

NEW RECORD OF *CAMELLIA* SECT. *CAMELLIA* (THEACEAE) FOR THE FLORA OF VIETNAM

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Abstract

*This study provides color illustrations and describes the morphological characteristics and distribution of *Camellia pitardii* and *Camellia mairei* var. *lapidea*, species formerly considered endemic to China but recently discovered and recorded in the flora of Vietnam.*

Keywords: *Camellia mairei*; *Camellia pitardii*; New record; Northern Vietnam.

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1. INTRODUCTION

Recent reports show that Vietnam has over 100 species and two varieties of the genus *Camellia* L. (Theaceae) (Hoang et al., 2022; Le et al., 2020; Ly et al., 2022; Quach, Doudkin et al., 2021; Quach, Luong et al., 2021, 2022; Truong et al., 2022). The species are divided into 15 sections (Ninh, 2002; Orel & Curry, 2015; Pham-Hoang, 1999). There are 3 species in the *Camellia* sect. *Camellia* in Vietnam, including: *C. yokdonensis*, *C. polyodonta* var. *longicaudata*, and *C. hongkongensis* (Nguyen, 2017). Sect. *Camellia* is characterized by flowers axillary or subterminal, solitary or paired, large, subsessile; perules imbricate, caducous after anthesis or persistent (*C. hongkongensis*); petals red or white, basally connate and strongly adnate to androecium; stamens numerous, outer filament whorl connate for basal one-half to three-quarters; styles 1 with 3-fid, rarely styles 3, free (only in *C. hongkongensis*) (Chang & Ren, 1998; Ming & Bartholomew, 2007; Nguyen, 2017; Sealy, 1958).

During botanical surveys in northern Vietnam (Lai Chau, Ha Giang, and Lao Cai provinces) in 2019 and 2020, we came across unusual species of *Camellia* with rose and pink flowers, which were identified as *Camellia pitardii* and *Camellia mairei* after a careful study of the relevant literature (Ming & Bartholomew, 2007; Sealy, 1958) and herbarium specimens from the Royal Botanic Gardens, Kew (K) (<http://apps.kew.org/herbcat/getImage.do?imageBarcode=K000704295>), Royal Botanic Garden Edinburgh (E), Muséum National d'Histoire Naturelle (P) (<https://science.mnhn.fr/taxon/species/camellia/mairei>), and Chinese Virtual Herbarium (<https://www.cvh.ac.cn/>) (PE). The new specimens are a new record and taxa for the flora of Vietnam. The specimens have been deposited in the herbarium of Dalat University (DLU).

2. NEW RECORD AND TAXA

2.1. *Camellia pitardii* Cohen-Stuart, Meded. Proefstat. Thee 40: 72. 1916. (Figure 1)

Type:—CHINA: (holotype: E, E00284414, photo!).

Description: Shrubs or trees, 3–5(–8) m high. Young branches grayish-brown, glabrous. Leaf blade elliptic or oblong-lanceolate, 6–14 cm long and 2.5–5.5 cm wide, leathery, adaxially dark green, abaxially pale green, both surfaces glabrous, midvein raised on both surfaces, secondary veins 6–8 pairs sunken above and protruding below, base cuneate to broadly cuneate, apex acuminate to caudate, margin densely apiculate-serrulate; petiole 0.7–1.1 cm long, sparsely pubescent or glabrous. Flowers terminal or subterminal, solitary or geminate, subsessile, 5–9 cm in diameter. Perules (sensu Sealy) 9–10, caducous, leathery, margin membranous, 4 outermost lunate to semiorbicular, 2–5 mm wide and 5–7 mm long, outside glabrous or glabrescent, inside glabrous; 5–6 innermost orbicular to broadly obovate, 1.2–1.9 cm wide and 1.8–2.1 cm long, outside glabrous or pubescent, inside glabrous, margin ciliate. Petals 5–7, rose or pink, obovate to broadly obovate, 1.3–4.5(–7) cm long and 2–3.5(–4.5) cm wide, basally connate with outer filament approx. 1 cm, apex emarginated, inside glabrous, outside velutinous near the apex. Androecium numerous, 2–3 whorls, stamens 1.5–2.5(–3.5) cm long, filaments sparsely villous or glabrous, slightly pilose; outer filament whorl united one-half to two-

thirds its length to form a wide fleshy tube. Ovary 3 loculi, superior, globose, densely tomentose, 3–3.1 mm long and 2.9–3 mm wide; style 2.2–2.7 cm, glabrous or basally tomentose, shortly trifid. Capsule obovoid, 4.3–5 cm long and 2–2.5 cm in diameter, 3 locular, pericarp 0.2–0.3 cm thick, sparsely pubescent. Seeds brown, cuneate, 1–1.3 cm long and 1.2–1.5 cm wide, glabrous, dark brown.

