


NYCTAGINACEAE

紫茉莉科 zi mo li ke

Lu Dequan (鲁德全) Michael G. Gilbert

Herbs, shrubs, trees, or sometimes spiny vines. Leaves opposite, alternate, or ± whorled; stipules absent; petiole usually present, well defined; leaf blade simple, herbaceous or slightly fleshy, margin entire. Inflorescences mostly terminal, less often axillary, of cymes, umbels, or verticils, sometimes 1-flowered or fasciculate, often grouped into panicles; bracts often inconspicuous, sometimes forming calyxlike involucre, or large and brightly colored. Flowers bisexual, rarely unisexual or polygamous, actinomorphic. Perianth constricted beyond the ovary, base persistent, closely enclosing ovary which appears inferior, limb petaloid beyond constriction, tubular, funnelform, or campanulate, apex 5–10-lobed, lobes plicate or valvate in bud, persistent or caducous. Disk absent. Stamens (1–)3–5(–many), hypogynous, free or connate at base, involute in bud; anthers 2-loculed, dehiscence longitudinal. Ovary superior, 1-loculed; ovule 1. Style 1; stigma globose. Fruit an achenelike anthocarp enclosed by persistent perianth, ribbed or winged, often glandular. Seed 1; endosperm present; embryo straight or curved.

About 30 genera and 300 species: tropics and subtropics, mainly in tropical America; six genera (two introduced) and 13 species (one endemic, three introduced) in China.


1a. Plants climbing, spiny; flowers unisexual; fruit with rows of conspicuous stalked glands .......................................... 1.

1b. Plants erect, not spiny; flowers bisexual or polygamous; fruit with sessile glands.


腺果藤属 xian guo teng shu

Calpdisia Thouars; Ceodes J. R. Forster & G. Forster.

 Shrubs, trees, or vines. Stems sometimes armed. Leaves opposite or alternate, petiolate, margin entire. Inflorescences axillary (or terminal), many-flowered cymes or panicles; bracts absent or inconspicuous, caducous. Flowers unisexual (plant dioecious), bisexual, or polygamous; bracteoles 2–4. Male perianth limb campanulate or funnelform. Stamens 6–10. Female perianth ovate-tubular or cylindric, 5–10-lobed. Ovary sessile, oblique. Stigma capitulate or lobed. Fruit oblong or clavate, ribbed, with sticky glands. Seed oblong, with a deep longitudinal furrow; embryo straight, cotyledons recurved, enclosing the endosperm.

Between 35 and 40(–75) species: tropical and subtropical regions, most diverse in SE Asia and tropical America; three species in China.

Some authors place freestanding plants that have bisexual or polygamous flowers and fruits with sessile glands in the genus Ceodes and recognize up to 75 species, but most modern authors believe the similarities between the groups outweigh the differences and recognize only one genus with 35(–40) species. The very sticky fruits can attach to birds, and species of Pisonia are often common on isolated islands hosting colonies of sea birds.

1a. Plants climbing, spiny; flowers unisexual; fruit with rows of conspicuous stalked glands .......................................... 1. P. aculeata

1b. Plants erect, not spiny; flowers bisexual or polygamous; fruit with sessile glands.

2a. Flowers bisexual; inflorescence 1–4 cm; pedicel 1–1.5 mm, apex bracteolate; perianth tube funnelform; fruit clavate, ca. 1.2 cm, muricate, aculeate, apex without persistent perianth ............................................................. 2. P. grandis
2b. Flowers polygamous; inflorescence 5–12 cm; pedicel 1.5–6 mm, apex without bracteole; perianth tube campanulate; fruit subterete, 2.5–4 cm, smooth, apex with spreading persistent perianth .............................................. 3. P. umbellifera


腺果藤 xian guo teng

Shrubs vinelike, climbing, to 20 m. Bark olive green. Stems with axillary spines, pilose or glabrous; branches pendent, often with 5–10 mm, recurved thorns. Petiole 1–1.5 cm; leaf blade ovate to elliptic, 3–10 × 1.5–5(–7) cm, ± leathery, abaxially greenish, adaxially dark green, glabrous, pubescent, yellow-brown, lateral veins 4–6 pairs, base cuneate or rotund, apex acute or obtuse. Cymes axillary, yellow-brown pubescent. Pedicel with 3 ovate bracteoles near apex. Flowers unisexual; perianth yellow, fragrant. Male perianth tube funneliform, puberulous, apex 5-lobed; stamens 6–8, exserted; anthers subglobose. Female perianth tube ovate-tubular, apex 5-lobed; style exserted; stigma lacerate. Fruit clavate, 7–14 × 4 mm, 5-ribbed, with rows of stalked glands and brownish black pubescent; carpododium long. Fl. Jan–Jun.


