AMARYLLIDACEAE

石蒜科  shi suan ke

Ji Zhanhe (吉占和 Tsi Zhan-huo)1; Alan W. Meerow2

Herbs perennial, rarely shrubby or treelike, often with bulbs, corms, rhizomes, or tubers. Leaves basal or cauline, often narrow, margin entire or spiny. Inflorescence a terminal spike, umbel, raceme, panicle, or flowers solitary. Flowers bisexual, actinomorphic or zygomorphic, usually subtended by 1 to several spathaceous involucres. Perianth segments 6, in 2 whorls, free or connate to form a short tube, with or without a corona. Stamens 6, inserted at perianth throat or at base of segments; filaments sometimes basally connate; anther dorsifixed or basifixed, mostly introrse. Ovary inferior, 3-loculed; ovules few to many per locule; placentation axile. Style slender; stigma capitate or 3-lobed. Fruit a capsule, usually loculicidal, sometimes dehiscing irregularly, rarely a berry. Seeds with endosperm.

More than 100 genera and 1200 species: tropical, subtropical, and temperate regions worldwide; ten genera and 34 species (14 endemic, four introduced) in China.

The circumscription adopted here for Amaryllidaceae sensu lato follows FRPS and is not supported by current phylogenetic analysis of the group. The genus order has been slightly adjusted to reflect the more recent classification of Kubitzki (Fam. Gen. Vasc. Pl. 3, 1998), who placed the genera in segregate families as follows: Acanthochlamydaceae: Acanthochlamys; Agavaceae: Agave; Amaryllidaceae: Crinum, Lycoris, Narcissus, Pancratium, Zephyranthes; Hypoxidaceae: Curculigo, Hypoxis; Ixioliriaceae: Ixiolirion.

Many members of this family, including garden plants, are cultivated in China as ornamentals, including Clivia Lindley, Haemanthus Linnaeus, Hippeastrum Herbert, Hymenocallis Salisbury, Leucojum Linnaeus, Polianthes Linnaeus, and Sprekelia Heister; however, not all are described in this account. Some species are used medicinally or for fibers.


1a. Leaves grooved ..................................................................................................................................................... 10. Acanthochlamys
1b. Leaves not grooved.

2a. Leaves fleshy and thick, with a spinelike apex and often with sharp, marginal teeth; perianth tube present; ovary beakless ............................................................................................................................................................................ 7. Agave
2b. Leaves neither fleshy nor thick, never spiny; perianth tube absent or very short; ovary sometimes narrowly beaked.

3a. Plants with corms, rhizomes, tubers, or fleshy, fibrous roots; flowering stem leafy or bracteate.
   4a. Rootstock a bulblike corm covered with a tunic; perianth white or pale blue ............................................. 6. Ixiolirion
   4b. Rootstock a tuberous rhizome or corm covered with fibers; perianth yellow (color not recorded for Curculigo sinensis).
   5a. Fruit a berry; inflorescences usually many flowered .......................................................... 8. Curculigo
   5b. Fruit a capsule; inflorescences 1- or 2-flowered ...................................................................................... 9. Hypoxis
3b. Plants with bulbs or a bulblike base formed by persistent leaf bases; flowering stem scapose, leafless except for involucre enclosing strictly terminal umbel, sometimes 1-flowered.
   6a. Corona present ....................................................................................................................................... 5. Narcissus
   6b. Corona absent.

7a. Filaments basally connate into a cup or with free scales among them.
   8a. Filaments basally connate into a cup .................................................................................... 3. Pancratium
   8b. Filaments with free scales among them .............................................................................. 4. Lycoris
7b. Filaments free, without scales among them.
   9a. Fibers not visible in broken bulbs and leaves; flowers solitary ................................................. 1. Zephyranthes
   9b. Fibers visible in broken bulbs and leaves; flowers several to many ......................................... 2. Crinum

1. ZEPHYRANTHES Herbert, Appendix, 36. 1821, nom. cons.

葱莲属 cong lian shu

Atamosco Adanson, nom. rej.

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1 Herbarium, Institute of Botany, Chinese Academy of Sciences, 20 Nanxincun, Xiangshan, Beijing 100093, People’s Republic of China.
2 USDA-ARS-SHRS, 13601 Old Cutler Road, Miami, Florida 33158, U.S.A.
Herbs perennial, bulbiferous. Bulbs covered with a tunic. Leaves several, fascicled, linear. Flowering stem slender, hollow. Inflorescence umbellate, rarely flower solitary; involucres large and broad. Flowers pedicellate or sessile. Perianth actinomorphic or slightly zygomorphic, salverform or subsalverform; lobes oblong, lanceolate, or linear, straight or curved upward. Stamens inserted at throat or in tube of perianth; filament erect to slightly declinate; anther dorsifixed. Ovary with many ovules. Stigma 3-lobed or 3-notched. Fruit a capsule, subglobose, 3-valved, loculicidal. Seeds black, slightly flattened.

About 40 species; warmer regions of the Western hemisphere; two species (introduced) in China.

1a. Perianth white; tube very short or indistinct; leaves 2–4 mm wide ................................................................. 1. Zephyranthes candida
1b. Perianth rose red to pink; tube 1–2.5 cm; leaves 6–8 mm wide ................................................................. 2. Zephyranthes carinata


葱莲 cong lian

Amaryllis candida Lindley, Bot. Reg. 9: t. 724. 1823; Argyropsis candida (Lindley) M. Roemer.

Bulbs ovoid, ca. 2.5 cm in diam., neck 2.5–5 cm. Leaves bright green, terete-linear, 20–30 cm × 2–4 mm, fleshy. Involucres red-brown. Flowers solitary, terminal; pedicel ca. 1 cm. Perianth white, often tinged with rose abaxially; lobes ± free, 3–5 × ca. 1 cm, usually with tiny scales near throat, apex obtuse to shortly acute. Stamens ca. 1/2 as long as perianth. Style slender; stigma strongly 3-lobed. Capsule subglobose, ca. 1.2 cm in diam. Fl. autumn.

