A New Species and One New Name in *Castanopsis* (Fagaceae) from Hainan, China

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ABSTRACT. A new species, *Castanopsis glabrifolia* J. Q. Li & Li Chen, and one new name, *C. hsiensiui* (X. M. Chen & B. P. Yu) J. Q. Li & Li Chen (Fagaceae), are described from Hainan, China. They both grow on sandy beaches. *Castanopsis glabrifolia* is closely related to *C. chinensis* (Spreng.) Hance, differing from it by having smaller leaves, shorter petioles, fewer secondary veins, and smaller cupules that are incompletely covered by shorter spines. *Castanopsis chinensis* var. *hainanica* X. M. Chen & B. P. Yu is treated as a new synonym of *C. glabrifolia*. The new name *C. hsiensiui* is proposed, based on *C. hainanensis* Merr. var. *litoralis* X. M. Chen & B. P. Yu, with the variety recognized at higher rank based on its glabrous branches and petioles, the smaller cupules with the external surfaces visible, and the nuts that are glabrous or sparsely pubescent near the apex.

Key words: *Castanopsis*, China, Fagaceae, Hainan, IUCN Red List.

In the first comprehensive revision of *Castanopsis* (D. Don) Spach (Fagaceae), Camus (1929) recorded 112 species with a taxonomic key and detailed descriptions of their respective morphology and anatomy. Her work was subsequently complemented by Barnett (1944), who recognized 119 species in 11 groups. Govaerts and Frodin's (1998) *World Checklist and Bibliography of Fagales* included 134 species of *Castanopsis*, with 61 or 62 species recorded for China. Most recently, Huang and Chang (1998) and Huang et al. (1999) revised Chinese *Castanopsis* and accepted 63 species and 58 species in the *Flora Reipublicae Popularis Sinicae* and *Flora of China* treatments, respectively. This increasing number of taxa in *Castanopsis* is mostly due to the descriptions of new species and transfers published in the past several decades (Fu & Huang, 1989; Huang & Chang, 1990, 1996; Chen & Yu, 1991; Fu & Feng, 1992; Fu, 2001; Chen et al., 2009, 2010). During revision of Chinese *Castanopsis*, we recognize 66 species of this genus in China, based on extensive examination of herbarium specimens and field investigation. In this paper, the following novelties are proposed.

1. Castanopsis glabrifolia J. Q. Li & Li Chen, sp. nov. TYPE: China. Hainan: Wenchang, Changmao of Daodong Forest Farm, Tiantou village, 14 Jan. 1978, *Anonymous 9254* (holotype, IBSC 0034559). Figure 1.

Castanopsis chinensis (Spreng.) Hance var. *hainanica* X. M. Chen & B. P. Yu, J. S. China Agric. Univ. 12: 93. 1991, syn. nov. TYPE: China. Hainan: Wenchang, 11 Dec. 1987, *B. P. Yu 103158* (holotype, CANT).

Species *Castanopsidi chinensi* (Spreng.) Hance affinis, sed ab ea foliis minoribus, petiolis brevioribus, nervis lateralibus utrinsecus paucioribus atque cupulis minoribus spinis brevioribus incomplete tectis differt.

Trees; second-year twig cortices gray, branches red-brown after cortices dehisce, lenticels slightly raised; first-year branches and rachis of infructescences red-brown; branches, leaves, and rachis of inflorescences glabrous. Young leaves dark when dry, abaxially with few dotted brown scales; petioles 0.9–1.5 cm, red-brown; leaves elliptic, rarely ovate, 3.5–8.5(−10) × 1.1–3(−4.5) cm, leathery and concolorous, bases cuneate, rarely rounded, margins with shallow to deep teeth, apex long acute; midvein from base to middle adaxially raised or flat, red-brown, secondary veins in 6 to 9 pairs on each side of midvein, adaxially flat. Rachis of infructescences 3.5–7 × 0.1–0.15 cm; cupule prolate ellipsoid, 1.1–1.7 cm diam., sometimes basally short-stalked, splitting into 2 to 3 segments when mature, cupule spines 2.5–5.5 mm, scattered or connate at base and transversely united across 3 or 4 rings, the external cupule and spines sparsely covered with gray pubescence and scales. Fruit as 1 nut per cupule, prolate ellipsoid, glabrous or sparsely pubescent near apex, ca. 1.2 × 0.6–0.8 cm, scar basal, slightly raised, 0.4–0.7 cm diam.

Distribution and habitat. *Castanopsis glabrifolia* has been collected from sandy beaches along the seashore of Wenchang County, Hainan.

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Figure 1. *Castanopsis glabrifolia* J. Q. Li & Li Chen. —A. Fertile branch. —B. Nut enclosed by spinose cupule. —C. Cupule. —D. Nut. —E. Leaf showing the variation of the leaf base. Scale bars = 1 cm. Figure drawn by Gexin Chen (Wuhan Botanical Garden, CAS) from *Anonymous 9254* (IBSC).

