4. Subfam. VANILLOIDEAE

香荚兰亚科 xiang jia lan ya ke

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb, Stephan W. Gale

Small to large terrestrial autotrophic or holomycotrophic, monopodial or sympodial herbs or scrambling or climbing vines. Roots elongate, fleshy; rhizome short to elongate. Stems erect or scrambling, unbranched or branched, very short to long, leafy. Leaves 1 to many, sometimes reduced to scales, alternate, fleshy or leathery, conduplicate, spreading or suberect, ovate, elliptic, lanceolate, ligulate, or oblong, green, glabrous. Inflorescences terminal or lateral, 1- to many flowered, racemose or paniculate, rarely 1-flowered; rachis sometimes pubescent; bracts conduplicate. Flowers often showy; pedicel short; ovary 1-locular or 3-locular, glabrous or pubescent; abscission layer between pedicel and ovary, sometimes with a distinct calyculus present. Sepals free, submiliar, glabrous or externally pubescent. Petals free, glabrous; lip free or with side margins fused to column, 3-lobed or entire, usually with a callus of hairs, papillae, or backward-facing scales, lacking a nectary. Column elongate, slender, porrect, hooded at tip; anther 1, terminal, mobile; pollinia obscure; pollen loose, shed in monads or rarely tetrads; stigma 3-lobed, concave, viscid. Capsule erect to pendulous, 3-ribbed, cylindric to almost ellipsoidal, glabrous to pubescent. Seeds with a hard testa.

Twenty-four genera and ca. 185 species: widespread in the tropical regions of Africa, America, and Asia, with a few species reaching temperate areas; six genera and 19 species (five endemic) in China.

Of the six genera in China, four are vines (Cyrtosia, Erythrorchis, Galeola, and Vanilla) and the other two are terrestrial herbs (Lecanorchis and Pogonia).


香荚兰属 xiang jia lan shu

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb

Vines, climbing, herbaceous, to several meters long. Stem with an aerial root and a leaf at each node. Leaves large, fleshy, shortly petiolate [sometimes reduced to scales outside Flora area]. Racemes axillary, several to many flowered. Flowers resupinate, often large, often with an abscission layer between ovary and perianth. Sepals and petals similar, free, spreading. Lip often joined to sides of column with its basal margin, sometimes almost to top of column and ± trumpet-shaped, free part often dilated, spurless, sometimes 3-lobed, disk often with hairy appendages adaxially. Column long, slender, slightly curved near top; anther inserted pointing downward; pollinia 2 or 4, granular-farinaceous or loosely granular, without caudicle or viscidium; rostellum often broad, below anther. Fruit cylindrical, fleshy, often indehiscent. Seeds with stout testa, often black, wingless.

About 70 species: throughout the tropics; four species (two endemic) in China; one additional species (endemic) is incompletely known.

1a. Inflorescence very short, usually 2-flowered ........................................................................................................ 2. V. somae
1b. Inflorescence 3–20 cm, many flowered.

2a. Sepals and petals 14–20 × 4–6 mm, white tinged with greenish ................................................................. 4. V. annamica
2b. Sepals and petals 38–48 × 10–28 mm, yellowish green, sometimes with purple-red lip.

3a. Sepals and petals 10–13 mm wide; lip not purple-red ..................................................................................... 1. V. siamensis
3b. Sepals and petals 16–28 mm wide; lip purple-red ................................................................................... 3. V. shenzhenica


