
Ligustrum guangdongense (Oleaceae), a New Species from China

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ABSTRACT. *Ligustrum guangdongense* R. J. Wang & H. Z. Wen (Oleaceae), from Guangdong, China, is described and illustrated. The new species is similar to *L. punctifolium* M. C. Chang and *L. morrisonense* Kaneh. & Sasaki, based on the small leaf blades and terminal inflorescences. *Ligustrum guangdongense* differs from *L. punctifolium* by having sparsely punctate glands on the abaxial leaf blade surface (vs. densely so), a corolla tube longer than the corolla lobes (1.6–1.9:1 vs. 1.1–1.3:1), and stamens that are included within (vs. exserted). *Ligustrum guangdongense* differs from *L. morrisonense* by having abaxially punctate leaf blades (vs. not punctate), typically 12 to 28 flowers in an inflorescence (vs. two or three), and a corolla tube that is shorter relative to the corolla lobes. The pollen grains of the new species are subprolate, with tricolpate apertures and a reticulate exine. The IUCN conservation status of *L. guangdongense* is assessed as Critically Endangered (CR).

Key words: China, IUCN Red List, *Ligustrum*, Oleaceae.

Ligustrum L. is a moderately sized genus in the Oleaceae and consists of approximately 37 species worldwide, of which at least 23 are found in China (Qin, 2009). *Ligustrum* is distributed in eastern and southern Asia, Europe, and Australia, with China seen as its modern center of species diversity (Qin, 2009). Plants of *Ligustrum* are either deciduous or evergreen shrubs or small trees, with opposite, simple, short petiolate leaves. Their inflorescences are generally terminal, as a panicle of cymes, with bisexual flowers that are either sessile or pedicellate. The flowers have a campanulate and truncate calyx that is 4-toothed and persistent. The flowers have a rotate, funnellform, or salverform corolla that is 4-lobed, with two stamens. The fruits are a berrylike drupe, with one to four seeds.

While investigating plants on the Dapeng Peninsula in Guangdong Province, China, we found an

unknown shrubby plant among the mixed shrubs on the seashore. It is distinguished from previously recognized *Ligustrum* species and our comprehensive study confirms it as a new species.

Ligustrum guangdongense R. J. Wang & H. Z. Wen, sp. nov. TYPE: China. Guangdong: Shenzhen, Dapeng Peninsula, Xichong seaside, on sandy soil, N22°28'49", E114°31'43", 28 Feb. 2010, flowering, R.-j. Wang 1285 (holotype, IBSC; isotypes, IBSC). Figure 1.

Diagnosis. *Ligustrum guangdongense* is similar to *L. punctifolium* M. C. Chang and *L. morrisonense* Kaneh. & Sasaki, but differs from *L. punctifolium* by having sparsely punctate glands on the abaxial leaf surface, a corolla tube that is relatively longer than the corolla lobes, and stamens that are included within the corolla tube. *Ligustrum guangdongense* differs from *L. morrisonense* by having abaxially punctate leaf blades, (5 to)12 to 28 flowers in an inflorescence, and shorter corolla lobes relative to the corolla tube.

Description. Shrubs, 2–4 m tall, evergreen; branchlets terete, sparsely pubescent to glabrescent. Leaf blades usually ovate, asymmetric, 2.5–3.6 × (0.8–)1.1–2 cm; blade texture papery to somewhat leathery, glabrous on both surfaces, but sparsely punctate abaxially; leaf base obliquely cuneate, apex obtuse to acute; secondary veins in 3 or 4 pairs, venation flush adaxially, but prominent abaxially; petiole 0.5–1.3 mm. Panicles terminal, with (5 to)12 to 28 flowers per inflorescence; flowers white, 7.5–9 mm diam. while open, flowering pedicels 1.7–6.8 mm. Calyx campanulate, 1.3–2 mm, glabrous, truncate, persistent, sometimes mostly dehiscent as carpels develop; corolla 8.4–11.5 mm; corolla tube (5–)5.5–7.1 mm, 1.6–1.9:1 longer than the lobes; corolla lobes 2.5–4.4 × 1.2–2 mm; stamens 2, included, reaching at most the throat of the corolla tube; anthers pale yellow, ca. 2.8 mm, versatile;