Widely cultivated as an ornamental. Becoming naturalized in S China [native to South America].


文殊兰属 wen shu lan shu

Herbs perennial, bulbiferous. Leaves basal, ligulate or ensiform, often large, with extensible fibers visible when torn. Flowering stem solid. Inflorescences umbellate, rarely flower solitary; involucres large and broad. Flowers pedicellate or sessile. Perianth actinomorphic or slightly zygomorphic, salverform or subsalverform; lobes oblong, lanceolate, or linear, straight or curved upward. Stamens inserted at throat of perianth tube; filament suberect to declinate, filiform; anther versatile, linear. Ovary 3-loculed; ovules 2 to many per locule. Style slightly decumbent, slender; stigma capitate, small. Fruit a capsule, subglobose, dehiscing irregularly. Seeds orbicular or angular, large.

Between 65 and over 100 species; tropical and subtropical regions of both hemispheres, mainly in Africa; two species in China.

According to the literature, Crinum asiaticum Linnaeus var. anomalum Herbert, C. asiaticum var. declinatum Herbert, and C. loureiroi M. Roemer also occur in China, but no specimens of these taxa have been seen by the present authors.

1a. Perianth lobes linear, usually less than 1 cm wide, apex acuminate; perianth tube straight .............................................. 1. C. asiaticum
1b. Perianth lobes lanceolate to oblong-lanceolate, more than 1 cm wide, apex usually abruptly contracted to shortly acuminate; perianth tube often slightly curved ................................................................. 2. C. latifolium


文殊兰 wen shu lan

Crinum sinicum Roxburgh ex Herbert, Bot. Mag. 47: t. 2121. 1820.

Herbs perennial, stout. Bulbs narrowly cylindric. Leaves 20–30, dark green, linear-lanceolate, ca. 100 × 7–12 cm, margin undulate, apex acuminate, sharply pointed. Flowering stem erect, nearly as long as leaves. Umbel 10–24-flowered; bracts linear, 3–7 mm; involucres 2, lanceolate, 6–10 cm, membranous. Flowers fragrant; pedicel 0.5–2.5 cm. Perianth salverform; tube greenish white, straight, 7–10 cm × ca. 2 mm; lobes white, linear, 4.5–9 × 0.6–0.9 cm, apex acuminate. Stamens reddish; filament 4–5 cm; anther linear, more than 1.5 cm, apex acuminate. Ovary fusiform, less than 2 cm. Capsule subglobose, 3–5 cm in diam. Seed often 1. Fl. summer.

- Seashores, sandy places near river banks. Fujian, Guangdong, Guangxi, Taiwan.

Crinum asiaticum var. asiaticum occurs in tropical Asia but not in China.

The Chinese plant is widely cultivated as an ornamental and is used medicinally.


西南文殊兰 xi nan wen shu lan
Crinum esquirolii H. Lévéeil; C. ornatum Herbert var. latifolium (Linnaeus) Herbert.

Herbs perennial, fairly stout. Leaves ligulate, usually ca. 70 × 3.5–6 cm or more. Umbel several flowered; bracts linear; involucres 2, lanceolate, ca. 9 cm. Pedicel very short. Perianth subsalverform; tube slightly curved, ca. 9 cm; lobes white, often tinged with red, lanceolate to oblong-lanceolate, ca. 7.5 × 1.5 cm, apex shortly acuminated. Filaments shorter than perianth; anther linear, 1.2–1.8 cm. Fl. Jun–Aug.

Dry riverbeds, sandy soil. Guangxi, Guizhou, Yunnan [India, Laos, Myanmar, Sri Lanka, Thailand, Vietnam].


Herbs perennial, bulbiferous. Leaves basal, sessile, linear or ligulate. Flowering stem solid. Inflorescences umbellate, 1- to many flowered; involucres 2. Pedicel often short. Perianth subfunnelform; lobes 6, spreading, lanceolate or linear. Stamens inserted at throat of perianth tube; filaments connate into a cup for most of their length but apically free; anthers versatile, linear. Ovary with many ovules. Style filiform; stigma capitate, sometimes somewhat 3-lobed to -branched, small. Fruit a capsule, 3-valved, loculicidal. Seeds black, subfimbriae sometimes present at throat of tube.

About 15 species: Mediterranean region to tropical Africa and Asia; one species in China.


Herbs flowered; involucres lanceolate. Perianth tube green, slender, 10–12 cm; lobes white, linear, subequaling tube. Staminal cup ca. 1/3 as long as perianth tube and equal to free part of filament. Fl. Jul–Aug.

About 15 species: China, India, Japan, Korea, Laos, Myanmar, Pakistan, Thailand, Vietnam; 15 species (ten endemic) in China.

4. Lycoris Herbert, Bot. Mag. 47: 5 sub t. 2113. 1819.

Herbs perennial, bulbiferous. Bulbs subglobose to ovoid; tunic brown to black-brown. Leaves appearing before or after anthesis, ligulate. Flowering stem erect, simple, solid. Inflorescences umbellate, 1- to many flowered; involucres 2, membranous. Perianth white, creamy, gold, pink, or bright red, funnelform; lobes oblanceolate to narrowly elliptic, margin sometimes undulate; ring of 6 perianth scales or limbores sometimes present at throat of tube. Stamens inserted at throat of perianth tube; filament filiform; anther versatile. Ovary with few ovules. Style slender; stigma capitate, very small. Fruit a capsule, 3-valved, usually 3-angled, loculicidal. Seeds black, subglobose.

About 20 species: China, India, Japan, Korea, Laos, Myanmar, Pakistan, Thailand, Vietnam; 15 species (ten endemic) in China.

1a. Flowers actinomorphic; perianth lobes apically slightly recurved, margin basally minutely undulate or not undulate.