IUCN Red List category. *Castanopsis glabrifolia* is known from four populations from Wenchang County. The taxon should be categorized as Critically Endangered (CR) according to IUCN Red List Categories and Criteria (IUCN, 2001).

Etymology. The specific epithet *glabrifolia* is taken from the Latin and refers to the glabrous leaves of the new species.

Vernacular name. Gezhui, Gangzhui.

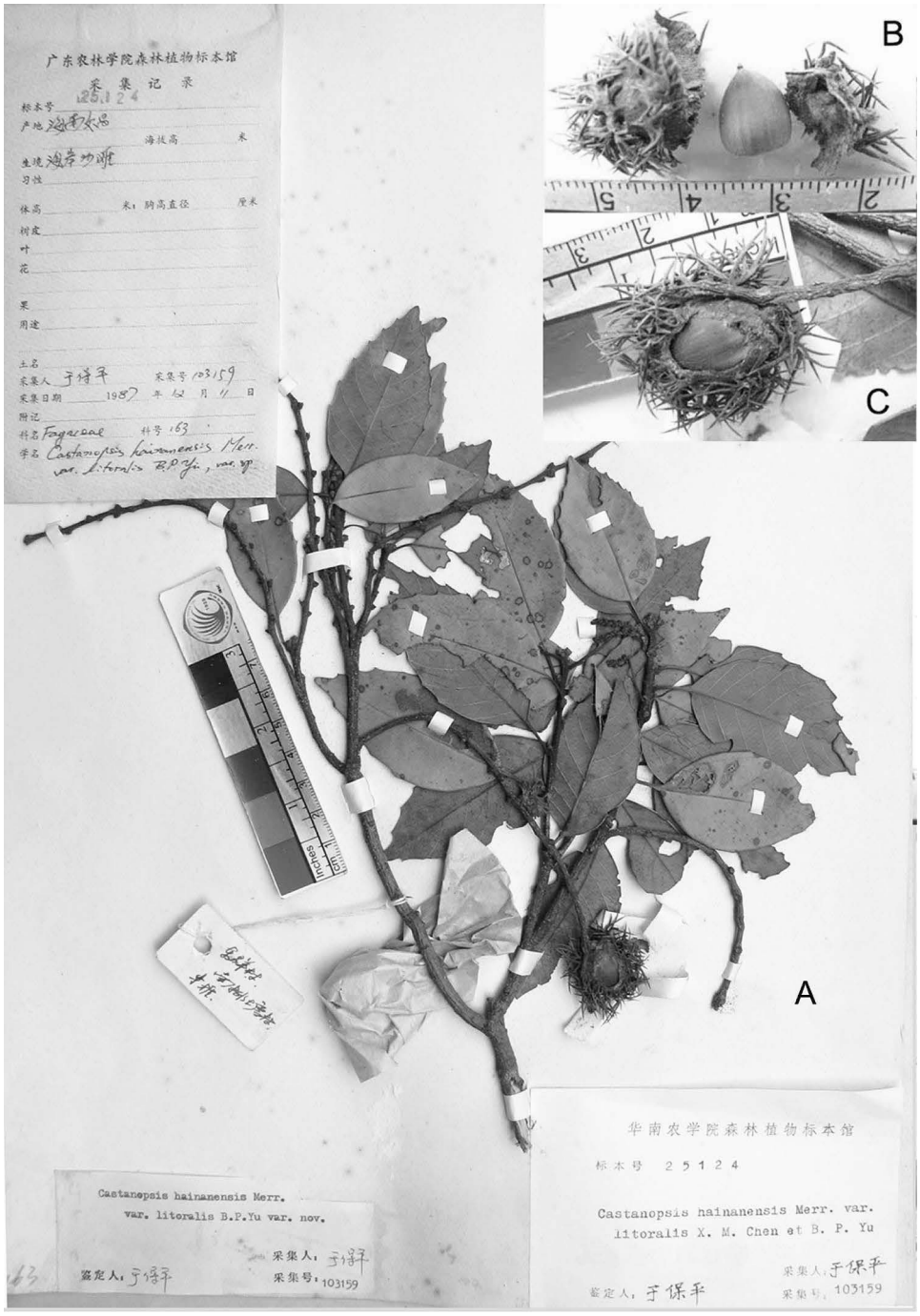

Figure 2. *Castanopsis hsiensiui* (X. M. Chen & B. P. Yu) J. Q. Li & Li Chen. —A. Fertile branch. —B. Nut dissected from cupule. —C. Nut enclosed by spinose cupule. The smallest division of the ruler in each image is 1 mm. Photos taken from the type *B. P. Yu 103159* (CANT).

