

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

石蒜属 shi suan shu

Herbs perennial, bulbiferous. Bulbs subglobose to ovoid; tunic brown to black-brown. Leaves appearing before or after anthesis, ligulate. Flowering stem erect, simple, solid. Umbel terminal, 4–8-flowered; involucre 2, membranous. Perianth white, creamy, gold, pink, or bright red, funnellform; lobes oblanceolate to narrowly elliptic, margin sometimes undulate; ring of 6 perianth scales or fimbriae 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. houdyshellii*
  - 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. shaanxiensis*
    - 11b. Stamens nearly as long as to slightly longer than perianth; leaf midvein distinctly pale (except in *L. albiflora*).
      - 13a. Perianth pink in bud, becoming creamy as buds develop, then gradually fading to white, lobes adaxially with scattered, pink stripes, abaxially with pink midvein ..... 8. *L. albiflora*
      - 13b. Perianth yellow, lobes with or without stripes or spots.
        - 14a. Perianth lobes without red stripes; leaves green, ligulate, ca. 3.5 × 2 cm ..... 6. *L. chinensis*
        - 14b. Perianth lobes abaxially with red stripes or brushlike spots; leaves dark green, narrowly ligulate, 24–29 × 1–1.2 cm ..... 7. *L. guangxiensis*

**1. *Lycoris radiata*** (L'Héritier) Herbert, Bot. Mag. 47: 5 sub t. 2113. 1819.

石蒜 shi suan

*Amaryllis radiata* L'Héritier, Sert. Angl. 16. 1788.

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; involucre 2, lanceolate, ca. 3.5 × 0.5 cm. Perianth bright red; tube green, ca. 0.5 cm; lobes strongly recurved, narrowly oblanceolate, ca. 3 × 0.5 cm, margin strongly undulate. Stamens conspicuously exserted. Fl. Aug–Sep. fr. Oct.  $2n = 22, 32, 33$ .

Shady and moist places on slopes, rocky places along stream

banks; near sea level to 1000(–2500) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Shaanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Nepal].

The fertile, diploid populations are *Lycoris radiata* var. *pumila* Grey (Hardy Bulbs 2: 58. 1938) according to Hsu et al. (Sida 16: 325. 1994), while the morphologically essentially identical, triploid populations are *L. radiata* var. *radiata*.

**2. *Lycoris straminea*** Lindley, J. Hort. Soc. London 3: 76. 1848.

稻草石蒜 dao cao shi suan

Bulbs subglobose, ca. 3 cm in diam. Leaves appearing in autumn, green, midvein pale. Flowering stem ca. 35 cm. Umbel 5–7-flowered; involucre 2, lanceolate, ca. 3 × 0.5 cm. Perianth ocherous; tube ca. 1 cm; lobes strongly recurved, adaxially with

scattered, pink stripes or spots which disappear at anthesis, oblanceolate, ca.  $4 \times 0.6$  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.

**3. *Lycoris houdyshelii*** Traub, *Herbertia* 13: 45. 1957.

江苏石蒜 jiang su shi suan

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

- Shady and moist 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).

**4. *Lycoris aurea*** (L'Héritier) Herbert, *Bot. Mag.* 47: 5 sub t. 2113. 1819.

忽地笑 hu di xiao

*Amaryllis aurea* L'Héritier, *Sert. Angl.* 14. 1788.

Bulbs ovoid, ca. 5 cm in diam. Leaves appearing in autumn, ensiform, ca.  $60 \times 1.7$ – $2.5$  cm, midvein pale, base and apex gradually tapering. Flowering stem ca. 60 cm. Involucres 2, lanceolate, ca.  $3.5 \times 0.8$  cm. Perianth yellow; tube 1.2–1.5 cm; lobes strongly recurved, abaxially with pale green midvein, oblanceolate, ca.  $6 \times 0.4$ – $1$  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, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, 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 Taiwan and S Japan that are closely related to *L. aurea*. The status of this species and its relationship to *L. aurea* needs further study. *Lycoris aurea* var. *angustipala* P. S. Hsu et al. (*Sida* 16: 318. 1994) 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  $\times$  as long as perianth).

