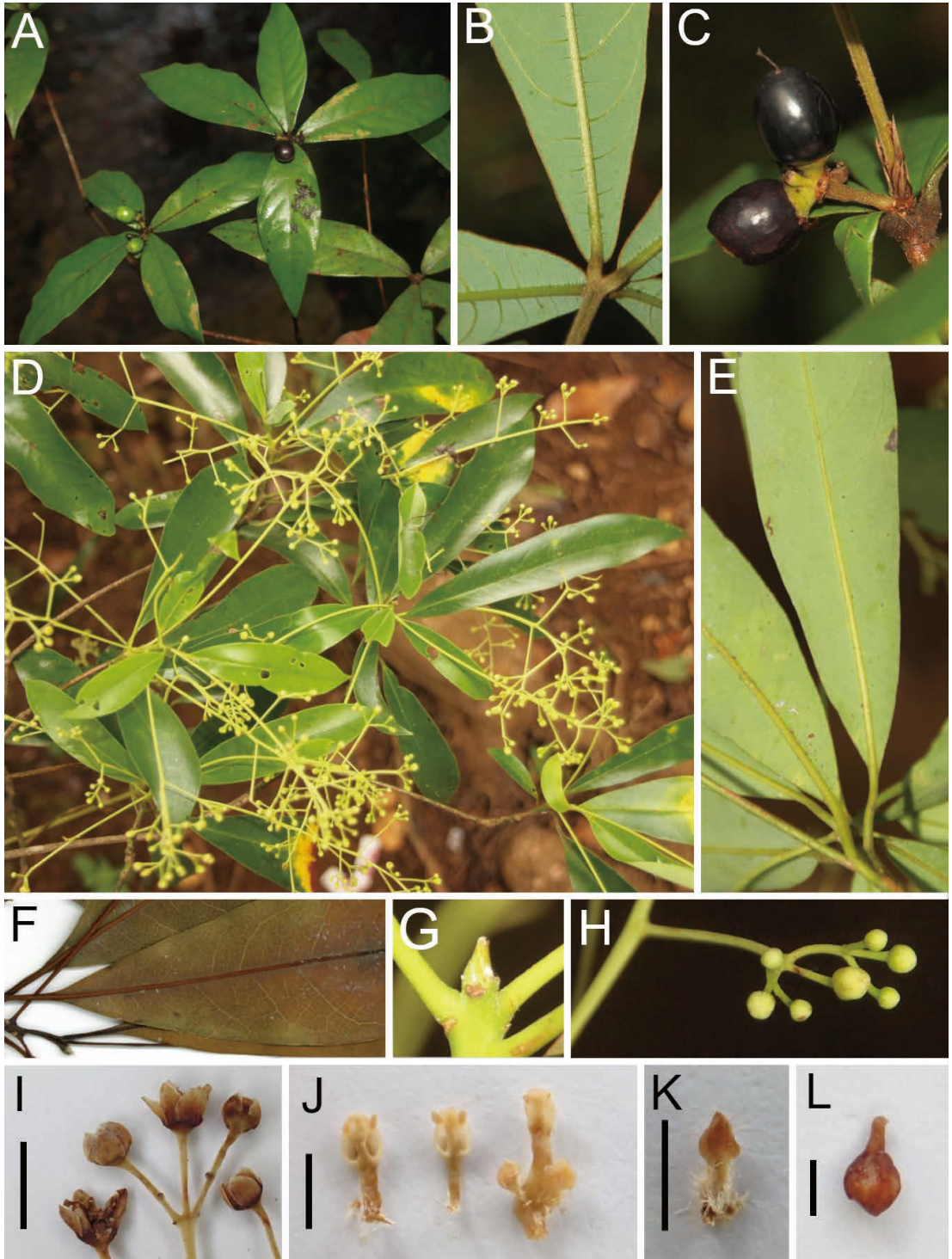


FIG. 3. *Litsea verticillata* Hance. A, fruiting branch. B, portion of lower leaf surface. C, fruits.

