

4. **CRATOXYLUM** Blume, Verh. Batav. Genootsch. Kunsten 9: 172, 174. 1823.

黄牛木属 *huang niu mu shu*

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*Hornschuchia* Blume, Catalogus, 15. 1823, not Nees (1821).

Trees or shrubs, deciduous to evergreen. Twigs with nodes sometimes flattened, mostly with interpetiolar lines; apical bud abortive or not; buds with scales or not. Leaves opposite, sessile to petiolate, entire, abaxially often pruinose to waxy, often finely translucent-punctate between veins, secondary veins  $\pm$  widely spaced, tertiary veins reticulate. Inflorescence cymose, terminal and/or axillary; bracteoles caducous, minute. Flowers bisexual, homostylous or heterostylous, pedicellate. Sepals 5,  $\pm$  unequal, leathery, usually accrescent. Petals 5, white to deep crimson or pink, sometimes tinged orange and green, often with punctiform or linear dark resinous glands, sometimes with  $\pm$  adnate adaxial near-basal scalelike appendage. Stamen fascicles apparently 3 (2 + 2 + 1), with filaments ca. 2/3 united; anthers subsistent, dorsifixed, sometimes with  $\pm$  prominent resinous connective gland. Fascicledodes 3, alternating with fascicles, scalelike, sometimes minute. Ovary 3-loculed, with [3–]5–16[–18] erect or ascending ovules on lower half of each placenta; styles 3, free, often divergent; stigmas punctiform, truncate or somewhat thickened, slightly papillose. Capsule  $\pm$  woody, ellipsoid to narrowly cylindrical, dehiscent loculicidally, with persistent columella. Seeds obovoid to cylindrical, with unilateral wing 2.5–3  $\times$  as long [or wing all around and smaller]; embryo cylindrical.

About six species: Cambodia, S and SW China, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam, all S of ca. 24° N; two species in China.

- 1a. Leaves with secondary veins ascending, not or irregularly joining; inflorescences terminal and axillary; flowers homostylous; stamen fascicles short and broad; fascicledodes recurved-cucullate; twigs and leaves glabrous; petals without appendage ..... 1. *C. cochinchinense*  
1b. Leaves with secondary veins spreading, regularly joining toward margin; inflorescences axillary, often on old growth; flowers heterostylous; stamen fascicles long and slender; fascicledodes never recurved; twigs and leaves sometimes villous; petals with minute, basal appendage ..... 2. *C. formosum*

1. **Cratoxylum cochinchinense** (Loureiro) Blume, Mus. Bot. 2: 17. 1856.

黄牛木 *huang niu mu*

*Hypericum cochinchinense* Loureiro, Fl. Cochinch. 2: 472. 1790; *Ancistrolobus ligustrinus* Spach; *Cratoxylum biflorum* (Lamarck) Turczaninow; *C. chinense* Merrill; *C. ligustrinum* (Spach) Blume; *C. petiolatum* Blume; *C. polyanthum* Korthals; *C. polyanthum* var. *ligustrinum* (Spach) Dyer; *Elodes chinensis* (Retzius) Hance; *H. biflorum* Lamarck (1797), not Choisy (1821); *H. chinense* Retzius (1788), not Osbeck (1757), nor Linnaeus (1759); *Oxycarpus cochinchinensis* Loureiro; *Stalagmites erosipetala* Miquel.

Shrubs or trees, deciduous, 1.5–18(–25) m tall, glabrous. Trunk with clusters of long thorns on lower part. Bark gray-yellow or gray-brown, smooth or finely striate. Twigs somewhat compressed, glabrous and pink when young, interpetiolar scars not always continuous. Petiole 2–3 mm, glabrous; leaf blade abaxially gray-green, adaxially green, elliptic to oblong or lanceolate, 3–10.5  $\times$  1–4 cm, papery, both surfaces glabrous, abaxially with pellucid or dark glands, midvein abaxially raised, adaxially impressed; secondary veins 8–12 pairs, oblique, not or irregularly joining at the margins; veins and veinlets reticulate, raised on both surfaces, base obtuse to cuneate, apex abruptly acute or acuminate. Cymes axillary or extra-axillary and terminal, (1 or) 2 or 3-flowered, pedunculate; peduncles 3–10 mm or longer. Pedicel 2–3 mm. Flowers 1–1.5 cm in diam. Sepals accrescent, oblong, 5–7  $\times$  2–5 mm, with dark linear glands on