大香荚兰 da xiang jia lan

Stem to several meters long, with long internodes, with a root and a leaf at each node. Leaves loosely arranged, fleshy; blade elliptic, 14–25 × 6–8(–13) cm, glabrous, base slightly contracted, apex acuminate; petiole robust, 1.5–2.5 cm, broad. Raceme axillary, 7–14 cm, many flowered; floral bracts broadly ovate, 7–8 mm, fleshy; pedicel and ovary ca. 2 cm. Flowers opening ephemerally; sepals and petals yellowish green. Sepals oblong or narrowly ovate, 3.8–4.5 × ca. 1.2 cm, apex rounded and slightly involute. Petals obovate-oblong, ca. 4 × 1–1.3 cm, thinly textured; lip rhombic-obovate, ca. 4 cm, basal half adnate to both sides of column, ± trumpet-shaped, indistinctly 3-lobed; lateral lobes embracing column; mid-lobe undulate at margin, with fimbriate papillae near apex; disk with a cup-shaped, shortly hairy appendage centrally. Column 2–2.6 cm, villous on central surface. Fl. Aug. 2n = 32.

Forests; 800–1200 m. S Yunnan [Thailand].

2. Vanilla somae Hayata, Icon. Pl. Formosan. 6: 88. 1916 ["somai"].

台湾香荚兰 tai wan xiang jia lan

Vanilla griffithii H. G. Reichenbach var. formosana Ito; V. griffithii var. ronoensis (Hayata) S. Y. Ying; V. ronoensis Hayata.

Stem climbing, to 3 m, with internodes 7–10 cm. Leaves alternate; blade narrowly ovate or elliptic-lanceolate, 10–20 × 4–8 cm, thickly fleshy, slightly reticulate veined, base obtuse and with a very short petiole, apex acuminate. Inflorescence axillary, very short, usually 2-flowered; floral bracts subtriangular-
lar, 1–1.5 cm; pedicel and ovary 4–5 cm. Flowers 5–6 cm in
diam., whitish or tinged with greenish; lip adaxially red-striped,
abaxially tinged with pink. Sepals similar, spreading, elliptic-
oblancoate or oblancoate, 3.5–4 × 0.8–1 cm, apex recurved.
Petals similar to sepal; lip 3.5–4 cm, basally connate for ca. 3/5
length to both sides of column forming a trumpet-shaped tube,
margins undulate, apex dilated and slightly 3-lobed; lateral lobes
rather large, incurved; mid-lobe subtriangular or orbicular,
adaxially with 2 or 3 rows of papillae near apex; disk with a
white bristle-like appendage centrally. Column 2.5–3 cm, apex
with 2 small wings; anther ca. 3 mm, fleshy. Fruit subcylindric,
7–10 cm, with 3 inconspicuous longitudinal ridges. Fl. and fr.
Apr–Aug. 2n = 32*.

- Forests; below 1200 m. Taiwan.

Sin. 45: 301. 2007.

深圳香荚兰  shen zhen xiang jia lan

Stem scendent, 1–1.5 cm, with internodes 5–10 cm. Leaf
blade elliptic, 10–20 × 5.5–9.5 cm, base shortly petiolate.
Inflorescence 3–5 cm, usually 4-flowered; floral bracts oblong,
1.8–2.1 cm, leathery. Flowers not fully opening, yellowish
green, with purple-red lip and white appendage. Sepals and
petals oblong-lanceolate to elliptic, 4.4–4.8 × 1.6–2.8 cm; lip
broadly obovate when spreading, 4.4–4.6 cm, basally connate
for ca. 3/5 length to both sides of column forming a trumpet-
shaped tube, apical margin undulate, adaxially tufted with a
retrorse white fimbriate appendage composed of many thin
pieces, with 3–5 rows of small horn-shaped appendages above
middle, and with 2 lamellae extending from base up to fimbriate

- Forests or cliffs along valleys; below 300 m. S Guangdong.

One of us (Cribb) suggests that Vanilla shenzhenica needs to be
further compared with V. somae, which is very close morphologically.

sér. 2, 3: 686. 1931.