2a. Margin of perianth lobes not undulate.

3a. Perianth pale purple but apically blue, tube 1–1.5 cm; leaves ca. 1 cm wide .............................................. 14. L. sprengeri

3b. Perianth white or yellow, tube 4–6 cm; leaves 1.5–2 cm wide .......................................................... 15. L. longituba

2b. Margin of perianth lobes basally minutely undulate.

4a. Leaves first appearing in autumn and then reappearing in spring; perianth purple ..................... 11. L. squamigera

4b. Leaves appearing in spring; perianth yellow or white.

5a. Perianth yellow, tube 2.5–3.5 cm; leaves ca. 2 cm wide .............................................................. 12. L. anhuiensis

5b. Perianth white, gradually changing to yellowish pink, tube ca. 1 cm; leaves ca. 1.2 cm wide ....... 13. L. incarnata

1b. Flowers zygomorphic; perianth lobes recurved, margin undulate.

6a. Leaves appearing in autumn; stamens obviously longer than perianth.

7a. Perianth yellow or light rose red.

8a. Perianth yellow; leaves ensiform, ca. 60 × 2 cm, apex acuminate ................................................. 4. L. aurea

8b. Perianth light rose red; leaves ligulate, ca. 20 × 1 cm, apex rounded ........................................... 5. L. rosea

7b. Perianth bright red, white, or ocherous.

9a. Perianth bright red; leaves narrowly ligulate, ca. 0.5 cm wide ..................................................... 1. L. radiata

9b. Perianth white or ocherous; leaves ligulate, 1.2–1.5 cm wide.

10a. Perianth ocherous; leaves green .............................................................. 2. L. straminea

10b. Perianth white; leaves dark green .......................................................... 3. L. houdyshelii

6b. Leaves appearing in spring; stamens shorter to slightly longer than perianth.

11a. Stamens shorter than perianth; leaf midvein not distinctly pale.

12a. Perianth pink in bud, becoming creamy at anthesis, then gradually fading to white, lobes without pink stripes .............................................. 9. L. caldwellii

12b. Perianth white with red stripes in bud, fading to white at anthesis, lobes abaxially with scattered, pink stripes .............................................. 10. L. shaaxiensis

11b. Stamens nearly as long as to slightly longer than perianth; leaf midvein distinctly pale (except...
1. Lycoris radiata (L’Héritier) Herbert, Bot. Mag. 47: 5 sub t. 2113. 1819.

江苏石蒜 zhong guo shi suan


Bulbs subglobose, 1–3 cm in diam. Leaves appearing in autumn, dark green, narrowly ligulate, ca. 15 × 0.5 cm, midvein pale, apex obtuse. Flowering stem ca. 30 cm. Umbel 4–7-flowered; involucres 2, lanceolate, ca. 3.5 × 0.5 cm. Perianth light rose; tube ca. 1 cm; lobes recurved, oblanceolate, ca. 4 × 0.6 cm, margin strongly undulate. Stamens conspicuously exerted, 5–6 cm. Ovary subglobose, ca. 0.6 cm in diam. Fl. Aug.

- Shady and moist slopes; ca. 100 m. Jiangsu, Zhejiang.


江苏石蒜 jiang su shi suan

Bulbs subglobose, ca. 3 cm in diam. Leaves appearing in autumn, dark green, ligulate, ca. 30 × 1.2 cm, midvein pale, apex obtuse. Flowering stem ca. 30 cm. Umbel 4–7-flowered; involucres 2, oblong-lanceolate, ca. 2 × 0.8 cm. Perianth white; tube ca. 0.8 cm; lobes strongly recurved, axially with pale green midvein, oblanceolate, ca. 4 × 0.8 cm, margin strongly undulate. Stamens conspicuously exerted, 5–6 cm; filament white. Style pink at apex. Fl. Sep. 2n = 30*.

- Shady slopes. Jiangsu, Zhejiang.

This triploid species is widely cultivated in S China. Further study is required to show whether it really occurs in the wild or only as cultivated plants, as was suggested by Hsu et al. (Sida 16: 321. 1994).


忽地笑 hu di xiao


Bulbs ovoid, ca. 5 cm in diam. Leaves appearing in autumn, ensiform, ca. 60 × 1.7–2.5 cm, midvein pale, base and apex gradually tapering. Flowering stem ca. 60 cm. Involucres 2, lanceolate, ca. 3.5 × 0.8 cm. Perianth yellow; tube 1.2–1.5 cm; lobes strongly recurved, axially with pale green midvein, oblanceolate, ca. 6 × 0.4–1 cm, margin strongly undulate. Stamens slightly or long exerted, 7–12 cm; filament yellow. Style rose red at apex. Capsule 3-angled, loculicidal. Seeds few, black, subglobose, ca. 0.7 cm in diam. Fl. Aug–Sep. 2n = 12–16.

Shady and moist places on slopes, rock crevices; (100–)500–2300 m. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hebei, Hunan, Jiangsu, Jiangxi, Shandong, Shannxi, Sichuan, Yunnan, Zhejiang [India, Indonesia, Japan, Laos, Myanmar, Pakistan, Thailand, Vietnam].

Lycoris traubii W. Hayward (Pl. Life 13: 40. 1957) has been named for plants from S Gansu (Kang Xian) and SW Shaanxi (Feng Xian) that are characterized by narrow perianth lobes (0.4–0.8 cm wide) and long exerted stamens (1.5–2 × as long as perianth).

Lycoris aurea is cultivated as an ornamental in S China.


玫瑰石蒜 mei gui shi suan

Bulbs subglobose, ca. 2.5 cm in diam. Leaves appearing in autumn, pale green, ligulate, ca. 20 × 0.8 cm, midvein pale. Flowering stem pale rose red, ca. 30 cm. Umbel ca. 5-flowered; involucres 2, oblong-lanceolate, ca. 3.5 × 0.5 cm. Perianth light rose red; tube ca. 1 cm; lobes recurved, oblanceolate, ca. 4 × 0.8 cm, margin undulate. Stamens exerted, 4.5–5 cm. Fl. Sep. 2n = 32*.