Distribution: Vietnam: Ha Giang. China: N Guangxi, Guizhou, W Hubei, S and W Hunan, Sichuan, and NE and SE Yunnan.

Habitat and Ecology: *Camellia pitardii* grows on slopes, in secondary forests, along roadsides, and in exposed disturbed areas at elevations of 1100 to 1500 m above sea level in association with *Milliusa balansae*, *Litsea monopetala*, *Knema globularia*, and *Betula alnoides*.

Specimens examined: Vietnam, Ha Giang Province, Vi Xuyen District, Minh Tan Commune, 22°57'47"N, 104°55'30"E, elev. 813–820 m, 21 November 2019, *Son 200219* (DLU).

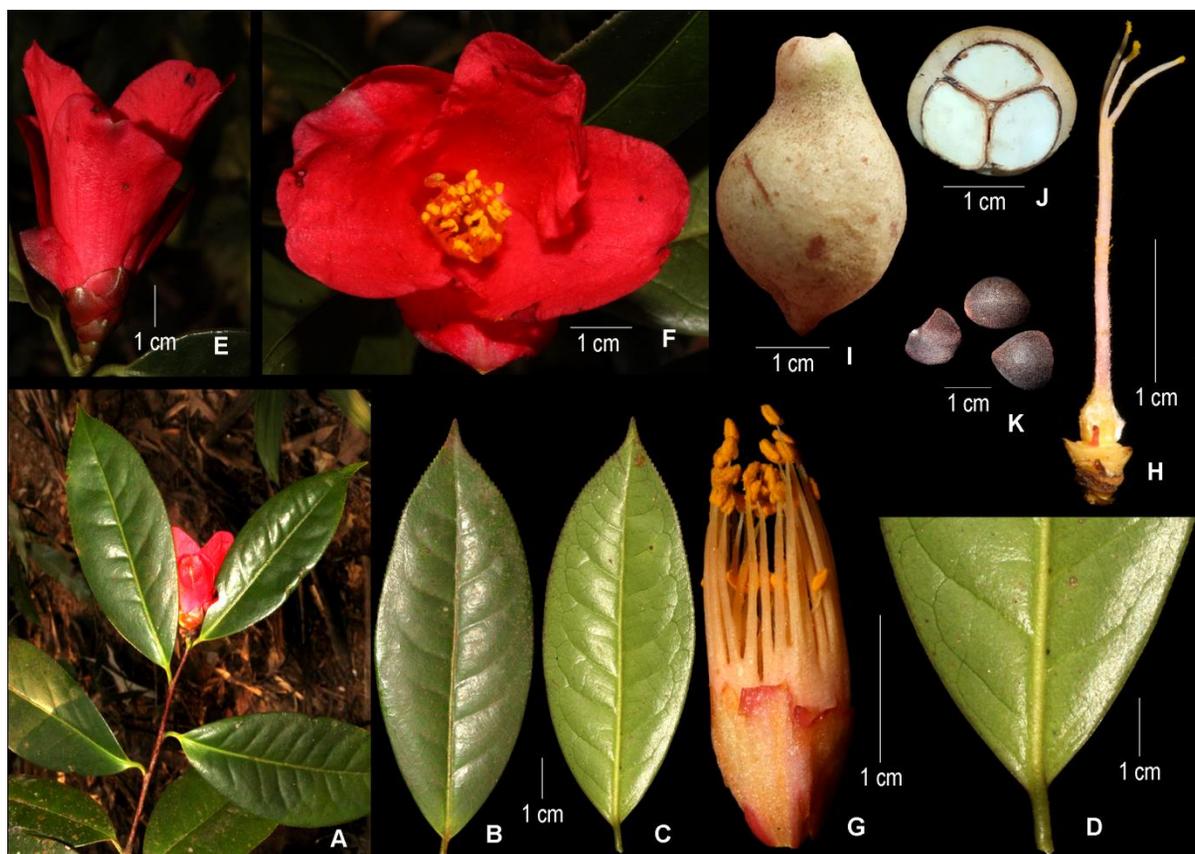


Figure 1. *Camellia pitardii*

Notes: (A) Branch with flower; (B) Adaxial surface of leaf; (C) Abaxial surface of leaf; (D) Base and petiole leaf; (E) Flower (side view); (F) Flower (top view); (G) Androecium; (H) Gynoecium; (I, J) Capsule (side view and cross-section); (K) Seeds.