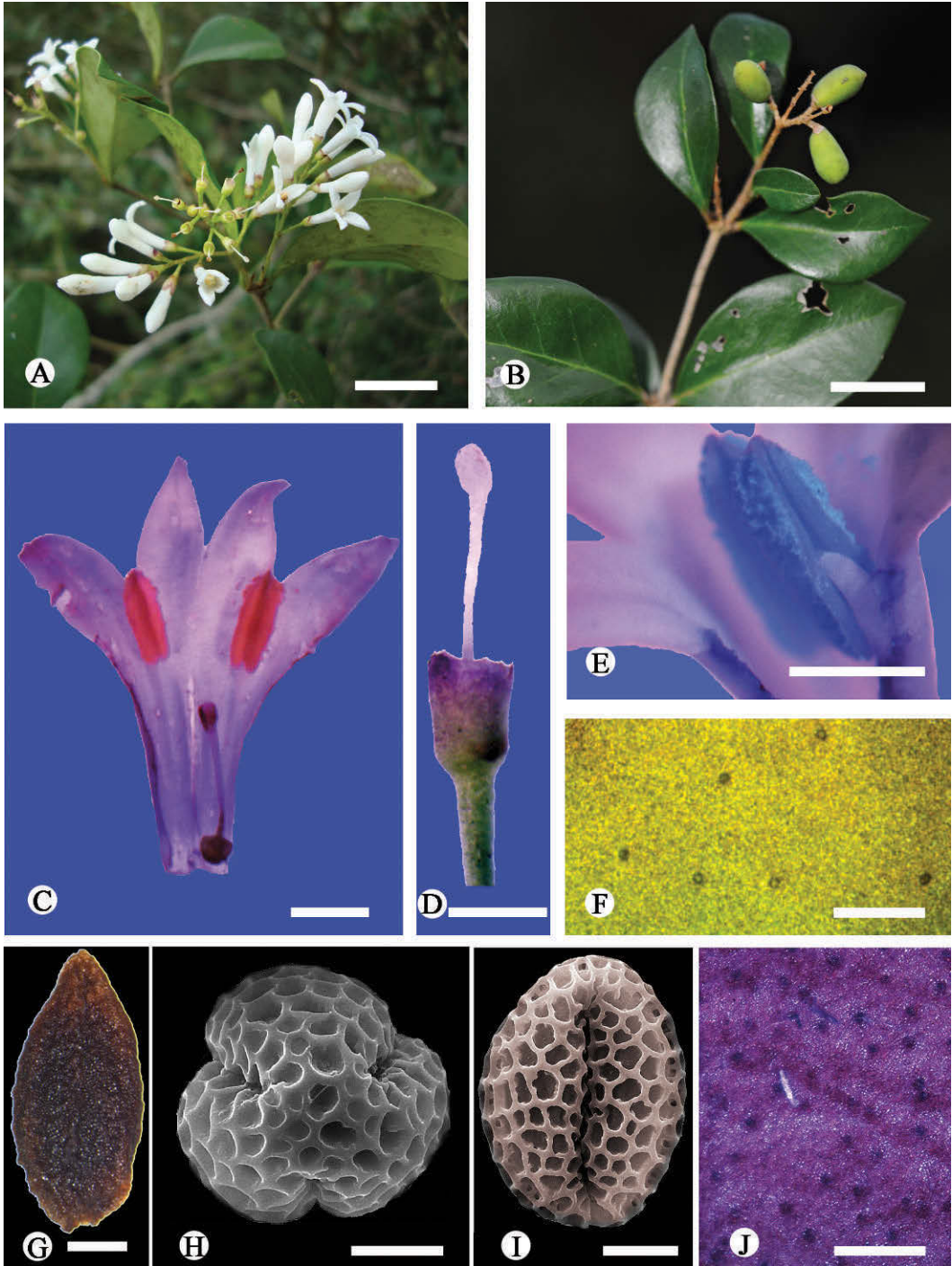


Figure 1. *Ligustrum guangdongense* R. J. Wang & H. Z. Wen. —A. Flowering branch. —B. Fruiting branch. —C. Floral dissection to reveal the inserted stamens and gynoecium. —D. Floral dissection to show the style and stigma. —E. Inserted stamens epipetalous on the corolla tube. —F. Abaxial leaf surface showing the punctate glands under light microscopy. —G. Seed. —H. Pollen grain in polar view. —I. Pollen grain in equatorial view. —J. Abaxial leaf surface showing the denser distribution of punctate glands in *L. punctifolium* M. C. Chang. Scale bars: A, B = 1 cm; C, E = 2 mm; D, F, G, J = 1 mm; H, I = 10 μm. Photographs were taken from the type locality by the corresponding author.

filaments ca. 1.5 mm; styles 3–4 mm, with stigma ca. 0.5 mm long. Fruit a drupe, obovoid when ripe, 3.5–4.5 mm, acute at apex, with a tip < 1 mm; seeds ca. 3 × 2 mm, oblong to ellipsoid, with indistinct longitudinal ridges.

Palynology. The pollen of the new species is a single grain that is subprolate to prolate, isopolar, and radially symmetric in shape, with tricolpate apertures and a reticulate exine. Pollen grains are medium-sized, 38.4(36.2–40.1) × 29.1(27.5–30.0) μm, with polar/equatorial (P/E) ratios of a mean of 1.32 (range, 1.29–1.35). These pollen characteristics are consistent with those of other *Ligustrum* species previously observed (Li et al., 1992).