- Shady slopes, rocky places. Jiangsu, Zhejiang.

According to Hsu et al. (Sida 16: 326–327. 1994), this species is believed to be a hybrid between Lycoris radiata var. pumila Grey and L. sprengeri.


中国石蒜 zhou guo shi suan

Bulbs ovoid, ca. 4 cm in diam. Leaves appearing in spring, green, midvein distinctly pale, apex rounded. Flowering stem ca. 60 cm. Umbel 5- or 6-flowered; involucres 2, oblong-lanceolate, ca. 2.5 × 0.8 cm. Perianth yellow; tube 1.7–2.5 cm; lobes strongly recurved, axially with pale yellow midvein, oblanceolate.
ca. 6 × 1 cm, margin strongly undulate. Stamens nearly as long as or somewhat longer than perianth; filament yellow. Style rose red at apex. Fl. Jul–Aug. 2n = 16.

Mixed forests, shady and moist slopes. Henan, Jiangsu, Shandong, Zhejiang [S Korea].

This species is related to *Lycoris aurea*, but the leaves appear in spring.


广西石蒜 guang xi shi suan

Bulbs ovoid, ca. 3 cm in diam. Leaves appearing in early spring, dark green, narrowly ligulate, 24–30 × 1–1.2 cm, midvein distinctly pale, apex obtuse. Flowering stem ca. 50 cm. Umbel 3–6-flowered; involucres 2, pale brown, ovate-lanceolate to lanceolate, ca. 4 × 1(–1.5) cm. Perianth yellow with red stripes in bud; tube 1.5–2 cm; lobes adaxially slightly undulate to lanceolate, abaxially with a few scattered, pink stripes, obovate-oblanceolate to oblanceolate, ca. 7 × 1.5 cm, base clawed, ca. 0.5 cm wide, margin minutely undulate, apex acute. Stamens nearly as long as perianth. Fl. Jul–Aug.

- Mixed forests, shady and moist places on slopes. Guangxi.

**8. Lycoris albiflora** Koidzumi, Bot. Mag. (Tokyo) 38: 100. 1924.

乳白石蒜 ru bai shi suan

Bulbs ovoid, ca. 4 cm in diam. Leaves appearing in spring, green, ligulate, ca. 35 × 1.5 cm, midvein not distinctly pale, apex obtuse. Flowering stem ca. 60 cm. Umbel 6–8-flowered; involucres 2, pale pink, oblanceolate, ca. 3.5 × 1.2 cm. Perianth white; tube ca. 2 cm; lobes adaxially slightly undulate. Stamens nearly as long as perianth; filament pale red at apex. Style slightly longer than perianth; stigma rose red. Fl. Aug–Sep. 2n = 16*.

- Mountain slopes. Jiangsu [Japan, Korea].


短蕊石蒜 duan rui shi suan

Bulbs subglobose, ca. 4 cm in diam. Leaves appearing in early spring, green, ligulate, ca. 30 × 1.5 cm, midvein not distinctly pale, apex obtuse. Flowering stem ca. 50 cm. Umbel 5–8-flowered; involucres 2, pale pink, lanceolate to broadly so, 5–7 × ca. 1.2 cm. Perianth white; tube ca. 2 cm; lobes recurved, adaxially with a few scattered, pale red stripes, abaxially with red midvein, margin minutely undulate. Stamens shorter than perianth; filament pale purple. Style slightly longer than perianth, apex purple. Fl. Aug–Sep.

- Shady slopes. Shaanxi, Sichuan.


鹿葱 lu cong

Bulbs ovoid, ca. 5 cm in diam. Leaves first appearing in autumn and a second time in early spring, green, ligulate, ca. 8 × 2 cm, apex obtuse. Flowering stem ca. 60 cm. Umbel 4– or 5-flowered; involucres 2, narrowly ovate to lanceolate, 6 × 1.3 cm. Perianth pale purple; tube ca. 2 cm; lobes oblanceolate, ca. 7 × 1.8 cm, margin basally slightly undulate. Stamens nearly as long as perianth. Style slightly longer than perianth. Fl. Aug. 2n = 27.

Shady and moist often disturbed places, along valleys, beside streams; near sea level to 1200 m. Jiangsu, Shandong, Zhejiang [Japan, Korea].


安徽石蒜 an hui shi suan

Bulbs ovoid to ovoid-ellipsoid, 3–4.5 cm in diam. Leaves appearing in early spring, ligulate but gradually tapering toward apex, ca. 35 × 1–5 × 2 cm, midvein pale, apex obtuse. Flowering stem ca. 60 cm. Umbel 4–6-flowered; involucres 2, narrowly ovate to lanceolate, 3–3.5 × ca. 1.2 cm. Perianth yellow, ca. 7.5 cm in diam.; tube 2.5–3.5 cm; lobes strongly recurved and widely spreading, obovate-oblanceolate, ca. 6 × 1.5 cm, margin basally minutely undulate. Stamens nearly as long as perianth. Style slightly longer than perianth. Fl. Aug. 2n = 16*.

- Rock crevices on slopes. Anhui, Jiangsu.

**13. Lycoris incarnata** Comes ex Sprenger, Gartenwelt 10: 490. 1906.

香石蒜 xiang shi suan

Bulbs ovoid, ca. 3 cm in diam. Leaves appearing in early spring, green, ligulate but gradually tapering toward apex, ca. 50 × 1.2 cm, midvein inconspicuously pale, apex obtuse. Perianth with red midvein in bud, gradually changing to yellowish pink; tube ca. 1 cm; lobes adaxially with scattered, red stripes, abaxially with purple midvein, oblanceolate, ca. 5 × 1.2 cm, margin minutely undulate. Stamens nearly as long as perianth; filament purple. Style purple, darker at apex, slightly longer than perianth. Fl. Sep. 2n = 30*.