南方香荚兰  nan fang xiang jia lan

Stem climbing, 6–20 cm, ca. 1 cm in diam., swollen noded,
with internodes 6–10 cm. Leaf blade elliptic, 18–23 × 5–10 cm;
petiole 1–1.5 cm, base amplexicaul. Inflorescence 10–20 cm;
floral bracts broadly elliptic or elliptic, concave, 7–12 mm,
thickened, obtuse at apex. Flowers yellow, tinged with greenish.
Sepals and petals lanceolate, 14–20 × 4–6 mm; lip 2.5–3 × ca.
1.5 cm, basally connate for ca. 3/4 length to both sides of col-
umn forming a tube, apex inconspicuously 3-lobed; lateral lobes
broad, margins incised; mid-lobe with dense, fimbriate hairs
near apex; disk with scaly appendages. Column ca. 2 cm. Fl.
Apr–May.

- Cliffs, forests: 1200–1300 m. Fujian, SW Guizhou, Hong Kong,
SE Yunnan [Thailand, Vietnam].

Of the Chinese specimens referred to this species, only the one
from Hong Kong has flowered, confirming its identity. The other
species are sterile but are very similar in habit to Vanilla annamica.

Incompletely known species

1987.

宝岛香荚兰  bao dao xiang jia lan

Stem scendent, elongate, with long internodes, with a leaf
at each node. Leaves alternate; blade narrowly ovate-elliptic or
elliptic-lanceolate, 10–15 × 5–7 cm, apex acute or acuminate;
petiole 1–1.5 cm, ± amplexicaul. Inflorescence terminal, rac-
mose, 15–30 cm, many flowered; floral bracts reddish or
brownish, ovate, 5–6 mm; pedicel and ovary 1–1.8 cm, gla-
brous. Flowers reddish or brownish, glabrous. Sepals oblanco-
late, 25–30 × 6–8 mm, base contracted, apex obtuse. Petals
linear, 25–28 × 3–4 mm, apex obtuse; lip narrowly elliptic or
elliptic, adaxially villous at center, 3-lobed, margin indistinctly
serrate; disk with 2 thickened ridges. Column 2–2.5 cm. Fl. un-
known.

- Thickets; 800–1600 m. C Taiwan.

No specimen of this species has been seen. According to the
original description and the color photograph provided by the author
(Coloured Ill. Indig. Orchids Taiwan 2: photo: 109. 1990), this taxon
seems to be a member of Galeola rather than Vanilla.

52. CYRTOSIA Blume, Bijdr. 396. 1825.

肉果兰属  rou guo lan shu

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb

Herbs, mycotrophic. Rhizome stout, with fleshy or sometimes tuberlike roots. Stems erect, often several arising from 1 rhi-
zone, simple or branched, yellowish brown to reddish brown, fleshy, with scales at nodes. Raceme or panicle terminal or lateral,
several or many flowered; rachis shortly hairy or mealy-hairy; floral bracts persistent. Flowers not fully opening, medium-sized.
Sepals and petals connivent; sepal often hairy abaxially. Petals glabrous; lip erect, unlobed, sparsely, base connate to column, ±
embracing column. Column slightly curved, stout, upper part enlarged, without a foot; anther terminal, incumbent, 2-locular; pollinia
2, granular-farinaceous, without caudicle or viscidium. Fruit fleshy, indehiscent. Seeds with stout testa, wingless or with a narrow
surrounding wing.

Five species: tropical Asia to E Asia; three species in China.

1a. Plants rather large, 30–170 cm tall; lateral racemes 3–7(–10) cm; tuberlike roots absent ..................................... 3. C. septentrionalis
1b. Plants relatively small, 8–22 cm tall; lateral racemes very short or absent; tuberlike roots conspicuous,
5–12 mm in diam.
2a. Inflorescence terminal; lip glabrous ............................................................................................................... 1. C. javanica

2b. Inflorescence terminal and lateral, latter at least represented by a short raceme; lip with white hairs near adaxial apex ........................................................................................................... 2. C. nana

1. Cyrtosia javanica Blume, Bijdr. 396. 1825.

肉果兰  卿果兰

_Galeola javanica_ (Blume) Bentham & J. D. Hooker.