Machilus angustifolia Mase, Tagane & Yahara. D, flowering branch. E & F, portion of lower leaf surface. G, shoot apex showing naked terminal buds. H & I, flowers. J, anthers of 1st (left), 2nd (middle) and 3rd (right) whorls. K, staminode. L, pistil. Photos A–C from S. Tagane *et al.* L1923, D–L from S. Tagane *et al.* L2153. Scale bars I = 4 mm, J–L = 1 mm.

mm in diam., glabrous, style ca. 0.8 mm long, glabrous, stigma capitate, flattened.

Distribution. Cambodia and Laos.

Habitat and Ecology in Bolaven. Hill evergreen forests at 950 m elev.

Phenology. Flowering specimens were collected in December.

Vernacular name. Tong Hom Bai-khaep (ຕອງຫອມໃບແຄບ) (nov.). Meaning: *Machilus* with narrow leaves.

Note. *Machilus angustifolia* was described on the basis of two sterile Cambodian specimens and molecular phylogeny based on ITS nucleotide and chloroplast *rbcL* and *matK* regions (Mase *et al.* 2020). It is morphologically characterized by naked terminal buds, relatively narrow leaves (length/width ratio of 3–4.9), lamina (abaxial surface), twigs and petioles reticulate tertiary veins with sparse appressed hairs. Our Laotian collection perfectly matches these vegetative characteristics. According to Mase *et al.* (2020), the Laotian collection is phylogenetically close plants identified as *Machilus declinata* (Blume) de Kok and *M. kerrii* (Gamble) Mase, Tagane & Yahara that have scalariform-reticulate tertiary veins, although those identifications need further examination. Mase *et al.* (2020) noted that *M. angustifolia* is similar to *M. brevipaniculata* Yahara & Tagane in having reticulate tertiary veins, but *M. brevipaniculata* is different from *M. angustifolia* in having densely hairy twigs and petioles. Since this is the first collection of a flowering specimens of *M. angustifolia*, we provide a above detail description of its morphological traits, including floral traits based on the Laotian plants. Six species of *Machilus* have been recorded for the flora of Laos: *M. cochinchinensis* Lecomte, *M. gamblei* King ex Hooker, *M. odoratissima* Nees, *M. parviflora* Meisn., *M. salicina* Hance, and *M. velutina* Champ. ex Benth. (Wei & van der Werff 2008, Newman *et al.* 2017 onwards). Among them, *M. angustifolia* most resembles to *M. sal-*

icina in shape, size and texture of the lamina as well as in the number of secondary veins, but is distinguished by its naked terminal buds (vs. buds covered with scales in *M. salicina*), longer inflorescence (6–13.5 cm vs. 3 cm) and glabrous perianth lobes (except margin) (vs. sericeous on both surfaces).

Specimens examined. LAOS. Champasak Province, Dong Hua Sao National Protected Area, Tad Fane Waterfall, 15°10'57.24"N, 106°07'36.82"E, 950 m, 12 Dec. 2018, fl., S. Tagane *et al.* L2153 (FOF!, KAG [KAG128253!], BKF).

***Machilus champasakensis* Tagane & Soulad., sp. nov.** —Fig. 4.

Similar to *M. lohuiensis* S. K. Lee of China (Hainan) and Vietnam in glabrous branchlets and young shoots, shape and texture of the lamina and inflorescence usually arising from near the base of newly sprouted branchlets, but distinguished by its glabrous leaves (vs. puberulent when young in *M. lohuiensis*), larger perianth lobes (4–5 mm vs. ca. 3 mm) and style much longer than the ovary (vs. style as long as ovary).