- Mountain slopes. Hubei, Yunnan.


换锦花 huan jin hua

Bulbs ovoid, ca. 3.5 cm in diam. Leaves appearing in early spring, green, ligulate, ca. 30 × 1 cm, apex obtuse. Flowering

**水仙属** shui xian shu

Herbs perennial, bulbiferous. Bulbs with a membranous tunic. Leaves basal, linear or terete. Flowering stem solid. Inflorescence a several-flowered umbel or sometimes a solitary flower; involucres membranous, basally tubular. Flowers erect or pendulous. Perianth tube cylindrical or funnelform, short; lobes 6, erect or recurved, subequal; corona narrowly tubular, corollalike or shallowly cupular. Stamens inserted in perianth tube; anther basifixed. Ovary with many ovules. Style filiform; stigma 3-lobed, small. Fruit a loculicidal capsule. Seeds subglobose.

About 60 species: mainly in C Europe and the Mediterranean region; one species in China.

Additional species of Narcissus, e.g., *N. jonquilla* Linnaeus and *N. pseudonarcissus* Linnaeus, are cultivated as garden plants in China but are not described in this account.


**水仙** shui xian

Bulbs ovoid. Leaves broadly linear, flat, 20–40 × 0.8–1.5 cm, margin entire, apex obtuse. Flowering stems usually equaling leaves. Umbels 4–8-flowered; involucres membranous. Flowers fragrant; pedicels unequal, perianth tube glaucous, ca. 2 cm, slender, nearly 3-angled; lobes widely spreading, white, broadly elliptic to ovate, apex shortly acute; corona pale yellow, shallowly cupular, less than 1/2 as long as perianth, margin not undulate. Stamens ca. 4 mm, not exerted. Fl. Feb–Mar. 2n = 30*.

- Sandy places, wastelands; near sea level to 100 m. SE Fujian, E Zhejiang.


**黄水仙** huang shui xian

Bulbs ovoid. Leaves broadly linear, flat, 20–40 × 0.8–1.5 cm, margin entire, apex obtuse. Flowering stems usually equaling leaves. Umbels 4–8-flowered; involucres membranous. Flowers fragrant; pedicels unequal, perianth tube glaucous, ca. 2 cm, slender, nearly 3-angled; lobes widely spreading, white, broadly elliptic to ovate, apex shortly acute; corona pale yellow, shallowly cupular, less than 1/2 as long as perianth, margin not undulate. Stamens ca. 4 mm, not exerted. Fl. Feb–Mar. 2n = 16*.

- *Mountain slopes, shady and moist areas on slopes; low elevations. Jiangsu.*

1a. **Perianth white, lobes adaxially with pale red stripes** ........................................ 15a. var. **longituba**

1b. **Perianth yellow** ............................................ 15b. var. **flava**

15a. **Lycoris longituba** var. **longituba**

**长筒石蒜** chang tong shi suan

Perianth white; lobes adaxially with pale red stripes. Fl. Jul–Aug.

- *Mountain slopes; low elevations. Jiangsu.*


**黄长筒石蒜** huang chang tong shi suan


- Shady and moist areas on slopes; low elevations. Jiangsu.
About three species: C and SW Asia, NE Africa (Egypt); two species (one endemic) in China.

1a. Perianth segments spreading, free, sometimes laxly connivent proximally into a pseudotube; filament purple, anther basifixed ............................................................. 1. *I. tataricum*

1b. Perianth segments recurved, connate proximally into a true tube; filament white, anther dorsifixed .................. 2. *I. songaricum*

1. *Ixiolirion tataricum* (Pallas) Herbert, Appendix 37. 1821.

鸢尾蒜 yuan wei suan

<table>
<thead>
<tr>
<th>Corms ovoid, 1.5–2.5 × (2–5) cm; tunic brown, longitudinally striate. Basal leaves usually 3–8, linear. Flowering stem 10–40 cm, base with 1–3 smaller leaves; bracts smaller than involucre, membranous. Inflorescence an umbel or short raceme, 3–6-flowered, sometimes basal leaf axil of flowering stem with 1–3 additional flowers; involucres 2 or 3, white or green, lanceolate, to 3.5 cm, membranous, apex acuminate and aristate. Pedicels unequal. Perianth azure to dark violet or light violet; segments spreading, free, sometimes laxly connivent proximally into a ca. 1 cm long pseudotube. Fl. Apr–May.</th>
<th>Perianth light blue, segments 1–3 mm wide, laxly connivent proximally into a ca. 1 cm long pseudotube. Fl. Apr–May.</th>
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| No. 1. var. tataricum | No. 1. var. tataricum

1a. Perianth azure to dark violet, segments not connivent proximally into a pseudotube .............................. 1. var. tataricum

1b. Perianth light blue, segments laxly connivent proximally into a ca. 1 cm long pseudotube .............................. 1. var. ixiolirioides


假管鸢尾蒜 jia guan yuan wei suan


Perianth light blue, segments 1–3 mm wide, laxly connivent proximally into a ca. 1 cm long pseudotube. Fl. Apr–May.

Stony slopes. N Xinjiang [Kazakhstan, Kyrgyzstan].

Rudolf Kamelin (pers. comm.) notes that this taxon differs from var. *tataricum* in other characters and would be better recognized at the rank of species.

2. *Ixiolirion songaricum* P. Yan in N. R. Cui, Fl. Xinjiang. 6: 605. 1996.