Source: Photos by Hoang Thanh Son (A, B, C, D, E, F, G, H); Pham Chuong (I, J); Trinh Ngoc Bon (K).

2.2. *Camellia mairei* var. *lapidea* (Y. C. Wu) Sealy, Rev. Gen. Camellia 174, 1958 – *Camellia lapidea* Y. C. Wu, Bot. Jahrb. Syst. 71: 190, 1940. (Figures 2, 3)

Type:—CHINA: (lectotype: Guangxi (Kwangsi), Jinxiu, Yao Shan, S. S. Sin 2097 (B)).

Description: Shrubs or trees, 4–12 m high. Year-old branchlets glabrous; current year branchlets sparsely gray, pubescent to subglabrous. Leaf blade, oblong or oblong-lanceolate, 6.5–13.5 cm long and 2.5–4.5 cm wide, leathery, adaxially dark green, abaxially pale green, sparsely appressed villous along midvein, midvein raised on both surfaces, secondary veins 5–8 pairs and sunken above and protruding below, base cuneate, broadly cuneate or obtuse, apex acuminate to long caudate, margin densely apiculate-serrulate; petiole 0.8–1.0 cm long, sparsely pubescent or glabrescent. Flowers terminal or subterminal, solitary or geminate, subsessile, 5–9 cm in diameter. Perules (sensu Sealy) 9–11, caducous, leathery, margin membranous, 4–5 outermost semiorbicular, 2–4.5 mm wide and 5–7 mm long, 5 innermost orbicular to broadly obovate, 1–1.9 cm wide and 1.8–2 cm long, both surfaces velutinous, margin ciliate. Petals 5–9, dark red, obovate to broadly obovate, 1.3–4.5 cm long and 1–2.5 cm wide, basally connate with outer filament approx. 1 cm, apex emarginated, inside glabrous, outside velutinous toward the apex. Androecium numerous, 2–3 whorls, 1.5–2.5 cm long; filaments villous, slightly pilose; outer filament whorl united one-half to two-thirds its length to form a wide fleshy tube. Ovary 3 loculi, superior, globose, densely tomentose, 3–3.1 mm long and 2.9–3 mm wide; style 2.2–2.7 cm, basally tomentose, abruptly trifid. Capsule subglobose or obovate, 3.2–7 cm long and 4–6 cm in diameter, 3 locular, pericarp 0.7–1.4 cm thick, sparsely pubescent. Seeds brown, semiorbicular or cuneate, 1–1.5 cm wide and 1.3–1.6 cm long, glabrous, dark brown.

Distribution: Vietnam: Lai Chau and Lao Cai provinces. China: NW Guangdong, Guangxi, Guizhou, S Hunan, S Sichuan, and Yunnan.

Habitat and Ecology: *Camellia mairei* var. *lapidea* grows on slopes, in secondary forests, along roadsides, and in exposed disturbed areas at elevations of about 1850 m to 2175 m above sea level in association with species of Fagaceae, Magnoliaceae, Lauraceae, Styracaceae, and Symplocaceae.

Specimens examined: Vietnam, Lai Chau Province, Phong Tho District, Pa Vay Su Commune, 22°43'27"N, 103°23'32"E, elev. 2175 m, 7 December 2019, *Bon 191201* (DLU); Lao Cai Province, Bat Xat District, Y Ty Commune, Hong Ngai Village, elev. 1850 m, 10 January 2019, *Thuong 191001* (DLU).