Typus. LAOS. Champasak Province: Dong Hua Sao National Protected Area (Bolaven Plateau), near Nong Luang Village, alt. 1,210 m, 15°04'26.35"N, 106°12'24.15"E, 9 Dec. 2018, fl., S. Tagane, A. Nagahama, P. Souladeth, P. Pisuttimarn L1871 (holo- FOF!, iso- BKF, KAG [KAG 127975!]).

Trees, evergreen, to 8 m tall. Young twigs reddish brown, glabrous, old twigs blackish brown or grayish brown, lenticellate. Terminal buds covered with scales; scales ovate-orbicular, to 6 mm long, glabrous (outer ones) or densely puberulent (inner ones) outside, glabrous inside, margin ciliate. Leaves alternate; petioles 1.2–1.9 cm long, glabrous; blades elliptic-oblong to oblanceolate, (3.7–)7.5–14.2 × (1.6–)2.5–5.4 cm, leathery, base cuneate, margin entire, slightly revolute when dry, apex acute to short acuminate, both surfaces glabrous and foveolate, adaxially dark yellowish green or dark greenish brown, abaxially dull brownish yellow, glaucous, midrib sunken adaxially, prominent abaxially, lateral veins 8–12 pairs, prominent abaxially, tertiary veins scalariform-reticulate. Inflorescences reduced panicles, appearing racemose, usually arising from near base of newly sprouted branchlets, 1.5–6.7 cm long,

