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# *Cinnamomum purpureum* (Lauraceae): A New Species from Guangdong, China

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**ABSTRACT.** A new species of Lauraceae from Guangdong, China, *Cinnamomum purpureum* H. G. Ye & F. G. Wang, is described and illustrated here. The new species belongs to *Cinnamomum* sect. *Camphora* Meissner and is similar to *Cinnamomum parthenoxylon* (Jack) Meissner in appearance, but differs by the short trunk; the thick leathery leaves with apex obtuse or acute; the branchlets, petioles, costas, young leaves, pedicels, and peduncles purplish red; anthers quadrangular with digitate staminodia; and a fusiform ovary. A key is provided to distinguish the species of *Cinnamomum* in Ehuangzhang Nature Reserve, Guangdong, China.

**Key words:** China, *Cinnamomum*, Ehuangzhang, Guangdong, Lauraceae, Yangchun.

*Cinnamomum* Trew is one of the larger genera of Lauraceae, with more than 250 species, and is distributed in tropical Asia and tropical America (Tao, 2001; H. X. Li, 1982). There are about 50 species in China (Tao, 2001), mostly distributed in South China, northward to Shanxi and southern Gansu. Plants of the genus *Cinnamomum* contain diverse essential oils, which can be used extensively for many economic industries such as spices, medicine, foodstuffs, and chemical synthesis. The oils are especially important in the crude spice and medicine industries in China and are welcomed by international markets (Cheng et al., 1997).

The Ehuangzhang Nature Reserve lies east of the Yunkai Mountains, in southeastern Guangdong Province, China. The highest peak, Ehuangzhang, is 1338 m, while the lowest point is 50 m. The Reserve is well covered by natural forests and is an important area to biodiversity conservation.

During a recent scientific survey of the Ehuangzhang Nature Reserve, six species of *Cinnamomum* (*C. burmanni* (C. G. & Th. Nees) Blume, *C.*

*camphora* (L.) Presl, *C. cassia* Presl, *C. parthenoxylon* (Jack) Meissner, *C. validinerve* Hance, as well as the new species), were discovered. The new species is described and illustrated below.

***Cinnamomum purpureum*** H. G. Ye & F. G. Wang, sp. nov. TYPE: China. Guangdong: Yangchun city, Ehuangzhang Mtn., Safflower Pond, ca. 300–800 m, 2 Mar. 2002, *Ye Hua-gu & Ye Yu-shi* 6892 (holotype, IBSC; isotypes, IBSC). Figure 1.

Haec species *C. parthenoxyloni* affinis, sed trunco 1.5–4.5 m alto, ramulis et petiolis et costis et foliis juvenilibus et pedicellis pedunculisque purpureo-rubris, foliis apicibus acutis vel obtusis, antheris quadratis, staminibus 4-loculis, superne 2 latrorsis, inferne 2 latrorseo-extrorsis, staminodiis digitiformibus, ovariis fusiformibus, ca. 1.8 mm longis, stylis ca. 0.2 mm longis, differt.

Shrubs or small trees, 1.5–4.5 m tall, 4–10 cm DBH; branchlets, young leaves, pedicels and peduncles purplish red when fresh, and purple-brown when dry. Leaves alternate or pseudovercillate, thick and leathery, broadly obovate or ovate-elliptic, 7–19 × 4–9.5 cm, apex obtuse or acute, base widely cuneate, glabrous on both surfaces, pinnately veined, with veins prominent on both surfaces, costa purplish red at maturity, lateral nerves 3 to 7 on each side, the axils of basal lateral nerves inconspicuously bullate above and inconspicuously dome-shaped beneath; petiole 2–3.5 cm long, purplish red. Panicle lateral or axillary on lower part of juvenile branches, 7–10 cm long, 4- to 11-flowered, branched, the end of branch being a 1- to 3-flowered cyme. Flowers small, 2.5–3.5 × 4–5.5 mm, green-yellow, pedicels 5–8 mm long; tepals 6, oblong and fleshy, the inner ones spatulate, sparsely puberulous, glabrous outside; fertile stamens 9 in 3 whorls, 4-celled, with the cells biseriate, filaments sparsely puberulous, anthers quadrangular; first and second