准噶尔鸢尾蒜 zhun ga er yuan wei suan

Corms subovoid, 1.5–3 × 0.8–2.2 cm; tunic brown, longitudinally striate. Basal leaves linear, 1.5–3 × 0.2–0.5(–0.7) cm. Inflorescence an umbel, 3–6-flowered, sometimes middle leaf axil of flowering stem with 1 or 2 additional flowers. Pedicels unequal, 1–3 cm. Perianth azure or pale purple, 1.8–3 cm; segments recurved, connate proximally into a true tube 9–11 mm, linear or linear-lanceolate, outer segments 1.5–2.5 mm wide, apex with an angular appendix with tufted hairs inside; inner segments 2.5–3.5 mm wide, apex acute. Stamens unequal; filament white, 3 outer ones filiform, 1.1–1.4 cm, 3 inner ones linear-oblancoate, 1.6–2.1 cm; anther dorsifixed. Stigma blue-purple, 1.3–1.8 cm. Capsule 10–16 × 4–7 mm. Fl. Apr–May, fr. May–June.

• Dry slopes and fields; 400–1600 m. Xinjiang (N slopes of Tian Shan).


龙舌兰属 long she lan shu

Plants perennial or monocarpic. Stems very short or indistinct. Leaves in a basal rosette, large, stout, leathery-fleshy or somewhat woody, containing many fibers, margin usually spiny, rarely entire, apex tipped with a spine. Flowering stems branched or simple, tall, stout. Inflorescence terminal, a spike or panicle, mostly very large. Perianth tube short; lobes narrow, subequal. Stamens inserted at throat or in tube of perianth; filament filiform, usually longer than perianth; anther versatile. Ovary with many ovules. Style slender; stigma 3-lobed. Fruit a capsule, oblong, 3-valved, loculicidal. Seeds numerous, black, thin, flattened.

About 200 species: arid and semiarid regions of the W hemisphere; two species (introduced) in China.

*Agave* is often placed in a distinct family, the Agavaceae. Recent molecular research suggests that *Hosta* Trattinnick is quite closely related.

Additional species of *Agave*, e.g., *A. angustifolia* Haworth and *A. cantala* Roxburgh, are cultivated as garden plants in China but are not described in this account.

1a. Leaves usually 200–250, apex straight ............................................................. 1. *A. sisalana*

1b. Leaves usually 30–40, apex recurved ............................................................. 2. *A. americana*

剑麻  jian ma  

Stems short, thick. Leaves usually 200–250, in a basal rosette before inflorescence develops, glaucous when young, later dark blue-green, ensiform, straight, usually 1–1.5 m × 10–15 cm, fleshy, adaxially concave, abaxially convex, margin not spiny or rarely spiny, apex straight and tipped with a red-brown spine 2–3 cm. Panicle to 6 m, stout, usually bearing bulblets after anthesis. Flowers with a strong smell; pedicel 5–10 mm. Perianth yellowish green; tube 1.5–2.5 cm; lobes obovate-oblancoate, 1.2–2 × 0.6–0.8 cm. Stamens inserted at base of perianth lobes; filament yellow, 6–8 cm; anther ca. 2.5 cm. Ovary oblong, ca. 3 cm. Style slender, 6–7 cm; stigma slightly capitate. Capsule oblong, ca. 6 × 2–2.5 cm.

Widely cultivated. S China [native to Mexico].  

The leaves are used as a source of fiber.


龙舌兰  long she lan  

Stems indistinct. Leaves usually 30–40 or more, in a massive basal rosette, oblate-spherical, 1–2 m × 15–20 cm, fleshy, margin spiny, apex recurved and tipped with a dark brown spine 1.5–2.5 cm. Panicle many branched, 6–12 m, usually bearing few bulblets after anthesis. Perianth greenish yellow; tube ca. 1.2 cm; lobes 2.5–3 cm. Stamens ca. 2 × as long as perianth. Capsule oblong, ca. 5 cm.

Widely cultivated. Naturalized in S China [native to tropical America].  

The leaves are used medicinally and as a source of fiber.


仙茅属  xian mao shu

*Molineria* Colla.

Herbs perennial, often with tuberous rhizomes. Leaves several, basal, sessile or petiolate; leaf blade usually lanceolate, plicate, leathery or papery. Flowering stems axillary, erect or apically bent downward, long or short. Inflorescences racemose, spicate, or subcapitate. Flowers bisexual or unisexual. Perianth often yellow; segments spreading, subequal, sometimes basally connate into a tube. Stamens inserted at base of perianth segments; anther nearly basifixed or dorsifixed; filament very short, sometimes subequaling anther. Ovary usually hairy; ovaries 2 to many. Style columnar, slender; stigma 3-lobed. Fruit a berry, indehiscent, apex sometimes beaked; berry (when present) formed by persistent perianth tube. Seeds small, often striped; hilum conspicuous.

About 20 species: tropical and subtropical regions worldwide; seven species (two endemic) in China.

Wu Zhengyi (editor’s note) believes that species nos. 1–4 would be better treated in the genus *Molineria*, which has recently been treated as separate from *Curculigo*, e.g., by Nordal (in Kubitzki, Fam. Gen. Vasc. Pl. 3: 294. 1998).

1a. Berry with a slender beak 2.5–7 mm.
   2a. Leaves 0.5–2.5 cm wide; berry beak ca. 2.5 mm .......................................................... 6. *C. orchioides*
   2b. Leaves 3–8 cm wide; berry beak 6–7 mm .......................................................... 7. *C. glabrescens*

1b. Berry beakless or very shortly beaked.
   3a. Leaves abaxially white tomentose .......................................................... 5. *C. crassifolia*
   3b. Leaves abaxially glabrous or laxly hairy but never tomentose.
      4a. Racemes 2.5–5 cm, densely flowered; berry beakless.
         5a. Flowering stems (10–)15–30 cm; filaments inconspicuous; berry subglobose, 4–5 mm in diam. ....... 1. *C. capitulata*
         5b. Flowering stems ca. 5 cm; filaments 3–3.5 mm; berry ovoid-ellipsoidal, ca. 9 mm in diam. ............... 2. *C. breviscapa*
      4b. Racemes 6–9 cm, laxly or densely flowered; berry very shortly beaked.
         6a. Leaves slightly plicate, papery; inflorescences suberect, 10–12-flowered ........................................... 3. *C. gracilis*
         6b. Leaves strongly plicate, leathery; inflorescences nodding, densely 40- or more flowered ............ 4. *C. sinensis*


大叶仙茅  da ye xian mao  

*Leucojum capitulatum* Loureiro, Fl. Cochinch. 1: 199. 1790; *Curculigo fuziariorae* Yamamoto; *C. recurvata* W. T. Aiton; *C. strobiliformis* D. Fang & D. H. Qin; *Molineria capitulata* (Loureiro) Herbert; *Tupistra esquirolii* H. Léveillé & Vaniot; *Veratrnum mairei* H. Léveillé.