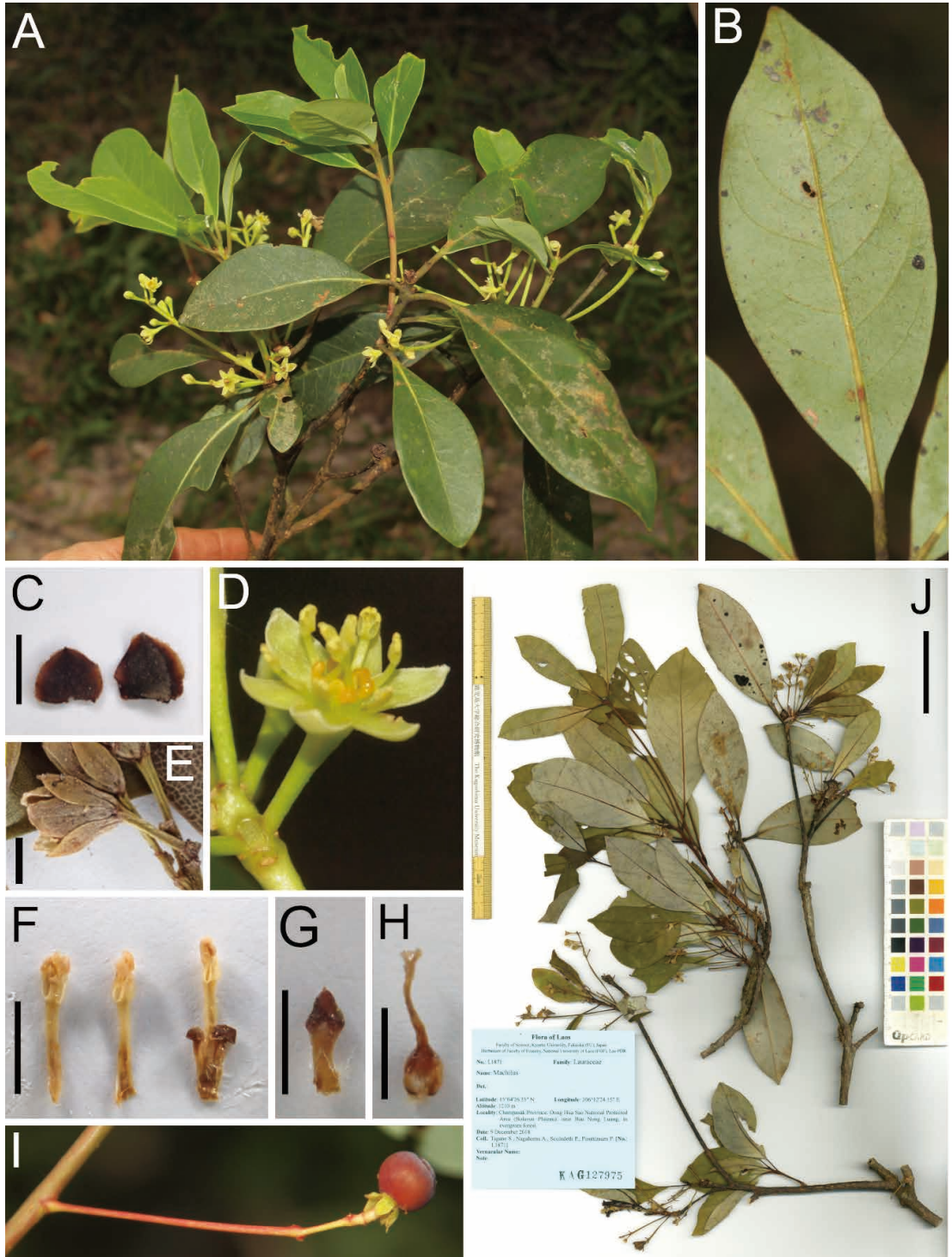


FIG. 4. *Machilus champasakensis* Tagane & Soulad. **A**, flowering branch. **B**, lower leaf surface. **C**, bud scales: adaxial (left) and abaxial (right). **D** & **E**, flowers. **F**, anthers of 1st (left), 2nd (middle) and 3rd (right) whorls. **G**, staminode. **H**, pistil. **I**, infructescence. **J**, isotype *S. Tagane et al.* L1871 (KAG). Photos **A**, **B** & **D** from *P. Souladeth et al.* L3462; **C**, **E**, **F**, **G**, **H** from *S. Tagane et al.* L1871, **I** from *P. Souladeth et al.* L3362. Scale bar **C** = 5 mm, **E** = 2 mm, **F** = 3 mm, **G** = 1 mm, **H** = 2 mm, **J** = 5 cm.

Flora of Laos
 Family: Myrsinaceae (Gonolobus, Ficus, etc.), Genus: Machilus
 No. L1871
 Family: Lauraceae
 Name: Machilus
 Det.
 Latitude: 19°04'20.15" N Longitude: 106°27'24.15" E
 Altitude: 220 m
 Locality: Champasak Province, Dong Hoi National Protected Area (Chheum Phoum), near Ban Xeng, Xang, 20
 Date: 5 September 2018
 Coll.: Tagane S., Tagane A., Souladeth P., Fontaine F. (Pho. L1871)
 Vernacular Name:
 Use:
 K A G 127975

glabrous or sparsely sericeous, peduncle 0.7–5.2 cm long. Pedicels 3–5.5 mm long, glabrous or sparsely hairy, bracts caducous, not seen. Flowers yellowish green (*in vivo*); perianth lobes 6, oblong-ovate, subequal, outer ones 4–4.2 × 2.2 mm, inner ones 4.2–5 × 2.8 mm, hairy on both surfaces, margin ciliolate. Stamens 9, subequal, 3.2–3.5 mm long, anthers ca. 1.2 mm long, 4-celled, filaments 2–2.3 mm long, hairy at base, glands of 3rd whorl broadly sagittate, ca. 0.5 mm long, stipitate, stipe ca. 1 mm long, hairy near base; staminodes sagittate, ca. 0.7 mm long, stipitate; stipe ca. 0.8 mm long, hairy near base. Ovary subglobose, ca. 1.2 mm in diam., glabrous, style ca. 2 mm long, glabrous, stigma capitate. Young fruits globose to ellipsoid, black, glabrous, surrounded by recurved perianth lobes.

Etymology. The specific epithet *champasakensis* is from the name of the province, Champasak, where the type specimen was collected.

Distribution. Laos (so far known only from the type locality).