Plants small, ca. 10 cm tall. Tuberlike roots tufted, cylindrical or clavate, 5–8 cm, stout, 8–12 mm in diam., thick, fleshy. Stems 1–3 arising from 1 rhizome, erect, 6–8 cm tall, with imbricate scales at nodes; scales alternate, yellowish brown, turning dark brown with age, elliptic-ovate, cymbiform or with subspherical base, glabrous. Inflorescence racemose, 5–8-flowered; floral bracts subtriangular, small; pedicel and ovary 1–1.5 cm, mealy-pubescent. Flowers not fully opening, yellowish brown, fleshy. Sepals mealy-pubescent abaxially; dorsal sepal oblong, ca. 16 × 8 mm, slightly concave; lateral sepals broadly ovate, ca. 16 × 9 mm. Petals oblong, ca. 15 × 7 mm, thinly textured; lip adnate to base of column, yellowish at base, whitish near apex, suborbicular, with thickened disk and spongy limb. Column clavate, ca. 8 mm, winged at apex; column erose-dentate at apex. Fruit sausage-shaped, ca. 5 cm, indehiscent. Fl. May–Jun.

Bamboo forests. C Taiwan [India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam].


矮小肉果兰  青小肉果兰


Plants small, ± fleshy. Rhizome short, stout. Tuberlike roots pale yellowish white, cylindrical, 2.5–9 cm, 5–8 mm in diam., fleshy. Stem erect, yellowish white, slightly tinged with red, 10–22 cm tall, glabrous or apical half with sparse rust-colored, mealy, short hairs, nodes with lanceolate scales; internodes usually 1–3 cm. Inflorescenceterminal and lateral, sometimes lateralinflorescence very short or inconspicuous; terminal raceme 6–11-flowered; rachis rusty mealy-puberulent; floral bracts ovate-lanceolate, 2–4 mm, abaxially rusty puberulent; pedicel and ovary 8–10 mm, also with rust-colored hairs. Flowers pale yellow, lip with orange-red longitudinal stripes. Sepals elliptic, 1–1.2 × ca. 0.6 cm, abaxially rusty mealy-puberulent, apex acute. Petals similar to sepals, slightly narrower, glabrous; lip ± embracing column, broadly ovate, ca. 1 × 1.2 cm, margin somewhat undulate, disk with a thick longitudinal ridge centrally, axadially white pilose near apex. Column ca. 6 mm, apex slightly dilated, without conspicuous wing. Fl. Apr–Jun. 2n = 28.

Forests or shaded places along valleys; 500–1400 m. S Guangxi, SW Guizhou [Thailand, N Vietnam].


血红肉果兰  红肉果兰花


Plants rather large. Rhizome nearly creeping, stout, 1–2 cm in diam., with sparse ovate scales. Stem erect, red-brown, 30–170 cm, apical half shortly rusty tomentose. Inflorescence terminal and lateral; lateral raceme 3–7(–10) cm, 4–9-flowered, base with a few ovate-lanceolate sterile bracts 1.5–2.5 cm; floral bracts ovate, 2–3 mm, abaxially with rusty hairs; pedicel and ovary 1.5–2.5 cm, shortly rusty tomentose. Flowers yellow, ± tinged with red-brown. Sepals elliptic-ovate, ca. 2 cm, abaxially shortly rusty tomentose. Petals similar to sepals, slightly narrower, glabrous; lip nearly broadly ovate, shorter than sepals, adaxially hairy-papillose or occasionally crest-lamellate along main veins, margin irregularly dentate or erose. Column ca. 7 mm. Fruit blood-red, suboblong, 7–13 × 1.5–2.5 cm, fleshy. Seeds with surrounding wing; wing less than 1 mm wide. Fl. May–Jul, fr. Sep. 2n = 28.

Forests; 1000–1300 m. SW Anhui, W Henan, Hunan, Zhejiang [Japan (Ryukyu Islands)].