entire surface, apex rounded. Petals deep crimson to pink or pinkish yellow, obovate, 5–10  $\times$  2.5–5 mm, with dark linear glands between veins, base cuneate, apex rounded; petal-scale absent. Stamen fascicles 4–8 mm, stalk broad to slender, with 40–55 stamens. Fascicledodes oblong to obovate, cucullate, to 3  $\times$  1–1.5 mm, apex thickened and recurved; connective with gland or not. Ovary conic, ca. 3 mm, glabrous; styles ca. 2 mm. Capsule brown, ellipsoid, 0.8–1.2 cm  $\times$  4–5 mm, to 2/3 covered by

persistent calyx. Seeds (5 or)6–8 per locule, 6–8 × 2–3 mm. Fl. Apr–May, fr. after Jun.

Secondary forests, thickets, dry sunny mountain slopes, hills; below 1200 m. S Guangdong, S Guangxi, S Yunnan [Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

This plant is xerophilous. The wood is hard and valuable for woodcuts. The young fruit is used as a spice for cooking. The roots, bark, and twigs are used as a medicine for colds and diarrhea. The young leaves are used as a substitute for tea.

**2. *Cratoxylum formosum*** (Jack) Dyer in J. D. Hooker, Fl. Brit. India 1: 258. 1874.

越南黄牛木 yue nan huang niu mu

Shrubs or trees, deciduous, 3–6 m tall. Trunk with spreading, long thorns on lower part. Bark exfoliating in flakes. Twigs somewhat compressed, ± tetragonous when young, becoming terete; interpetiolar scars interrupted. Petiole 5–7 mm, glabrous; leaf blade abaxially greenish, adaxially green, elliptic to oblong, 4–10 × 2–4 cm, abaxially with pellucid glands, midvein raised abaxially, impressed adaxially; secondary veins 8–10 pairs, broadly spreading, anastomosing regularly near leaf margin; tertiary veins and veinlets reticulate, base rounded, apex obtuse or acute. Cymes 5–8-flowered, in axils of fallen leaves. Pedicels 3–5 mm. Flowers ca. 1.3 cm in diam. Sepals elliptic or oblong-lanceolate, 5–6 × 2–3 mm, apex obtuse. Petals obovate or obovate-oblong, 1.1–1.5 cm, ciliate and brown-glandular on upper half of margin, narrowly clawed at base; petal-scale indistinct, ca. 2 mm, base cuneate, apex truncate and denticulate. Stamen fascicles ca. 1 cm, with 20–30 stamens; filament ca. as long as stalk; connectives with glands or not. Fascicledes ligulate, 1–1.5 mm, attenuate. Ovary narrowly conic, ca. 4 mm, glabrous; styles ca. 3.5 mm. Capsule dark brown, oblong, 0.6–1.5 cm, up to 1/2 enclosed by persistent calyx. Seeds 6–8 per locule, 3–7 mm. Fl. Mar–Apr, fr. after May.

Thickets, open secondary forests; below 1000 m. S Guangxi, Hainan, S Yunnan [Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

- 1a. Young twigs, leaves, pedicels, and sepals glabrous ..... 2a. subsp. *formosum*  
1b. Young twigs, leaves, pedicels, and sepals densely villous ..... 2b. subsp. *pruniflorum*

**2a. *Cratoxylum formosum*** subsp. **formosum**

越南黄牛木(原亚种) yue nan huang niu mu (yuan ya zhong)

*Elodes formosa* Jack, Malayan Misc. 2(7): 24. 1822 [“*Elodea*”]; *Hypericum biflorum* Choisy (1821), not Lamarck (1797).

Young twigs, leaves, pedicels, and sepals glabrous; connective without glands.

Thickets; below 600 m. Hainan [Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam].

**2b. *Cratoxylum formosum*** subsp. **pruniflorum** (Kurz) Gogelein, Blumea 15: 469. 1967.

红芽木 hong ya mu

*Tridesmis pruniflora* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41: 293. 1872; *Cratoxylum dasyphyllum* Handel-Mazzetti; *C. pruniflorum* (Kurz) Kurz.

Young twigs, leaves, pedicels, and sepals densely villous; connective with glands.

Open secondary forests, thickets in mountain regions; below 1000 m. S Guangxi, S Yunnan [Cambodia, Myanmar, Thailand, Vietnam].

The wood is reddish, hard, and fine-grained, and is used for making woodcuts. The bark is used as a medicine for diarrhea in domestic animals. The young leaves are used as a substitute for tea.

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