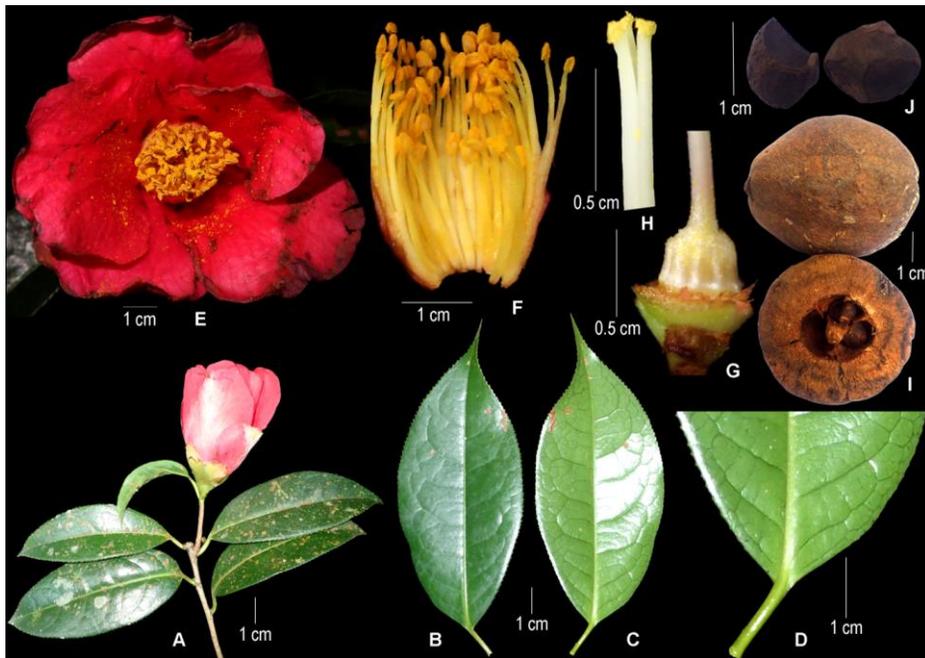


Figure 2. *Camellia mairei* var. *lapidea* (Y. C. Wu) Sealy distributed in Lai Chau Province

Notes: (A) Branch with flower; (B) Adaxial surface of leaf; (C) Abaxial surface of leaf; (D) Base and petiole leaf; (E) Flower (top view); (F) Portion of androecium (inner surface); (G) Ovary; (H) Style; (I) Capsule (side view and cross-section); (J) Seeds.

Source: Photos by Trinh Ngoc Bon.

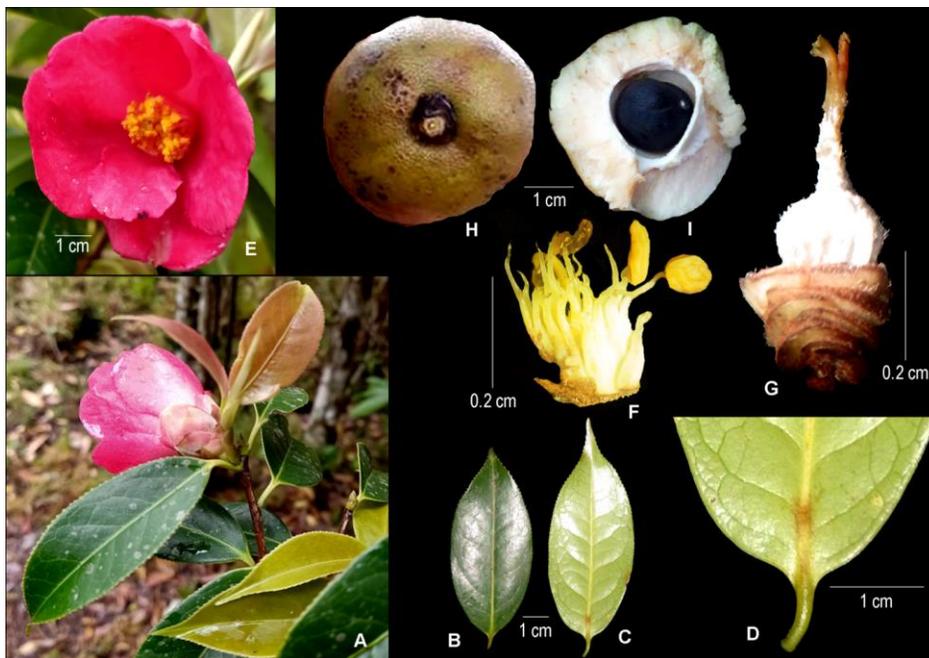


Figure 3. *Camellia mairei* var. *lapidea* (Y. C. Wu) Sealy distributed in Lao Cai Province

Notes: (A) Branch with flower; (B) Adaxial surface of leaf; (C) Abaxial surface of leaf; (D) Base and petiole leaf; (E) Flower (top view); (F) Portion of androecium; (G) Gynoecium; (H) Capsule; (I) Cross-section of capsule with seed.

Sources: Photos by Nguyen Kim (A, E); Luong Van Dung (B, C, D, F, G); Mai Van Hanh (H, I).

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