山珊瑚属  花珊瑚属

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb

_Herbs, mycotrophic, erect, or scrambling vines, often with rather stout, tuberous rhizomes. Stem yellowish brown or reddish brown, often stout, slightly fleshy, with scales at nodes. Raceme or panicle terminal and lateral, with many slightly fleshy flowers; rachis pubescent; floral bracts persistent. Flowers usually yellow or tinged with reddish brown, medium-sized. Sepals free, abaxially often hairy. Petals slightly smaller than sepals, glabrous; lip unlobed, usually concave, cup-shaped or saccate, ± embracing column, conspicuously larger than sepals, spurious, with longitudinal ridge or callus adaxially. Column often short and stout, dilated at apex, curved, without column foot, subterminal; pollinia 2, cleft, granular-farinaceous, without caudicle or viscidium; stigma large, deeply concave; rostellum short, wide, above stigma. Fruit a dry capsule, rather long, dehiscent. Seeds with stout testa, with broad surrounding wing._

About ten species: mainly in tropical Asia, extending to S China, Japan, New Guinea, and Madagascar; four species (one endemic) in China.

1a. Plants climbing vines; stem with 1 aerial root at each node ........................................................................... 4. _G nudifolia_

1b. Plants erect, not climbing; lacking aerial roots at nodes.
1. **Galeola lindleyana** (J. D. Hooker & Thomson) H. G. Reichenbach, Xenia Orchid. 2: 78. 1865.


54. ERYTHRORCHIS Blume, Rumphia 1: 200. 1837.

倒吊兰属 dao diao lan shu

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb

Vines, climbing or scrambling, mycotrophic. Stem climbing, reddish brown or yellowish brown, cylindrical, flexuous, much branched, glabrous, with a root and a scale at each node. Raceme or panicle terminal or lateral, densely manyflowered; rachis and flow er glabrous; floral bracts persistent. Flowers not fully opening, thin. Sepals and petals often connivent; lip nearly unlobed, broad, central part with 1 stout and thick longitudinal ridge, both sides with many transversely parallel ridges composed of small papillae. Column slightly curved, with a short foot, tapering into central longitudinal ridge of lip; anther subterminal; pollinia 2, granular-farinaceous, without caudicle or viscidium; stigma concave, large; rostellum small. Fruit a capsule, oblong-cylindric, dry, dehiscent. Seeds with stout testa and broad surrounding wing.

Three species: mainly in SE Asia, extending north to S Japan (Ryukyu Islands) and southeast to New Guinea and the Pacific islands; one species in China.

1. Erythrorchis altissima (Blume) Blume, Rumphia 1: 200. 1837.

倒吊兰 dao diao lan

Cyrtoxia altissima Blume, Bijdr. 396. 1825; Erythrorchis ochobiensis (Hayata) Garay; Galeola altissima (Blume) H. G. Reichenbach; G ochobiensis Hayata; Haematorchis altissima (Blume) Blume.

Plants climbing, to several meters long. Stem cylindrical, slender, with many branches, curved or twisted, reddish brown or greenish brown, nodes ± dilated, with scales. Inflorescence large, much branched, branch 5–15 cm or longer, sometimes lateral racemes branched again; racis rather slender, glabrous; floral bracts persistent, subtriangular, 2–3 mm, glabrous; pedicel and ovary ca. 8 mm, glabrous. Flowers whitish yellow or pale yellow, slightly spotted with brown, not opening widely. Sepals suboblong, 1.2–1.5 × 0.3–0.5 cm, glabrous. Petals oblong, slightly shorter and narrower than sepals; lip slightly tinged with brown, subobovate, concave, ca. 1 cm, apex slightly 3-lobed, centrally with 1 longitudinal ridge ca. 5 mm extending from base to middle; longitudinal ridge slightly divergent at apex and then with a woolly callus near its apex, both sides of ridge with many transversely papillar straps vertical to ridge. Column 6–7 mm. Capsule reddish, narrowly cylindrical, 13–22 cm × 5–10 mm, surface smooth. Seeds with surrounding wing less than 1 mm wide, wing cleft on one side. Fl. Apr–May, fr. Aug.

