

PLANT & FOREST

Taxonomic notes on *Leycesteria* Wall. (Caprifoliaceae): a newly recorded genus for the flora of Vietnam

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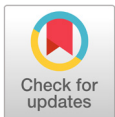
Abstract

Two species of *Leycesteria*, *L. gracilis* (Kurz) Airy Shaw and *L. formosa* Wall. (Caprifoliaceae), from the Lao Cai and Yen Bai Provinces are reported here as a new generic record for the flora of Vietnam. During floristic surveys of northern Vietnam, *L. gracilis* and *L. Formosa* were encountered. A critical morphological study of all the collected specimens and the type of materials consulting the relevant literature led us to confirm the identity of our collected specimens as *L. gracilis* and *L. formosa*. The genus differs from other Vietnamese genera of Caprifoliaceae by the presence of a spike inflorescence or flowers in sessile whorls of 6. Taxonomic notes, description, and photographs are provided, together with short notes on the distribution, ecology and phenology of the two species.

Keywords: honeysuckle family, Lao Cai Province, wild ornamentals

Introduction

Genus *Leycesteria* Wall. is one of the small genera of the family Caprifoliaceae comprising eight species, distributed in Bhutan, China, India, Myanmar, Nepal, Pakistan, Pacific islands, and New Zealand (Ren et al., 2011; POWO, 2018); widely cultivated and naturalized in Australia, Europe, and North America. Three species of *Leycesteria* have been recorded from the Chinese territories adjacent to Vietnam i.e., *L. formosa* in West Guizhou, West Sichuan, Xizang, and Yunnan whereas *L. stipulata* in Yunnan and *L. gracilis* in Xizang, Yunnan. All of them are distributed in wet rocky forests at an altitudinal gradient of 1100 - 3800 m a.s.l. (Hsu et al., 1988; Ren et al., 2011). During our floristic surveys carried out during April-October 2017 to the Hoang Lien Mountains (Lao Cai Province, Bat



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Xat District) of Vietnam, some individuals of *L. gracilis* were encountered. The locality lies in Y Ty Commune, having primary evergreen broad-leaved humid forest on sandstone (Fig. 1). The first author (BHQ) thereafter, collected some more individuals of *L. formosa* from Yen Bai Province in Vietnam (Fig. 1). A review of literature revealed that the family Caprifoliaceae has not been dealt in the Illustrated Flora of Vietnam (Pham, 2000) as well as in any of the checklists from

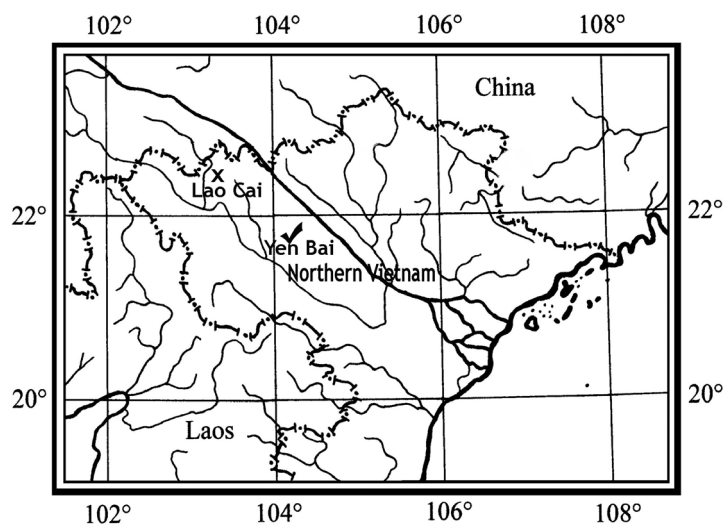


Fig. 1. Map showing the distribution localities of *Leycesteria gracilis* (X) and *L. formosa* (✓) in Vietnam.



Fig. 2. *Leycesteria gracilis* (Kurz) Airy Shaw. A & B. Habit. C. Branchlets. D. Abaxial portion of leaf. E & F. Inflorescence. G & H. Flower bud. I. Flower. J & K. Flower view of opened. L. Bracts. M. Anthers. N. Calyx, Ovary & Style. O & P. Inflorescence & Fruit. Q. Cross section of fruit. R. Seeds.