Herbs to 1 m tall, stout. Rhizomes tuberous, thick, with creeping, slender stolons. Leaves often 4–7; petiole 30–80 cm; leaf blade oblong-lanceolate to suboblong, 40–90 × 5–14 cm, plicate, papery, sometimes pubescent, margin entire, apex acuminate. Flowering stems (10–)15–30 cm, brown villous. Racemes nodding, capitate to subovoid, 2.5–5 cm, densely many flowered; bracts ovate-lanceolate to lanceolate, 1.5–2.5 cm, hairy. Pedicel ca. 7 mm. Perianth yellow; segments ovate-oblong, ca. 8 × 3.5–4 mm, apex obtuse, outer segments adaxially hairy, inner ones adaxially hairy on midvein or at base of midvein. Stamens 5–6 mm; filament less than 1 mm; anther linear, ca. 5 mm. Ovary subglobose to oblong, hairy. Style longer than stamens; stigma subcapitate. Berry white, subglobose, 4–5 cm in diam., beakless. Seeds black with irregular stripes. Fl. May–Jun, fr. Aug–Sep.

Forests, shady and moist places; (300–)800–2200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Xizang, Yunnan [Bangladesh, Bhutan, India, Indonesia, Japan, Laos, Malaysia,
Guangdong, Guangxi.


短葶仙茅 duan ting xian mao

Rhizomes short, slightly thick. Leaves often 5 or 6; petiole ca. 60 cm × 3–4 mm, usually tomentose, base with a black, membranous margin; leaf blade green, lanceolate, 70–75 × ca. 10.5 cm, plicate, papery, adaxially glabrous, abaxially laxly strigose on conspicuous veins, base obliquely cuneate, apex acuminate. Flowering stems ca. 5 cm, brown tomentose. Inflorescences nodding, capitulate, subglabose, 3–3.5 cm in diam.; bracts oblong-lanceolate, basal ones 0.8–2.5 cm, abaxially tomentose. Pedicel 2–10 mm. Perianth yellow; segments suboblanceolate to ovate-oblong, 10–12 × ca. 4 mm, outer segments abaxially hairy, inner ones abaxially hairy on midvein. Stamens shorter than perianth segments; filaments 3–3.5 mm; anthers ca. 5 mm. Ovary oblong, ca. 1/2 as long as pedicel. Style columnar, 1–1.2 cm, slightly angled; stigma subcapitate. Berry ovoid-ellipsoid, ca. 1.3 × 0.9 cm, pubescent, beakless. Seeds black, subglobose, Fl. Apr–May. fr. Jun.

- Dense forests along valleys or streams; near sea level to 600 m. Guangdong, Guangxi.


疏花仙茅 shu hua xian mao


Rhizomes very short, with creeping, slender stolons. Leaves 5–9; petiole 7–13 cm; leaf blade lanceolate to suboblong lanceolate, 20–50 × 3–5 cm, papery to thickly so, adaxially glabrous, abaxially slightly pilose on veins, base acuminate, apex acuminate to subcaudate. Flowering stems decumbent to suberect, 13–20 cm, brown hairy. Racemes 6–9 cm, usually laxly 10–12-flowered; bracts linear-lanceolate, basal ones longer than flowers, margin and apex hairy. Pedicel 3–5 mm. Perianth yellow; segments oblong-lanceolate, 8–12 × 2.5–3 mm, abaxially strigose on midvein. Stamens ca. 2/3 as long as perianth segments; filament very short; anther sublinear, 6–7 mm. Ovary oblong, ca. 1 cm, brown tomentose. Style ca. 1 cm; stigma capitate, 1.5–2 mm in diam. Berry bottlelike, ca. 2 cm, slightly hairy, very shortly beaked. Seeds black, striped. Fl. May.

Shady and moist forests; ca. 1000 m. Guangxi, Guizhou, Sichuan [Cambodia, Nepal, Thailand, Vietnam].


中华仙茅 zhong hua xian mao

Rhizomes short, thick. Petiole ca. 40 cm; leaf blade oblong-lanceolate to linear-lanceolate, ca. 85 × 4 cm, strongly plicate, leathery, adaxially subglabrous, abaxially villous, particularly on veins, base tapering, apex narrowly acuminate. Flowering stems nodding, ca. 15 cm, tomentose. Racemes ca. 9 cm, densely 40- or more flowered; bracts linear-lanceolate to subulate, 3–3.5 × 0.2–0.3 cm, base and margin hairy. Pedicel hairy, 2–3 mm. Perianth ca. 1 cm in diam.; segments suboblanceolate, 5–6 × 2.5–4 mm, apex acute, outer segments abaxially strigose on midvein, inner ones glabrous. Stamens ca. 1/2 as long as perianth segments; filaments very short; anther oblong-lanceolate, ca. 3 mm. Ovary fusiform, ca. 8 mm, tomentose. Style columnar, longer than stamens, slightly angled; stigma subcapitate. Berry ca. 1.6 cm, tomentose, very shortly beaked. Fl. Apr–May.

- Grassy slopes; ca. 1800 m. SE Yunnan.