Bamboo forests, evergreen broad-leaved forests; below 500 m. S Hainan, Taiwan [Cambodia, NE India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

55. LECANORCHIS Blume, Mus. Bot. 2: 188. 1856.

盂兰属 yu lan shu

Chen Xinqi (陈心启 Chen Sing-chi); Phillip J. Cribb, Stephan W. Gale

Herbs, mycotrophic. Rhizomes creeping or ascending, cylindrical, slender, slightly rigid or subfleshy, branched or simple. Stem suberect, slender, branched or simple, with sparse scalelike sheaths. Raceme terminal, usually several to 10-flowered; floral bracts small, membranous. Flowers usually resupinate, small or medium-sized, with 1 small toothed cup (calyculus) between ovary and perianth, with abscission layer above calyculus near perianth base. Sepals and petals free, similar; lip base clawed, usually by canaliculate claw connate to column foot forming a tube, rarely free, spurless, upper part 3-lobed or unlobed; disk often hairy or papillose. Column rather slender, slightly dilated toward apex, slightly clavate; anther subterminal, 2-locular; pollinia 2, granular-farinaceous, without caudicle or conspicuous viscidium; rostellum short. Fruit a cylindrical capsule.

About ten species: SE Asia to the Pacific islands, north to S China and Japan; four species (one endemic) in China.

Hsu and Chung (Taiwania 54: 83. 2009) recently added three species of Lecanorchis to the flora of China based on new discoveries in Taiwan. However, detailed accounts have yet to be published. Two of the three species, L suginoana (Tuyama) Serizawa (Bunrui 5(1): 38. 2005) and L virella T. Hashimoto (Ann. Tsukuba Bot. Gard. 8: 1. 1989), are also known to occur only in Japan, from where they were originally described. The third, L triloba J. Smith (Bull. Dep. Agric. Indes Neerl. 19: 26. 1908; L javanica Blume), is more widespread throughout parts of mainland SE Asia, the Malay Archipelago, New Guinea, and S Japan. The present authors have not seen Chinese material for any of these species. In the absence of refutable material, the three taxa are omitted from the following account.

1a. Lip simple, ca. 1.5 mm wide ................................................................. 4. L nigricans
1b. Lip ± 3-lobed, more than 3 mm wide.

2a. Raceme 13–21-flowered; sepals 9–10 mm ........................................ 1. L multiflora
2b. Raceme 3–9-flowered; sepals 11–25 mm.

3a. Sepals 11–14 mm; mid-lobe of lip sparsely hairy adaxially ................... 2. L japonica
3b. Sepals 18–25 mm; mid-lobe of lip densely hairy adaxially .................. 3. L thalassica

多花盂兰 duō huā yú lán

Plants 20–30 cm tall, with fleshy rhizomes underground. Rhizomes 3–4 mm in diam., branched, with nodes, nodes with amplexicaul sheaths; sheaths membranous, margin toothed. Stem suberect, slender, nodes, nodes with sheaths; sheaths ovate to broadly ovate, 4–6 mm, membranous, base amplexicaul. Raceme terminal, 8–10 cm, 13–21-flowered; floral bracts ovate, 2–3 mm, membranous. Flowers 9–10 mm; lip 3-lobed; mid-lobe hairy adaxially; disk with 2 calii. Capsule (immature) 1.7–2 cm.

Forests in limestone areas; 600–700 m. S Yunnan [Indonesia, Malaysia, Thailand].


盂兰 yu lán

Lecanorchis cerina Fukuyama; L. cerina f. albida (T. P. Lin) S. S. Ying; L. cerina var. albida T. P. Lin; L. ohwii Masson.