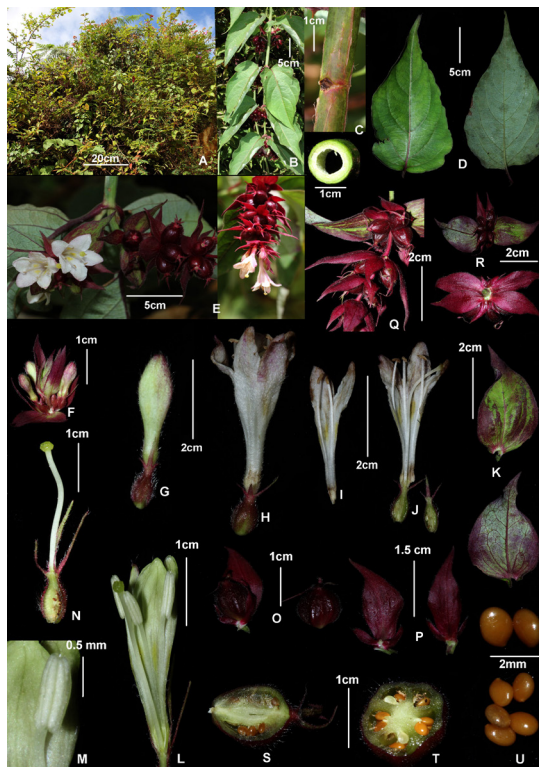


Fig. 3. *Leycesteria formosa* Wall. A. Habit. B & C. Branchlets. D. Abaxial portion of leaf. E. Inflorescence. F, G, & H. Flower. I & J. Corolla. K. Bracts. L. Stamens. M. Anther. N. Ovary and style. O. Berry. P. Calyx. Q & R. Inflorescence fruit and Bracts. S. Detailed view of opened fruit. T. Cross section of fruit. U. Seeds.

Vietnam (Nguyen and Nguyen, 1998; Nguyen and Phuong, 2005). Further review of literature (Ren et al., 2011) and study of the specimens housed in different herbaria (K, HN, VNM) revealed that the genus *Leycesteria* has never been recorded from Vietnam. A critical morphological study of collected specimens and the type materials consulting the relevant literature led us to confirm the identity of our collected specimens as *L. gracilis* and *L. formosa* (Fig. 2 and 3). The genus differs from other Vietnamese genera of Caprifoliaceae by the presence of a spike inflorescence or flowers in sessile whorls of 6. This genus was hitherto known to occur in Bhutan, China, India, Myanmar and Nepal (Ren et al., 2011). The present report is a new distributional record of this genus in Vietnam.

Materials and Methods

All the specimens of Caprifoliaceae and allied families kept in different herbaria of Vietnam, Vietnam Academy of Science and Technology (VAST) (HN), and Institute of Tropical Biology (VNM) were studied. Photographs of the type specimens housed in the virtual herbaria, Royal Botanic Gardens (K), Muséum National d'Histoire Naturelle (P), and Harvard University Herbaria (HUH) were also studied. Morphological characters were studied consulting the relevant literature (Nguyen and Nguyen, 1998; Pham, 2000; Nguyen and Phuong, 2005; Ren et al., 2011).

Results

Taxonomic Treatment

Key to the genera of Caprifoliaceae in Vietnam

1. Inflorescence short cyme 1 - 8 flowers.....**1. *Abelia***
 1. Inflorescence thyrsoid, cymes opposite and usually reduced to paired flowers, rarely 1-, sometimes 3-flowered.....**2**
 2. Inflorescence occasionally pedunculate; cymes sessile, sometimes forming a capitulum, or cymes pedunculate with a pair of bracts and 2 pairs of bracteoles; bracts usually small.....**2. *Lonicera***
 2. Inflorescence a spike or flowers in sessile whorls of 6, terminal or axillary, often with conspicuous leaflike involucral bracts.....**3. *Leycesteria***

Leycesteria Wall. 1824. Fl. Ind. 2: 181; H.P. Sheng, H.J. Qi & Wang H.-J. 1988. In: H.P. Sheng (ed.) Fl. Reipubl. Popularis Sin. 72: 104–259; D.K. Ren et al. in Wu C.Y. & Raven P.H. (eds.) 2011. Fl. China, 19: 618–620. **Type:** *Leycesteria formosa* Wall. Nepal, 30/09/1932, *Hay s.n.* (K, Holotype, K000076878 photo!)