抗风桐 kang feng tong

Trees to 14(–30) m; trunk 30–50(–70) cm in diam. Bark white-gray, with conspicuous furrows and large leaf-scar; puberulous to nearly glabrous, lenticels conspicuous; branches unarmed. Petiole 1–8 cm; leaf blade elliptic, oblong, or ovate, (7–)10–20(–30) × (4–)8–15(–20) cm, papery or membranous, puberulous or glabrescent, lateral veins 8–10 pairs, base rounded or slightly cordate, mostly oblique, margin entire, apex acute to acuminate. Cymes terminal, paniculate, 5–12 cm. Flowers polygamous. Pedicel 1.5–6 mm, with 1–3 bracteoles near base. Perianth tube white, campanulate, 5–7 mm, with brown hairs, apex 5-lobed. Stamens 7–10, slightly exserted; filaments unequal, base united in a ring; anthers subglobose. Ovary oblong, upper acuminate. Style slender; stigma fimbriate, slightly exserted. Fruit subterete, slightly curved, 2.5–4 cm × 6–7 mm, 5-ribbed, smooth, glabrous; carpododium thick, ca. 1 cm, with spreading persistent perianth at apex. Fl. and fr. late summer–autumn.

Thickets along seashores and open forests. Hainan, SE Taiwan [Africa, America, Asia, Australia].

2. BOUGAINVILLEA Commerson ex Jussieu, Gen. Pl. 91. 1789 ["Buginvillaea"], nom. et orth. cons.

叶子花 ye zi hua shu

Shrubs or small trees, sometimes climbing. Branches spiny. Leaves alternate, petiolate, leaf blade ovate or elliptic-lanceolate. Inflorescences axillary, pedunculate, 3-flowered cymes, each flower subtended by a persistent, often brightly colored, ovate bract adnate to the pedicel, often grouped into terminal panicles. Flowers bisexual; pedicel adnate to the midvein or the bract. Perianth connate, limb rose or yellow, funnelform, 5–6-lobed, lobes short. Stamens 5–10, included; filaments shortly united at base. Ovary fusiform, stipitate. Style lateral, short linear; stigma fimbriate. Fruit cylindric or clavate, 5-ribbed, without sticky glands. Seed: testa thin; embryo curved, cotyledons convolute, enclosing the endosperm.

About 18 species: native to South America, widely cultivated in tropical and subtropical regions; two species (introduced) in China.

1a. Leaves glabrous or sparsely pubescent; bracts oblong or elliptic-lanceolate, hairs very short, curved away from pedicel ................................................................. 1. B. glabra

1b. Leaves densely pubescent; bracts elliptic-ovate, longer than flowers; perianth tube rounded, hairs copious, spreading, to 1 mm ........................................................................................................... 2. B. spectabilis


光叶子花 guang ye zi hua

Shrubs vinelike. Stems thick, branches pendent, glabrous
or sparsely pubescent; spines axillary, 5–15 mm. Petiole 1 cm; leaf blade ovate or ovate-lanceolate, 5–13 × 3–6 cm, chartaceous, abaxially sparsely pubescent, adaxially glabrous. Foliarceous bracts purple or magenta, oblong or elliptic, 2.5–3.5 × 2 cm, chartaceous. Perianth tube greenish, distinctly angled, ca. 2 cm, sparsely pubescent, ribbed, apex 5-lobed, hairs short, curved away from pedicel. Stamens 6–8. Fl. winter–spring (in south), Mar–Jul. (in north or greenhouse).

Widely cultivated in China, outdoors in frost-free areas, in greenhouses elsewhere [native to South America (Brazil)].

This species is used as an ornamental and medicinal plant. It is better adapted to areas lacking a distinct dry season and flowers more or less continuously in perpetually humid conditions.


