

## 5. BOERHAVIA Linnaeus, Sp. Pl. 1: 3. 1753.

黄细心属 huang xi xin shu

Herbs annual or perennial, erect, ascending, or procumbent. Stems sometimes glandular. Leaves opposite, often unequal, petiolate, margin entire or sinuate. Inflorescences usually terminal, sometimes apparently axillary, of small umbels, often irregular, rarely 1-flowered, grouped into cymose panicles. Flowers bisexual, small; bracteoles minute, often deciduous. Perianth constricted beyond the ovary, limb campanulate, apex 5-lobed, truncate, or plicate, caducous, Stamens 1–5, included or shortly exerted; filaments connate at base. Ovary oblique, stipitate. Stigma peltate or capitate. Fruit obovoid, turbinate, clavate, or terete, small, 5-ribbed or deeply 5-angled, often rough, with sessile, sticky glands. Seed: embryo curved, cotyledons thin, broad, enclosing the thin endosperm.

Between 20 and 40 species: widespread in tropical and subtropical regions; four species in China.

All species occur in disturbed, often sandy, habitats. *Boerhavia coccinea*, *B. diffusa*, and *B. repens* have been much confused. This is partly because of problems with typification: the type collection of *B. repens*, in particular, is very far from adequate, partly because the boundaries between these rather plastic weeds are not as clearly defined as one would like them to be. It is worth noting that as early as 1849, Choisy noted five different usages of *B. diffusa*. Published records from China need to be treated with caution. A record of the Indian species *B. crispa* Heyne ex J. D. Hooker from Taiwan seems to be based on a misidentification.

- 1a. Stems prostrate to weakly ascending, most parts hairy; flowers in axillary umbels or cymes, or in ill-defined terminal panicles with lower branches subtended by well-developed leaves.
- 2a. Stems prostrate on ground or nearly so; inflorescences mostly axillary, umbels or cymes; most parts eglandular-puberulent ..... 1. *B. repens*
- 2b. Stems sprawling to ascending; inflorescences mostly terminal, upper leaves reduced to form ill-defined ascending panicles; most parts glandular-pubescent ..... 2. *B. coccinea*
- 1b. Stems trailing, ascending to erect, upper parts glabrous; flowers in well-defined leafless terminal panicle.
- 3a. Leaf margin with unicellular hairs; perianth limb white, red, or pink; anthocarp glabrous, tip sharply angular ..... 3. *B. erecta*
- 3b. Leaf margin with stout, multicellular hairs, at least when young; perianth limb bright purple or purple-red; anthocarp glandular-hairy, tip ± rounded ..... 4. *B. diffusa*

### 1. *Boerhavia repens* Linnaeus, Sp. Pl. 1: 3. 1753.

匍匐黄细心 pu fu huang xi xin

*Boerhavia diffusa* Linnaeus var. *minor* (Delile) Cufodontis; *B. repens* var. *minor* Delile.

Herbs ephemeral to perennial. Stems prostrate, radiating from taproot, to 50 cm, most parts eglandular-puberulent. Petiole to 1 cm; leaf blade 1–2.5 × 0.4–1.5 cm, abaxially conspicuously pale, base rounded to cuneate, margin entire, apex rounded to subacute. Inflorescences mostly axillary, 2–5-flowered umbels, sometimes gathered into cymes, to 2 cm. Pedicel to 1 mm. Perianth limb white, pink, or pale purple, to 1 mm. Stamens (1 or)2(or 3). Anthocarp clavate, 3–3.5 mm, 5-ribbed, sparsely puberulent, sometimes with ± sessile glands.

Sunny sites in disturbed areas. Fujian, Guangdong [widespread in Africa, America, Asia, etc.].

This species is often confused with *Boerhavia diffusa*. It can be most readily distinguished by the lack of multicellular hairs along the leaf margins, consistently pedicellate flowers, and much paler perianth. It differs from *B. erecta* by the very differently shaped fruit. This is a pantropical, ruderal weed, mainly growing in dry areas.

### 2. *Boerhavia coccinea* Miller, Gard. Dict., ed. 8, *Boerhavia* no. 4. 1768.

红细心 hong xi xin

Herbs annual or perennial. Stems sprawling to ascending, most parts glandular-pubescent, sometimes conspicuously so, occasionally apparently eglandular. Petiole well defined, to 3 cm; leaf blade very variable, lanceolate to suborbicular, to 1.8–

6 × 1–5.5 cm, base cuneate to shallowly cordate, margin obscurely sinuate, apex rounded to acute. Inflorescences mostly terminal and subterminal, upper leaves reduced to form ascending panicle, 2–8-flowered clusters. Pedicel to 1 mm. Perianth limb white, pink, or mauve, rarely purplish red, to 2(–2.5) mm. Stamens (1–)3(–4), 1.5–4.5 mm. Anthocarp fusiform, 3–3.5(–4) mm, obviously 5-ribbed, usually glandular hairy.

Sunny sites in disturbed areas. ?Hainan [Africa, America].

The record from Hainan is as yet unconfirmed. It has been included on the basis that the occurrence of this pantropical species in China will likely be confirmed at some time.

### 3. *Boerhavia erecta* Linnaeus, Sp. Pl. 1: 3. 1753.

直立黄细心 zhi li huang xi xin

Herbs. Stems erect or decumbent at base, 20–80 cm, puberulous or glabrescent. Petiole 1.5–4 cm; leaf blade ovate, oblong, or lanceolate, 1.5–3.5 × 1–2.5 cm, abaxially white-gray, with sunken glands, base rounded or cuneate, margin with unicellular hairs, apex acute, rarely obtuse. Inflorescences mostly axillary, cymose panicles close together; peduncle to 2 cm. Pedicel 0.5–5 mm, with 1 or 2 lanceolate bracteoles. Perianth limb white, red, or pink, 1.5–2 mm. Stamens 2 or 3, slightly exerted. Anthocarp obconic, ca. 3 mm, glabrous, 5-ribbed, groove between ribs somewhat undulate, apex truncate, angular. Fl. and fr. summer.

Open sandy areas. Hainan (Xisha Qundao) [Indonesia, Malaysia, Singapore, Thailand, and probably elsewhere in SE Asia; Pacific Islands].

**4. *Boerhavia diffusa*** Linnaeus, Sp. Pl. 1: 3. 1753.

黄细心 huang xi xin

*Boerhavia diffusa* var. *mutabilis* R. Brown; *B. repens* var. *diffusa* (Linnaeus) Heimerl ex J. D. Hooker.

Herbs perennial. Stems trailing, to 200 cm; stems glabrous or sparsely pubescent. Roots thick, fleshy. Petiole 0.4–2 cm; leaf blade ovate, 1–5 × 1–4 cm, both surfaces sparsely pubescent, abaxially gray-yellow, wrinkled when dry, base rounded or cuneate, margin undulate, with stout, multicellular hairs, apex obtuse or acute. Inflorescences terminal, capitate-cymose panicles; peduncle slender, sparsely pubescent. Pedicel short to almost absent. Bracts small, lanceolate, pubescent. Perianth limb bright purple or purple-red, 1.5–2 mm. Stamens 1–3(–5), slightly exserted or included. Anthocarp clavate, 3–3.5 mm, 5-ribbed, with viscid glands and sparse pubescence, apex rounded. Fl. and fr. spring–autumn.

Open places near sea, dry and warm river valleys; 100–1900 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, S Taiwan, Yunnan [Cambodia, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Africa, America, Australia, Pacific Islands].

The plants are used medicinally.