Habitat and Ecology in Bolaven. In lower montane forest at alt. 1,210–1,250 m.

Phenology. Specimens with flowers and young fruits were collected in December.

Vernacular name. Tong Hom Champasak (ຕອງຫອມຈຳປາສັກ) (nov.). Meaning: *Machilus* of Champasak (province name) in Laos.

Note. *Machilus champasakensis* is similar to *M. odoratissima*, which has been confused with *M. bokorensis* Yahara & Tagane (Yahara *et al.* 2016) and *M. seimensis* Mase, Tagane & Yahara of Cambodia (Mase *et al.* 2020). One reason is that the type specimens numbered as 2607 in Wallich's Catalogue (Wallich 1831) represent several gatherings (2607A, B, C, D, E, and F) that belong to different species (Yang 2008). Among them, Yang (2008) designated *Wallich 2607B* (K-W), from India as the lectotype of *M. odoratissima*. *Machilus champasakensis* differs from

M. odoratissima of India in having inflorescences that arise near the base of the newly sprouted branchlets (new branches and leaves appear at time of flowering in *M. champasakensis* vs. inflorescence subterminal, without young leaves when flowering in *M. odoratissima*), acute to short acuminate leaf apex (vs. acuminate), and inflorescence yellowish brown when dry (vs. black when dry). Newman *et al.* (2017 onwards) reported *M. odoratissima* from Laos on the basis of Newman *et al.* 126, 180 and 186 from Khammouan Province. However, those three specimens (deposited at E and P, image!) show differences from both the lectotype of *M. odoratissima* and *M. champasakensis* and possibly are another new species. *Machilus champasakensis* differs from the plants represented by these three specimens in its foveolate and completely glabrous leaves (vs. not foveolate and abaxial surface of developing leaves densely sericeous), reduced paniculate inflorescence appearing racemose (vs. obviously paniculate) and very sparsely hairy peduncle and rachis of inflorescence (vs. sericeous). In taxonomic studies of *Machilus* in Cambodia, Yahara *et al.* (2016) and Mase *et al.* (2020) concluded that *M. odoratissima* in Cambodia differed from *M. odoratissima* in India and described two new species, *M. bokorensis* Yahara & Tagane and *M. seimensis* Mase, Tagane & Yahara. Those species are similar to *M. champasakensis* in having scaly buds and elliptic-oblong to oblanceolate leaves; *M. champasakensis* is distinguished from *M. bokorensis* by its abaxially glabrous developing leaves (vs. sericeous in *M. bokorensis*), shorter inflorescence [1.5–6.7 cm long vs. (4.0–)6.0–13.0 cm long], smaller perianth lobes (outer ones 4–4.2 × 2.2 mm, inner ones 4.2–5 × 2.8 mm vs. outer ones ca. 6.8 × 2.4 mm, inner ones ca. 7 × 2.5 mm), and shorter styles (ca. 2 mm long vs. 2.5–3 mm long), and from *M. seimensis* by its glabrous leaves (vs. abaxially appressed hairy), inflorescence usually arising near the base of newly sprouted branchlets (vs. subterminal, without new leaves when flowering), shorter inflorescence (1.5–6.7 cm long vs. 7.5–9.5 cm long), and larger outer perianth lobes (4–4.2 × 2.2 mm vs. ca. 3.5 × 1.3 mm).