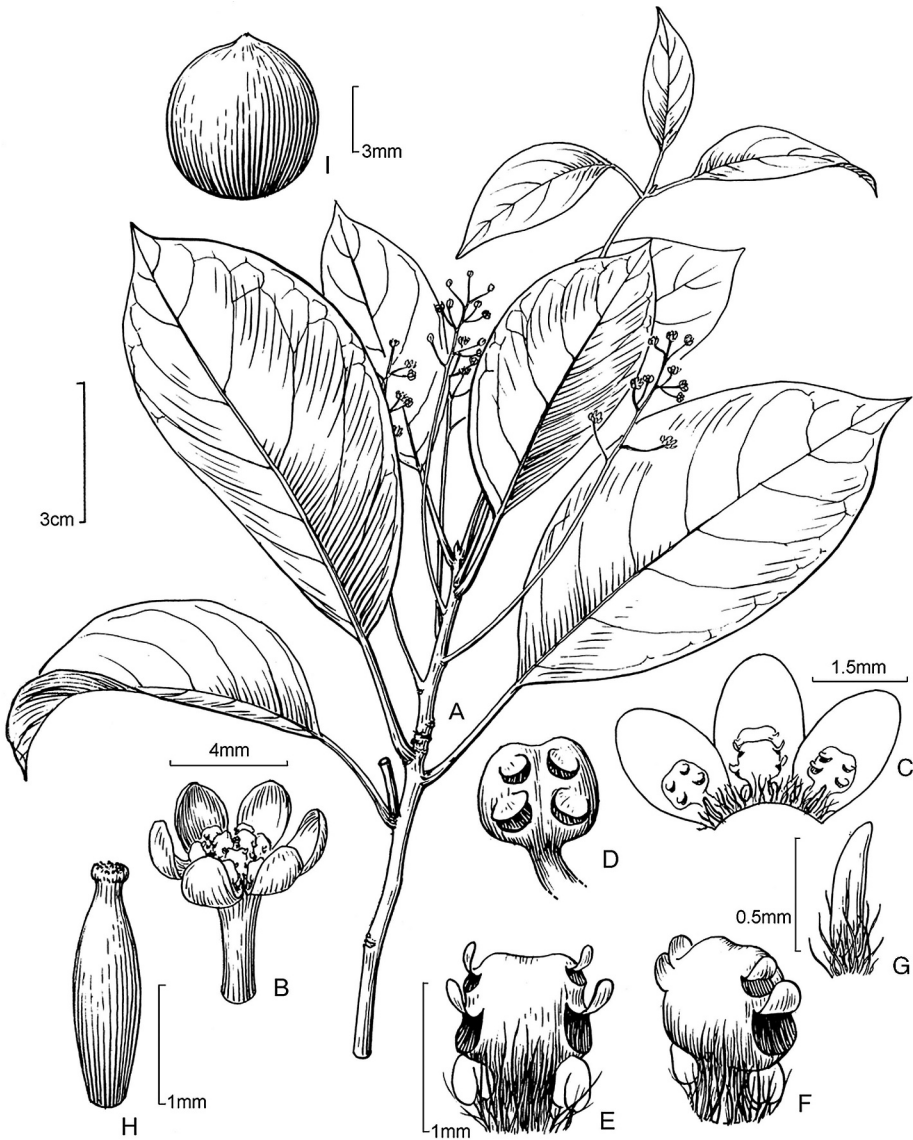


Figure 1. *Cinnamomum purpureum* H. G. Ye & F. G. Wang. —A. Habit. —B. Flower. —C. Longitudinal view of flower, showing three tepals and androecium. —D. Adaxial view of a stamen representative of the first and second whorls. —E, F. Abaxial views of a third whorl stamen with two basal glands. —G. Abaxial view of a staminode. —H. Pistil. —I. Fruit. Drawn from the holotype Ye Hua-gu & Ye Yu-shi 6892 (IBSC).

whorls of stamens introrse, ca. 1.1 mm long, glands not evident; upper 2 cells of third whorl stamens latrorse, and the lower 2 cells latrorse-extrorse, ca. 1.5 mm long, with 2 basal glands, pubescent abaxially; innermost 3 staminodes ca. 0.7 mm long, digitate, sparsely puberulous at bases; ovary fusiform, 1.5–1.8 mm long, glabrous; style short, ca. 0.2 mm long, stigma disk-shaped. Fruits globose, black at maturity, 6–8 × 6–8 mm; perianth cup narrowly obconical, purplish red basally, 12–15 mm long, 0.8–1 mm wide at base to 3–4 mm wide at apex.

*Ecology and distribution.* *Cinnamomum purpureum* grows in evergreen forests over granite substrates, at elevations between 300 and 800 m. *Cinnamomum purpureum* is endemic to the Ehuangzhang Mountains, from southwestern Guangdong Province, China.

*Phenology.* Flowering in February to March; fruiting through May.

*Cinnamomum purpureum* is closely related to *C. parthenoxylon* (X. W. Li, 1988), which is more broadly distributed in Guangdong, Guangxi, Fujian, Jiangxi,

Hunan, Guizhou, and Yunnan provinces of China (H. X. Li, 1982). *Cinnamomum parthenoxylon* also has alternate and ovate-elliptic leaves, 9 fertile stamens arranged in 3 whorls, 3 staminodes, and globose fruits. However, *C. parthenoxylon* is a larger tree, ca. 10–20 m tall, more than 40 cm DBH; leaves with long-caudate apex; branchlets, young leaves, pedicels, and peduncles gray-green; the anthers are ovoid-globose; the third whorl stamens with extrorse dehiscence; staminodes triangular and cordiform; ovary ovoid and perianth cup 0.8–1 cm long. A morphological comparison between *C. purpureum*, *C. parthenoxylon*, and *C. camphora* is given in Table 1. The species of *Cinnamomum* in Ehuangzhang Nature Reserve can be distinguished by the key below.