紫茉莉属 zi mo shu

Herbs annual or perennial. Roots thick, obconic. Leaves opposite, petiolate or upper ones sessile. Inflorescence with each flower surrounded by a 5-ft, calyxlike involucre of bracts, arranged in terminal, ± flat-topped cymes, rarely solitary; involucral lobes erect, acuminate, plicate, not enlarged after flowering. Flowers bisexual, opening in afternoon, fragrant or not. Perianth constricted beyond the ovary; limb showy, variously colored, expanded, salverform, plicate, distally 5-lobed, deciduous. Stamens 5 or 6, as long as perianth or exserted; filaments adnate to tube at base. Ovary ovoid or ellipsoid. Style linear, as long as stamens or longer, exserted; stigma capitate. Fruit globose or obovoid, coriaceous, crustaceous, or chartaceous, ribbed or tuberculate, without sticky glands. Seed: embryo curved, cotyledons folded, enclosing the mealy endosperm.

About 50 species: mainly in tropical America; one species (introduced) in China.


紫茉莉 zi mo li

Nyctago jalapa (Linnaeus) Candolle.

Herbs annual, to 1 m tall. Roots tuberous, black or black-brown. Stems erect, much branched, cylindric, glabrous or slightly pubescent, inflated on nodes. Petiole 1–4 cm; leaf blade ovate or ovate-triangular, 3–15 × 2–9 cm, base truncate or cordate, margin entire, apex acuminate. Flowers usually several clustered at apex of branches, fragrant; pedicel 1–2 mm. Inflorescences axillary, in 1–3-flowered cymes, sometimes panicles, or rarely 1-flowered, enclosed within a campanulate involucre; involucre lobes 5, reticulate-venose, enlarged and membranous after flowering. Flowers bisexual, inconspicuous, opening in morning; pedicel 20–25 mm. Perianth constricted beyond the ovary, 0.6–0.8(–1) cm, limb rose-red or light red-purple, plicate, campanulate or short funnelform, often oblique, ca. 0.8 cm in diam., deciduous. Stamens (2–3)–5; filaments slender, exserted; anther globe. Fruit black, globose, 5–8 mm in diam., coriaceous, ribbed and plicate. Endosperm white mealy. Fl. Jun–Oct, fr. Aug–Nov.

Originally introduced as an ornamental, now a ruderal weed in some areas of China [native to tropical America; now pantropical].

This species is used medicinally and as an ornamental.


山紫茉莉属 shan zi mo li shu

Herbs annual or perennial, erect, ascending, or prostrate, sometimes with tuberous roots. Stems viscid glandular pubescent or glabrescent. Leaves opposite. Inflorescences axillary, in 1–3-flowered cymes, sometimes panicles, or rarely 1-flowered, enclosed within a campanulate involucre; involucre lobes 5, reticulate-venose, enlarged and membranous after flowering. Flowers bisexual, inconspicuous, opening in morning; pedicel 20–25 mm. Perianth constricted beyond the ovary, 0.6–0.8(–1) cm, limb rose-red or light red-purple, plicate, campanulate or short funnelform, often oblique, ca. 0.8 cm in diam., deciduous. Stamens (2–3)–5; filaments capillary, cinctinately incurved, jointed at the ovary base. Style filiform; stigma capitate. Fruit oblong, fusiform, obovoid, or terete, small, smooth or tuberculate, without sticky glands. Seed: embryo curved, cotyledons enclosing the endosperm, radicle elongated.

About 25 species: mainly in warm regions of America, one species in Asia.


中华山紫茉莉 zhong hua shan zi mo li

5-dentate (teeth triangular), densely viscid glandular pubescent outside. Perianth purple-red or pink, 6–8 mm, apex 5-lobed. Stamens 5, as long as perianth; filaments linear, circinately incurved; anthers ovoid, 2-celled, longitudinally dehiscent. Ovary obconic, glabrous. Style as long as perianth or longer; stigma lobed. Fruit black, ellipsoid or ovoïd, ca. 5 mm. Fl. and fr. Aug–Oct.

- Thickets, grasslands, dry and warm river valleys, riversides, rock crevices, rock walls; 700–2700(–3400) m. SW Gansu, S Shaanxi, N Sichuan, Xizang, NW Yunnan.