绒叶仙茅 rong ye xian mao


Rhizomes tuberous, short, thick. Petiole ca. 40 cm; leaf blade oblong-lanceolate to linear-lanceolate, to 1 m or more, strongly plicate, abaxially white tomentose, apex narrowly acuminate. Flowering stems usually erect, 12–30 cm, tomentose, apex slightly pendent. Racemes to 7 × 5 cm, densely many flowered. Bracts lanceolate, 2–3 cm, margin and apex often hairy. Pedicel very short. Perianth yellow; segments suboblong, 10–12 × 4–6 mm, abaxially hairy on midvein, apex obtuse. Stamens ca. 1/2 as long as perianth segments; filament very short. Ovary oblong, ca. 1 cm, brown tomentose. Style slightly longer than stamens; stigma capitate. Berry oblong-ovoid, ca. 1 × 1 cm. Seeds longitudinally striped. Fl. May–Oct.

Forests, grassy slopes; 1500–2500 m. Yunnan [Bhutan, NE India, Nepal, Sikkim].


仙茅 xian mao

Curculigo orchioides var. minor Bentham.

Rhizomes erect, subcylindric, ca. 10 × 1 cm. Leaves sessile or shortly petiolate; leaf blade lanceolate to linear, usually 10–45(–90) × 0.5–2.5 cm, laxly pilose or glabrous, base tapering, apex narrowly acuminate. Flowering stems nearly enclosed in base of sheathing petiole, 6–7 cm, pilose; bracts lanceolate, 2.5–5 cm, margin ciliate. Inflorescences umbel-like racemes, 4–6-flowered. Pedicel ca. 2 mm. Perianth yellow; segments oblong-lanceolate, 8–12 × 2.5–3 mm, outer ones sometimes abaxially laxly pilose. Stamens ca. 1/2 as long as perianth segments; filaments 1.5–2.5 mm; anther 2–4 mm. Ovary narrowly oblong, to 7.5 mm, pilose. Stigma lobes longer than style. Berry subfusiform, 1.2–1.5 × ca. 0.6 cm; beak ca. 2.5 mm. Fl. and fr. Apr–Sep.

Forests, open grassy slopes; near sea level to 1600 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Taiwan, Zhejiang [Cambodia, India, Indonesia, Japan, Laos, Myanmar, Pakistan, Papua New Guinea, Philippines, Thailand, Vietnam].

The rhizomes are used medicinally.

7. Curculigo glabrescens (Ridley) Merrill, J. Straits Branch

小金梅草属 xiao jin mei cao shu

Herbs perennial. Rhizomes subglobose or tuberous. Leaves 3–20, basal, sessile. Flowering stems shorter than leaves, slender, usually pilose. Inflorescences terminal, umbellate or racemose, few flowered or flower solitary. Perianth segments free, persistent. Stamens inserted at base of perianth segments; filament short; anther nearly basifixed. Style short; stigma 3-lobed. Fruit a capsule.

Between 50 and 100 species: widely distributed in both hemispheres (absent from Europe); one species in China.


小金梅草 xiao jin mei cao

Plants small. Rhizomes globose to cylindric, fleshy, covered with fibers. Leaves 4–12, linear, 7–30 cm × 2–6 mm, yellow pilose, base membranous, apex narrowly acute, yellowish brown pilose. Flowering stems 2.5–10 cm or more, slender, 1- or 2-flowered, pale brown pilose; bracts 2, setaceous, small. Perianth yellow; segments oblong, 6–8 mm, brown pilose, persistent. Filaments short. Ovary 3–6 mm, pilose. Style short; stigma erect, 3-lobed. Capsule clavate, 6–12 mm, 3-valved. Seeds numerous, subglobose, tuberculate.

Forest margins, moist grassy slopes; near sea level to 2600 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Thailand, Vietnam].


芒苞草属 mang bao cao shu

Rhizomes short, with tufted roots. Leaves basal, suberete, grooved, base sheathing. Flowering stems erect, simple, slightly shorter than leaves. Inflorescence an abbreviated cyme, capitulate, (1 or)2–5-flowered; bracts 8–18 per flower, sheathing stem, leaflike. Flowers bisexual, actinomorphic; pedicel very short. Perianth corollalike; segments basally connate into a tube, inner ones slightly smaller than outer. Stamens inserted opposite perianth segments, outer ones slightly larger than inner and attached near middle of perianth tube; inner ones attached at base of inner perianth segments and with short filaments; anthers nearly dorsifixed, locules 2, parallel; connective slightly exerted. Ovary inferior; ovules many. Style columnar; stigma (2 or)3-lobed. Fruiting a capsule, obliquely lanceolate, slightly 3-angled, beaked. Seeds numerous, ellipsoid.

• One species: China.

Acanthochlamys has also been treated as belonging to the Velloziaceae (Wu, J. Jap. Bot. 63: 297–311. 1988) or placed in its own family, the Acanthochlamydaeae (Kao, Acta Bot. Sichuan. 1–14. 1989).


芒苞草 mang bao cao

Plants tufted, 1.5–5 cm tall. Rhizomes hard, 1–2 mm thick. Leaves suberect, 2.5–7 cm × ca. 0.3 mm, grooved on both surfaces. Flowering stems 2–5.5 cm. Cymes broomlike; 8–10 × 5–8 mm; 2 bracts at base of inflorescence 8–10 mm, persistent. Perianth red to purple, 3.5–6.5 mm; segments ovate, 3-veined, apex obtuse to acute, outer segments 1.5–3 mm, larger than inner ones. Anthers oblong, outer ones 0.8–1 mm, shorter than inner ones. Ovary oblong, 1.3–2 × ca. 1 mm. Style 2–3 mm, usually slightly dilated below middle; stigma lobes ca. 0.3 mm. Capsule ca. 7 × 3 mm, spongy, apex white with a beak ca. 1 mm. Seeds ca. 0.8 × 0.5 mm, both ends obtuse. Fl. Jun, fr. Aug.

• Open scrub, grassy slopes; 2700–3500 m. W Sichuan, E Xizang.