Discussion. *Castanopsis glabrifolia* is similar to *C. chinensis* (Spreng.) Hance (TYPE: China. Canton [Guangdong]: Tsingyune, N River, *Sampson & Hance 13785*, holotype, BM) in its concolorous and glabrous leaves, but the new species is distinguished by its smaller leaves (3.5–8.5 × 1.1–3 cm vs. 7–18 × 2–5 cm in *C. chinensis*), shorter petioles (0.9–1.5 cm vs. 1.5–2 cm), fewer secondary veins (6 to 9 vs. 8 to 14

pairs), and smaller cupules (1–1.7 cm diam. vs. 2.5–4 cm diam.) that are incompletely covered by shorter spines (2.5–5.5 mm vs. 6–12 mm).

After carefully checking the holotype materials and the original description of *Castanopsis chinensis* var. *hainanica* (Chen & Yu, 1991), we determined that *C. glabrifolia* and this variety represent the same taxon. According to Art. 11.2 of the *International Code of Botanical Nomenclature* (McNeill et al., 2006), the epithet *hainanica* has no priority outside the varietal rank.

Paratypes. CHINA. **Hainan:** Wenchang, *J. Hsiao 137877* (IBSC), *137881* (IBSC), *B. P. Yu 103158* (CANT), *Anonymous 9242* (IBSC), *9252* (IBSC), *9253* (IBSC), *9254* (IBSC), *9255* (IBSC).

2. Castanopsis hsiensiui (X. M. Chen & B. P. Yu) J. Q. Li & Li Chen, nom. et stat. nov. Basionym: *Castanopsis hainanensis* Merr. var. *litoralis* X. M. Chen & B. P. Yu, J. S. China Agric. Univ. 12: 92. 1991. TYPE: China. Hainan: Wenchang, Changsa, Nanpaitang village, sandy beach, 11 Dec. 1987, *B. P. Yu 103159* (holotype, CANT). Figure 2.

Trees; first-year branches gray-black with slightly raised lenticels; branches glabrous. Petioles 1–1.6 cm; leaves broadly elliptic or elliptic, rarely ovate, 4.8–7.7 × 2.5–3.8 cm, leathery and concolorous, abaxially with tight, thin scales; bases broadly cuneate or cuneate, rarely subrounded, margins with shallow teeth at least from middle to apex, sometimes curled abaxially, apex short acute; midvein flat or slightly impressed at base adaxially, secondary veins in 8 or 9 pairs on each side of midvein, adaxially flat. Rachis of inflorescences gray pubescent; rachis of infructescences 7.5–11 × 0.15–0.2 cm. Cupules globose, 2.5–3 cm diam., cupule externally covered with sparse glabrous spines, spines 0.7–1.1 cm, connate at base to middle. Fruit as 1 nut per cupule, conical, glabrous or sparsely pubescent near apex, 1.2–1.7 × 0.8–1.3 cm, scar basal, ca. 0.7 cm diam.

Distribution and habitat. *Castanopsis hsiensiui* has been collected from sandy beaches along the seashore of Wenchang County, Hainan.

IUCN Red List category. *Castanopsis hsiensiui* is considered here as Data Deficient (DD) according to IUCN Red List Categories and Criteria (IUCN, 2001). The taxon is known only from a single collection, and more information about the number of individuals and the extent of the habitat is needed.

Etymology. The specific epithet honors botanist Hu Hsen-Hsu (1894–1968) for his pioneering research on Chinese botany.

Discussion. The most distinctive character of *Castanopsis hainanensis* Merr. (TYPE: China. Hainan: Qiongzhong, betw. Namfung & Hongmatsuen, 3 Dec. 1921, in thickets near villages, 400 m, *McClure 8300*, holotype, SYS) is that its branchlets, petioles, and young leaves are abaxially covered with thin, brown, very short felted pubescence and scales. In contrast, *C. hainanensis* var. *litoralis*, described by Chen and Yu (1991), is distinguished by its glabrous branches and petioles, and the leaves lack pubescence abaxially, with only a layer of tightly adherent, thin scales. Furthermore, the cupules of *C. hainanensis* are larger (4–5.7 cm diam.) and their external surfaces are completely covered by longer spines (1–1.9 cm vs. 0.7–1.1 cm in *C. hsiensiui*), in contrast with *C. hsiensiui*, which has smaller cupules (2.5–3 cm diam.) with the cupule surfaces externally visible. In addition, *C. hsiensiui* has glabrous nuts, or with the apex sparsely hairy, while nuts of *C. hainanensis* are pubescent. Based on these characters, *C. hainanensis* var. *litoralis* merits treatment at the rank of species rather than as a variety of *C. hainanensis*, and we recognize it here as *C. hsiensiui*.

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