Plants ca. 33 cm tall. Rhizome 5–6 mm in diam., fleshy. Stem tinged with white, black when fruiting, slender, with 4 sheaths below middle; sheaths tubular, 5–7 mm, membranous, amplexicaul. Raceme terminal, 4–5 cm, 3–7-flowered; floral bracts ovate to ovate-lanceolate, 2.5–3 mm; pedicel and ovary 1.4–2 cm, slender; calyculus 0.8–1 mm tall, ca. 1 mm wide, 6-toothed. Sepals oblongate, 11–14 × 2–2.5 mm, apex obtuse. Flowers not widely open, margin grayish green and yellowish. Dorsal sepal oblongate, ca. 20 × 5 mm, apex obtuse; lateral sepals oblongate-obovate, ca. 20 × 3 mm. Petals obvate-lanceolate to spatulate, ca. 20 × 6 mm, apex obtuse or rounded; lip ovate, ca. 1.6 cm, cuneate at base, distal part 3-lobed, basal half connate to column forming a tube; tube ca. 8 mm, contracted near middle, swollen part ca. 3 mm wide; lateral lobes erect, abaxially purple, suborbicular, adaxially shortly villous; mid-lobe entire, suborbicular, ca. 5.5 mm, abaxially with several purple bands, adaxially densely yellow villous, apex emarginate; disk with yellow hairs extending to midlobe. Column ca. 9 mm, apex dilated. Fl. May.

- Broad-leaved forests; 1400–2000 m. C Taiwan.


全唇盂兰 quán chún yú lán

Lecanorchis oligotricha Fukuyama; L. purpurea Masson; L. taiwaniana S. S. Ying.

Plants 12–40 cm tall. Rhizome ascending, ligneous, with short scales at nodes. Stem erect, blackish, slender, often branched, remotely with several sheaths. Raceme terminal, 3–5 cm, 5–8-flowered; floral bracts ovate-triangular, 2–4 mm; pedicel and ovary purplish brown, 1–2 cm; slender; calyculus ca. 0.8 mm tall, denticulate. Flowers almost opening widely; sepals and petals brownish to nearly whitish, sometimes tinged with purple, concave. Sepals narrowly oblongate, 10–16 × 2–3 mm, apex acute; lateral sepals somewhat oblique, falcate-lanceolate, 12–14 × ca. 2.5 mm. Petals oblongate-linear, similar to sepals in size; lip whitish, tinged with purple, narrowly oblongate to obovate-spatulate, nearly as long as sepals, adaxially ± papillose-hairy, unlobed. Column white, 6–10 mm, slender. Fl. Aug–Oct.

Damp places in forests; 600–1000 m. Fujian, N Taiwan [Japan (Ryukyu Islands)].

56. POGONIA Jussieu, Gen. Pl. 65. 1789.

朱兰属 zhū lán shù

Chen Xinqi (陈心启 Chen Sing-chi); Stephan W. Gale, Phillip J. Cribb

Herbs, terrestrial. Rhizome ascending, cylindric, slender; roots fascicled, elongate, fibrous, slightly fleshy. Stem erect, slender, 1-leaved. Leaf elliptic to oblong-lanceolate, herbaceous to slightly fleshy, sheathing at base. Inflorescence terminal, slender, usually with a solitary flower, rarely 2- or 3-flowered; floral bract persistent, foliaceous. Flower resupinate, showy. Sepals free, similar, spreading. Petals free, usually deflexed over column, slightly wider and shorter than sepals; lip oblong-obovate, entire to shallowly 3-lobed above middle, not spurred, margin fimbriate; disk densely papillose. Column slender, dilated at apex; clinandrium erose at margin; anther terminal, incumbent; pollinia 2, granular-farinaceous, without caudicles or viscidia; stigma surface large; rostellum short, broad, protruding above stigma. Capsule erect.