Distribution and ecology. *Ligustrum guangdongense* is endemic to Dapeng Peninsula, and only four populations, each with less than 10 individuals, were found along the sandy seashore. Associates of these shrubs include small trees such as *Celtis sinensis* Pers. (Ulmaceae), *Syzygium odoratum* (Lour.) DC. (Myrtaceae), *Ficus hispida* L.f. (Moraceae), and *Pandanus tectorius* Parkinson (Pandanaceae). Other shrubs include *Elaeagnus oldhamii* Maxim. (Elaeagnaceae), *Atalantia buxifolia* (Poir.) Oliv. ex Benth. (Rutaceae), *Lantana camara* L. (Verbenaceae), and *Aporosa dioica* (Roxb.) Müll. Arg. (Euphorbiaceae). Liana associates include *Embelia laeta* (L.) Mez (Myrsinaceae) and *Morinda parvifolia* Bartl. ex DC. (Rubiaceae). The shade density was about 20%–40% for *Ligustrum guangdongense* at the type locality.

IUCN Red List Category. *Ligustrum guangdongense* is endemic to the Dapeng Peninsula, which has an attractive seashore with many visitors. All the presently known collections were from the type locality. The new taxon can be considered rare and its habitat is vulnerable and easily destroyed by human activities and destruction. According to the IUCN Red list criteria (IUCN, 2001), the new species is evaluated as Critically Endangered (CR), with this qualified as CR B2ab(i, iii)+D, referring to the area of occupancy as estimated to be less than 10 km², and the population size estimated to number fewer than 50 mature individuals.

Phenology. *Ligustrum guangdongense* was observed in flower from February to May; fruiting was noted from May to September.

Relationships. Based on the classification scheme of Qin (2009), *Ligustrum guangdongense* belongs to section *Ligustrum*, based on the ovate

seeds with acute apices. The new species is similar to *L. punctifolium* and *L. morrisonense*, sharing small leaf blades that are often ovate. Leaves do not exceed 2 cm in length in either *L. punctifolium* or *L. morrisonense*, but are larger and range from 2.5 to 3.6 cm in the new species. The terminal panicles of pedicellate flowers distinguish both *L. punctifolium* and *L. morrisonense*. However, flowers are fewer, appearing in groups of no more than two or three on lateral branches, and are sessile in *L. morrisonense*. These three morphologically similar taxa are geographically distinct. *Ligustrum punctifolium* occurs in floodplains in Hainan, Hong Kong, and Vietnam; *L. morrisonense* is known from mountainous ridges in Taiwan. The flowering season of the new species is noted from February to May, which differs from *L. punctifolium* (August) and *L. morrisonense* (April to July) (Chang et al., 1996).

A comparison between *Ligustrum guangdongense* and *L. punctifolium* reveals that the former has sparsely punctate abaxial leaf blade surfaces, with these glands distributed at a density of ca. 5.5 per mm². The abaxial glands are much denser, noted at a density of 26.3 per mm² in *L. punctifolium*. The relative lengths of the corolla tube to lobes are greater in *L. guangdongense* (1.6–1.9:1) than observed in *L. punctifolium* (1.1–1.3:1). Stamens distinguish both species and in *L. punctifolium* they are exerted, reaching the apex of the corolla lobes (vs. inserted in *L. guangdongense*). Anthers in *L. punctifolium* are 2.8 mm (vs. 2 mm in *L. guangdongense*); the filaments are longer, 2–2.5 mm (vs. 1.5 mm in *L. guangdongense*). Fertile pedicels are shorter in *L. punctifolium*, 0.5–1.5 mm, and are significantly longer in *L. guangdongense*, 1.7–6.8 mm. Leaves are more markedly asymmetrical at their bases in *L. guangdongense* (Chang et al., 1996).

Stamens are included within the corolla tube in both *Ligustrum guangdongense* and *L. morrisonense*. Leaves are asymmetrical at the base and abaxially punctate in the new species, in contrast to no glands and the more symmetrical blades of *L. morrisonense*. Flowers clearly distinguish both species, with two or three sessile and lateral flowers seen in *L. morrisonense*, whereas flowers are grouped in terminal panicles of (five to) 12 to 28 flowers that are pedicellate in *L. guangdongense*. Corolla lobes are relatively longer in *L. morrisonense*, with ratios of the corolla tube to the corolla lobes noted as (2.1–)2.5–4:1; in *L. guangdongense* these ratios are less, at 1.6–1.9:1.

Paratypes. CHINA. **Guangdong:** Shenzhen, Dapeng Peninsula, Xichong village, near seaside, 14 Apr. 2005 (fls.), S.-z. Zhang & L.-q. Li 0008 (SZG); 28 Apr. 2005 (fls.), S.-z. Zhang & L.-q. Li 0786 (SZG); 20 Apr. 2010 (fls., frs.), R.-j. Wang 1307 (IBSC, MO); 16 Aug. 2010 (frs.), R.-j. Wang 1422 (IBSC).

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