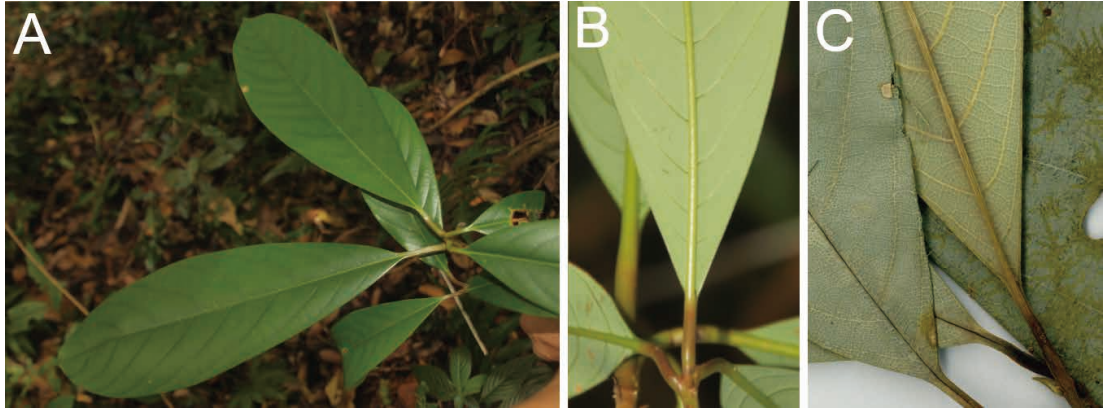


FIG. 5. *Machilus robusta* W. W. Sm. **A**, leafy branch. **B**, portion of lower leaf surface. **C**, shoot apex showing terminal bud and portion of upper and lower leaf surfaces. Photos all from *S. Tagane et al. L1996*.

Additional Specimens examined. LAOS. Champasak Province, Paksong District, Dong Hua Sao National Protected Area (Bolaven Plateau), near Nong Luang Village: 1,290 m, 15°03'38.56"N, 106°12'28.68"E, 17 Dec. 2018, young fr., *S. Tagane et al. L3357* (FOF!, FU, KAG [KAG155722!]) & *L3362* (FOF!, FU, KAG [KAG155727!]); 1,246 m, 15°04'44.53"N, 106°12'27.06"E, 9 Dec. 2018, ster., *S. Tagane et al. L1917* (FOF!, FU, KAG [KAG128021!]); 1,212 m, 15°04'25.38"N, 106°12'22.71"E, 18 Dec. 2018, young fr., *S. Tagane et al. L3462* (FOF!, FU, KAG [KAG155825!]).

Machilus robusta W. W. Sm., Notes Roy. Bot. Gard. Edinburgh 13: 169 (1921). —Fig. 5.

Distribution. China, Laos, Myanmar, Vietnam.

Habitat and Ecology in Bolaven. Lower montane forests; 1,100–1,250 m elev.

Phenology. Fruiting specimens were collected in September.

Vernacular name. Tong Hom Nang (ຕອງໜອງ) (nov.). Meaning: *Machilus* with leathery leaves.

Note. *Machilus robusta*, even when sterile, can be easily recognized by its densely puberulent terminal buds, leathery, glabrous and relatively larger leaves 10–26 cm long with short,

acuminate to acute apex and foveolate lamina surfaces both adaxially and abaxially. Kostermans annotated the specimen *E. Poilane 15689* (P) from Bolaven as this species in 1970 but no regional checklists and floras of Laos and surrounding countries (Lecomte 1914, Liou 1934, Wei & van der Werff 2008, Nguyen 2017, Newman *et al.* 2017 onwards) account for its presence in Laos.

Specimens examined. LAOS. Champasak Province, Dong Hua Sao National Protected Area, near Nong Luang village, 15°04'19.26"N, 106°12'38.67"E, 1,248 m, 10 Dec. 2018, sterile, *S. Tagane et al. L1996* (FOF!, FU, KAG [KAG128098!]); 15°04'05.58"N, 106°12'50.26"E, 1,238 m, 11 Dec. 2018, ster., *S. Tagane et al. L2083* (FOF!, FU, KAG [KAG129183!]); 5 à 6 kilos au nord de Pakson pro: Bassac. Plateau des Bolouen 11 à 1200 M alt. entre B. Du Mia et B. Thong Noi, 21 Sept. 1928, fr., *E. Poilane 15689* (P [P02003817], image!).

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