Four species: three species in E Asia and one in North America; three species (one endemic) in China.
1a. Leaf elliptic, 1–3(−4.5) cm; floral bract positioned up to 2.5 cm above leaf, 5–17 mm; flower suberect .......... 3. *P. yunnanensis*
1b. Leaf oblanceolate, 3–6 cm; floral bract positioned 3–8 cm above leaf, 15–30 mm; flower spreading.

2a. Flowers pale pinkish purple to purple; sepals 15–22 mm ....................................................................................... 1. *P. japonica*
2b. Flowers white; sepals 12–13(−15) mm ........................................................................................................................ 2. *P. minor*


*Pogonia kungii* Tang & F. T. Wang; *P. ophioglossoides* (Linnaeus) Ker Gawler var. *japonica* (H. G. Reichenbach) Finet; *P. parvula* Schlechter; *P. similis* Blume.

Plants 10–20(−25) cm tall. Rhizome 10–20 × ca. 2 mm, with several, slender, elongate, slightly fleshy roots. Leaf oblong to oblong-lanceolate, 3.5–6(−9) × 0.7–1.7 cm, slightly fleshy, base contracted and amplexicaul, apex acute or obtuse. Floral bract positioned 4–8 cm above leaf; narrowly oblong, linear-lanceolate, 15–25(−40) × 3–7 mm. Flower solitary, terminal, erect, not opening widely, pale pinkish purple to purple; pedicel and ovary 10–18 mm. Sepals narrowly oblong-oblanceolate, 15–22 × 2.5–3.5 mm, apex obtuse or acuminate. Petals similar to sepals, 14–22 × 3.5–5 mm, apex acuminate; lip narrowly oblong, 14–20 × 3–4 mm, slightly contracted toward base, obscurely 3-lobed above middle; lateral lobes triangular, ca. 0.8 mm, apical margin irregularly incised or fimbriate; mid-lobe ligulate to obovate, 6–13 × 3–4 mm, with 2 or 3 fimbriate-hairy crests, margin irregularly denticulate; disk with 2 or 3 longitudinal lamellae or ridges extending from base of lip and becoming continuous with hairy crests on mid-lobe. Column erect, 7–10 mm, slender. Capsule oblong, 20–25 × 5–6 mm. Fl. May–Jul, fr. Jul–Oct. 2n = 18.

Grasslands on hilltops, forests along valleys, wet places in thickets, open wet places; 1100–2300 m. Anhui, N Fujian, N Guangxi, Guizhou, Heilongjiang, Hunan, Jiangxi, Jilin, Nei Mongol, Shandong, Sichuan, NE Yunnan, Zhejiang [Japan, Korea].


Plants 13–16 cm tall. Rhizome 2–7 × ca. 2 mm, with several, elongate, slender roots. Stem with a sheath below leaf; sheath 7–12 mm. Leaf oblong-lanceolate, 3–7 × 0.4–1.2 cm, slightly fleshy, base amplexicaul, apex acute or obtuse. Floral bract positioned 3–6 cm above leaf, narrowly lanceolate, 20–30 × 3–4 mm. Flower solitary, terminal, erect, not opening widely, white; pedicel and ovary 10–20 mm. Sepals narrowly oblanccolate, 12–13(−15) × 2–3 mm, apex acute. Petals similar to sepals, narrowly ovate-elliptic, 12–13(−15) × 2.5–4 mm, apex acute; lip oblanccolate, ca. 11 × 2 mm, 3-lobed above middle; lateral lobes triangular, ca. 1 mm, apex acute; mid-lobe oblong, ca. 5 × 2 mm, with 3 crests of fleshy hairs, margin irregularly denticulate; disk with 3 longitudinal ridges extending from base of lip to base of mid-lobe and becoming continuous with hairy crests on mid-lobe. Column erect, nearly straight, white, ca. 7 mm. Capsule oblong-cylindric, ca. 20 mm. Fl. May–Jun. 2n = 18.

Grasslands; 2200–2400 m. S Taiwan [Japan].