*Cinnamomum purpureum* is currently known only from Safflower Pond of Ehuangzhang Mountains, and the population there is small, consisting of about 750 individuals. As such, it should be considered Vulnerable category under the IUCN Red List Categories and Criteria (IUCN, 2001; Hu et al., 2003). Additional ecological and biological study should be taken toward effective conservation measures.

*Paratypes.* CHINA. **Guangdong:** Yangchun city, Ehuangzhang Mtn., Safflower Pond, 550 m, *Ye Hua-gu & Wang Fa-guo* 5398 (IBSC, MO), 600 m, *Ye Hua-gu & Ye Yu-shi* 5438 (IBSC).

KEY TO SPECIES OF *CINNAMOMUM* IN EHUANGZHANG NATURE RESERVE, GUANGDONG, CHINA

- 1a. Bud scales distinct, imbricate; leaves alternate, pinninerved, sub-triplinerved or rarely trinerved; perianth lobes deciduous when in fruit.
- 2a. Shrub or small tree; branchlets, petioles, costa, young leaves, pedicel, and peduncles purplish red; anthers quadrangular, staminoids digitate; ovary fusiform . . . . . *C. purpureum*
- 2b. Tree; branchlets, leaves, pedicel, and peduncles gray-green; anthers ovate or oblong, staminoids not digitate; ovary ovoid.
  - 3a. Leaves always glaucous beneath when dry, triplinerved, the axils of lateral nerves and veins conspicuously dome-shaped beneath . . . . . *C. camphora*
  - 3b. Leaves greenish or glaucous-green beneath when dry, generally pinninerved, the axils of lateral nerves only conspicuously or inconspicuously dome-shaped beneath. . . . . *C. parthenoxylon*
- 1b. Buds naked or bud scales indistinct; leaves opposite or subopposite, trinerved or triplinerved; perianth lobes persistent when in fruit.
  - 4a. Leaves sparsely yellow-tomentellate beneath . . . . . *C. cassia*
  - 4b. Leaves glabrous.
    - 5a. Leaves elliptic, reddish green and glaucous beneath; perianth cup in fruit truncate, undulate or irregularly dentate on the margin teeth. . . . . *C. validinerve*
    - 5b. Leaves ovate, oblong to lanceolate, glaucous-green beneath; perianth cup in fruit regularly dentate on the margin, the teeth truncate, rounded or acute at the apex . . . . . *C. burmanni*

Table 1. Diagnostic characters among *Cinnamomum purpureum*, *C. parthenoxylon*, and *C. camphora*.

Characters	<i>C. purpureum</i>	<i>C. parthenoxylon</i>	<i>C. camphora</i>
Height of trunk	1.5–4.5 m	10–20 m	10–30 m
Diameter of trunk	0.04–0.1 m	0.4–2.5 m	0.8–3 m
Branchlets	purplish red	gray-green	gray-green
Leaves	broadly obovate or ovate-elliptic, 7–19 × 4–9.5 cm, apex obtuse or acute; young leaves purplish red; petiole purplish red	usually elliptic-ovate or narrowly elliptic-ovate, 6–12 × 3–6 cm, apex long-caudate to 2 cm long; young leaves green; petiole green	ovate-elliptic, 6–12 × 2.5–5.5 cm, apex acute, young leaves green; petiole green
Nerve	pinnately veined, the axils of basal lateral nerves inconspicuously bullate above; costa purplish red at maturity	pinnately veined, the axils of lateral nerves inconspicuously bullate above; costa green	usually triplinerved, the axils of lateral nerves and veins conspicuously bullate above; costa green
Inflorescence	pedicel and peduncles purplish red	pedicel and peduncles gray-green	pedicel and peduncles gray-green
Anther shape	quadrangular	ovate or oblong	oblong
Dehiscence of cells	upper 2 cells of third whorl stamens latrorse, and the lower 2 cells latrorse-extrorse	cells of third whorl stamens with extrorse dehiscence	cells of third whorl stamens with extrorse dehiscence
Staminoid shape	digitate	triangular and cordiform	sagittate
Ovary	fusiform, 1.5–1.8 mm long	ovoid, 0.8–1 mm long	ovoid, 0.8–1 mm long
Style	short, ca. 0.2 mm long	curved, about 1 mm long	about 1 mm long
Perianth cup	narrowly obconical, 12–15 mm long	narrowly obconical, 0.8–1 cm long	cupuliform, ca. 5 mm long

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