Shrubs, deciduous; branches hollow or with solid pith. Leaves simple, opposite, margin entire or serrate, occasionally sinuate; stipules present or absent. Inflorescence a spike or flowers in sessile whorls of 6, terminal or axillary, often with conspicuous leaf like involucral bracts. Calyx 5. Corolla 5-lobed, funnel-form, regular; tube gibbous at base. Stamens 5; anthers dorsifixed. Ovary 5-8-locular; style slender; stigmas peltate. Fruit a berry, with persistent calyx; seeds minute, numerous.

The genus is represented by eight species (POWO, 2018) in the world, distributed in Bhutan, India, Myanmar, Nepal, and Pakistan. They are widely cultivated and naturalized in Australia, Europe, North America, Pacific islands and New Zealand.

Leycesteria gracilis (Kurz) Airy Shaw, 1932. Hooker's Icon. Pl. 32: t. 3166; H.P. Sheng, H. J.-Qi & Wang H.-J. 1988. In: H.P. Sheng, ed., Fl. Reipubl. Popularis Sin. 72: 104–259; Ren et al. in Wu C.Y. & Raven P.H. (eds.) 2011. Fl. China, 19: 618–620. Type: India. Kurz W.S., *s.n.* (K, Isotype. K000076885 Photo!)

-*Lonicera gracilis* Kurz, 1870. J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39: 77.

Shrubs, 2 - 3 m tall. Branches hollow. Interpetiolar stipules absent; petiole 5 - 8 (10) mm, glabrescent or glabrous. Leaves simple blade ovate-lanceolate, 8 - 10 × 3 - 7 cm, abaxially light green, sparsely pubescent on midvein and lateral veins, adaxially glabrous, base rounded, margin slightly involute, remotely dentate, apex acuminate. Inflorescence pendent axillary pedunculate spike of paired flowers, 4 - 6 cm; pairs 2 - 6, with 3 bracts per flower and fruit; involucral bracts ovate-lanceolate or lanceolate, 1/3 - 1/2 as long as ovaries, glandular ciliate. Ovary 4 - 6 mm, with a short beak at apex. Calyx connate and shallowly cupular in lower part; lobes linear-lanceolate, 1.5 - 2 mm, often glandular ciliate. Corolla white, funnel-form, 1 - 2 cm, glabrous; lobes ovate to orbicular, 4 - 6 mm. Stamens 0.5 - 1 cm, slightly shorter than corolla; anthers yellow, 2 - 3 mm. Ovary (5-)7- or 8(-10)-locular, with numerous ovules, 0.5 - 1 cm; style protruding from corolla, 1.5 - 2 cm. Berry, turning blue-purple, oblong or ellipsoid, 0.8 - 2 cm; seeds numerous, subglobose, minute yellow, ca. 1 - 1.5 mm in diam. Flowering in March - April, fruiting April - May.

Distribution: Northern Vietnam: Lao Cai (Sa Pa, Bat Xat) of Ta Giang Phinh Forest Control Point, 22°24'56.6"N, 103°45'12.4"E. Secondary closed evergreen seasonal broad-leaved lowland forest on limestone hills at elev. ca. 2108 m a.s.l

Bat Xat District, Y Ty Commune, Nheu Co San Mountain. Around 22°37'27.5N 103°37'23.6E. Secondary closed evergreen seasonal broad-leaved lowland forest on limestone hills at elev. ca.1850 - 2000. China (Xizang, Yunnan), Bhutan, India, Myanmar and Nepal.

Ecology and habitat. Terrestrial. Lowland broad-leaved evergreen forests on alluvial soils derived from limestone. Primary evergreen broad-leaved and mixed forests with *Tsuga dumosa* on sandstones at elevations 1850 - 2108 m a.s.l., usually in wet places in assemblage with *Acer* sp., *Actinidia* sp., *Altingia* sp., *Ardisia* sp. Locally common.

Specimens examined: Vietnam Lao Cai, Bat Xat District, Y Ty Commune, Nheu Co San Mountain, near 22°37'27.5N 103°37'23.6E, at elevations 1850 - 2000 m a.s.l., *B.H. Quang 202*, *N.V. Du* et al. *HN-UBC 173* (HN!, UBC!)