This species is interesting, being the only Old World representative of an otherwise entirely New World genus. *Oxybaphus himalaicus var. himalaicus* occurs in N India and usually has four (not five) stamens. Wu Zhengyi (editor’s note) adds that var. *himalaicus* has also been recorded from S Xizang (in Fl. Xizang).

The roots are used medicinally.


Herbs annual or perennial, erect, ascending, or procumbent. Stems sometimes glandular. Leaves opposite, often unequal, petiolar, 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 exserted; 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 far from adequate, partly because the boundaries between these 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 glandular, tip ± rounded ........ 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.

**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.

**Boerhavia minor** Delile; **B. coccinea** var. *minor* (Delile) Cufodontis.

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, 2–4-flowered clusters. Pedicel to 1 mm. Perianth limb white, pink, or mauve, rarely purplish red, to 2(–2.5) mm. Stamens (1–)3–(4–5). Anthocarp fusiform, 3–3.5–(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.


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

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, 2–4-flowered clusters. Pedicel to 1 mm. Perianth limb white, pink, or mauve, rarely purplish red, to 2(–2.5) mm. Stamens (1–)3–(4–5). Anthocarp fusiform, 3–3.5–(5–4) mm, obviously 5-ribbed, usually glandular hairy.

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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 exserted. 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].


Herbs perennial or subshrubs, ascending or procumbent, sometimes climbing, with lower branches ± woody, sometimes glandular. Leaves opposite, subequal, often fleshy, margin entire or undulate. Inflorescences terminal or axillary, pedunculate, white, pink, or purple, 5-lobed. Stamens (2–)3(–6), often long exserted; filaments linear, unequal, connate at base. Ovary stipitate. Umbels or verticils, sometimes grouped into panicles. Flowers bisexual. Perianth constricted beyond the ovary, limb funnelform, embryo curved; cotyledons enclosing the scanty endosperm. Style linear, exserted; stigma peltate. Fruit clavate or obconic, 10-ribbed, with large, raised, wartlike sticky glands. Seed erect; groove between ribs somewhat undulate, apex truncate, angulate or subcordate, margin undulate, apex acuminate or acute. Inflorescences mostly with sunken glands, base rounded or cuneate, margin with unidcellular 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 exserted. 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].


1a. Herbs perennial; leaf blade 3–6 × 2.5–5 cm, base truncate or subcordate, margin undulate; petiole 1–3 cm; flowers purple-red; fruit obconic, 6–7 mm, longitudinally 10-ribbed, with minute glands. Fl. and fr. summer. 2. C. lantsangensis

1b. Subshrubs; leaf blade 1–2.7 × 1–2.5 cm, base cuneate, margin entire; petiole 0.5–1.3 cm; flowers purple-red; fruit clavate, with wartlike glands. 1. C. chinensis


Subshrubs, 40–70 cm tall. Branches terete, strict, bark whitish; young shoots finely striate, glandular pubescent, brownish or with black points, internode long. Pediole 0.5–1.3 cm; leaf blade triangular broad ovate, 1–2.7 × 1–2.5 cm, slightly fleshy, abaxially white-gray, glabrescent, rarely glandular pubescent along vein, veins clear, base cuneate, margin entire, apex acute. Umbels axillary or terminal, (1–)4–6-flowered; peduncle strict, red-purple, 1–4 cm; pedicel strict, 0.5–1.5 cm. Perianth tube 3–5 mm, enclosing ovary, limb purple-red, funnelform, 6–10 mm, apex 5-lobed, lobes triangular. Stamens 3; filaments 1.5 cm, base broad, connate; anthers globose. Ovary fusiform. Stigma peltate. Fruit nodding after maturity, clavate, ca. 7 mm, longitudinally 10-ribbed, apex truncate, with wartlike glands on rib; carpopodium 0.5–1.5 cm. Fl. Jun, fr. Aug.

● Dry, warm river valleys, roadsides, stone crevices; 2300–3000 m. Sichuan, SE Xizang, N Yunnan.

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

Herbs perennial. Stems 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, muticellular hairs, apex obtuse or acute. Inflorescences terminal, capitulate-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 (Ryuku Islands), Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Africa, America, Australia, Pacific Islands].

The plants are used medicinally.
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