Leycesteria formosa Wall. 1824. *Fl. Ind.* 2: 182; H.P. Sheng, H. J.-Qi & Wang H.-J. 1988. In: H. P. Sheng (ed.) *Fl. Republ. Popularis Sin.* 72: 104–259; Ren et al. in Wu C.Y. & Raven P.H. (eds.) 2011. *Fl. China*, 19: 618–620. **Type:** Nepal. *Hay s.n.* 30/09/1932 (K, lectotype. K000076895, K000076896 Photo!)

-*Leycesteria formosa* var. *brachysepala* Airy Shaw Bull. Misc. Inform. Kew (4): 169 1932. **Type:** China, Yunnan, *Forest G.* 7647, 05/1912 (K, lectotype. K000076876 Photo!)

Shrubs, 1 - 5 m tall. Branches hollow, branchlets, petioles, peduncles, bracts, and sepals adpressed pubescent and sometimes glandular hairy. Petiole 5 - 15 mm; leaf blade ovate to lanceolate, 4 - 13 × 2 - 6 cm, both surfaces glabrescent to sparsely adpressed pubescent, base cuneate to subcordate, margin entire to dentate, occasionally irregularly sinuate, apex acuminate to caudate. Inflorescence terminal or axillary, 5 - 8 cm; peduncle 6 - 30 mm. Whorls 1 - 10, each whorl composed of 2 opposite sessile, 3-flowered cymes subtended by green, purplish, or purple-red leaf like involucral bracts and bracts; involucral pair of bracts up to 2.5 cm, 4 outer bracts narrower and shorter, 8 inner bracts, 1 - 1.5 cm. Ovary oblong, 3 - 4 mm, densely glandular hairy. Calyx shortly fused at base, sometimes to half way; lobes lanceolate to linear, sometimes deltoid, 1 - 9 mm. Corolla white to pink, sometimes purple-red, funnel-form, 1.2 - 2 cm, outside pubescent; lobes orbicular-ovate, ca. 5 mm. Stamens subequaling corolla, 1 - 1.5 cm; anthers 0.5 - 0.8 mm. Ovary 5-locular, 0.3 - 0.5 mm; style slightly exceeding corolla, glabrous, 1.5 - 2 cm. Berry red, turning black-purple, ovoid or subglobose, with persistent calyx, 5 - 7 mm in diam; seeds minute, numerous, brownish, broadly ellipsoid to oblong, slightly compressed, ca. 1 mm. Flowering in Jun.- Sep., fruiting Sep.-Oct.

Distribution: Vietnam, Yen Bai (Mu Cang Chai, Che Tao) of roadside forest control point, 21°49'07.1"N, 104° 04'02.0"E. Secondary closed evergreen forest on limestone hills at elev. about 1910 m a.s.l. Mu Cang Chai District, Che Tao Commune. China (West Guizhou, West Sichuan, Xizang, Yunnan), Bhutan, India, Myanmar, Nepal, Pakistan. Widely cultivated and naturalized in Australia, Europe, North America, Pacific islands and New Zealand.

Ecology and habitat: *Leycesteria formosa* was found growing in the roadside and at the forest borders of limestone hills at about 1910 m a.s.l. However, it has also been reported to occur in the open evergreen forest and secondary forest (evergreen forest type).

Specimens examined: Vietnam, Yen Bai Province, Mu Cang Chai District, Che Tao Commune, 12 Sep. 2017, 21°49'07.1"N, 104° 04'02.0"E, ca. 1910 m a.s.l. *B.H. Quang 210* (HN!).

Notes

In Vietnam, the family Caprifoliaceae was reported to be comprised of five genera (Takhtajan, 1987; Pham, 2000; Nguyen and Phuong, 2005) i.e., *Abelia*, *Lonicera*, *Sambucus*, *Viburnum*, and *Silvianthus*. Of late, *Sambucus* and *Viburnum* were shifted to the family Adoxaceae and *Silvianthus* to the family Carlemanniceae (Ren et al., 2011; Byng et al., 2016; POWO, 2018). Hence, the family Caprifoliaceae in Vietnam has three genera now i.e. *Abelia*, *Lonicera*, and the newly discovered *Leycesteria*.

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