*Lycoris aurea* is cultivated as an ornamental in S China.

**5. *Lycoris rosea*** Traub & Moldenke, *Amaryllidaceae: Tribe Amaryllieae*, 178. 1949.

玫瑰石蒜 mei gui shi suan

Bulbs subglobose, ca. 2.5 cm in diam. Leaves appearing in autumn, pale green, ligulate, ca.  $20 \times 0.8$  cm, midvein pale. Flowering stem pale rose red, ca. 30 cm. Umbel ca. 5-flowered; involucre 2, lanceolate, ca.  $3.5 \times 0.5$  cm. Perianth light rose

red; tube ca. 1 cm; lobes recurved, oblanceolate, ca.  $4 \times 0.8$  cm, margin undulate. Stamens exerted, 4.5–5 cm. Fl. Sep.  $2n = 22^*$ .

- 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*.

**6. *Lycoris chinensis*** Traub, *Herbertia* 14: 44. 1958.

中国石蒜 zhong 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; involucre 2, oblanceolate, ca.  $2.5 \times 0.8$  cm. Perianth yellow; tube 1.7–2.5 cm; lobes strongly recurved, abaxially with pale yellow midvein, oblanceolate, ca.  $6 \times 1$  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, Shaanxi, Sichuan, Zhejiang [S Korea].

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

**7. *Lycoris guangxiensis*** Y. Xu & G. J. Fan in Y. Xu et al., *Acta Phytotax. Sin.* 20: 196. 1982.

广西石蒜 guang xi shi suan

Bulbs ovoid, ca. 3 cm in diam. Leaves appearing in early spring, dark green, narrowly ligulate,  $24$ – $30 \times 1$ – $1.2$  cm, midvein distinctly pale, apex obtuse. Flowering stem ca. 50 cm. Umbel 3–6-flowered; involucre 2, pale brown, ovate-lanceolate to lanceolate, ca.  $4 \times 1$ – $1.5$  cm. Perianth yellow with red stripes in bud; tube 1.5–2 cm; lobes adaxially with red, brush-like stripes, obovate-oblanceolate to oblanceolate, ca.  $7 \times 1.5$  cm, base clawed, ca. 0.5 cm wide, margin minutely undulate, apex acute. Stamens nearly as long as perianth. Style longer than 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.  $35 \times 1.5$  cm, midvein not distinctly pale, apex obtuse. Flowering stem ca. 60 cm. Umbel 6–8-flowered; involucre 2, oblanceolate, ca.  $3.5 \times 1.2$  cm. Perianth pink in bud, usually creamy at anthesis, later white; tube ca. 2 cm; lobes recurved, adaxially with a few scattered, pink stripes, abaxially with red midvein, oblanceolate, ca.  $6 \times 1.2$  cm, margin undulate. Stamens nearly as long as or slightly longer than perianth; filament pale red at apex. Style slightly longer than perianth; stigma rose red. Fl. Aug–Sep.  $2n = 16, 17, 18$ .

Mountain slopes. Jiangsu [Japan, Korea].

**9. *Lycoris caldwellii*** Traub, *Herbertia* 13: 46. 1957.

短蕊石蒜 duan rui shi suan

Bulbs subglobose, ca. 4 cm in diam. Leaves appearing in early spring, green, ligulate, ca.  $30 \times 1.5$  cm, midvein not distinctly pale, apex obtuse. Umbel 6- or 7-flowered. Perianth pink to creamy in bud, gradually fading to white at anthesis; tube ca. 2 cm; lobes oblanceolate, ca.  $7 \times 1.2$  cm, margin minutely undulate. Stamens shorter than perianth; filament white. Style nearly as long as perianth, apex pale rose. Fl. Sep.  $2n = 27^*$ .

- Shady and wet places on slopes. Jiangsu, Jiangxi, Zhejiang.

**10. *Lycoris shaanxiensis*** Y. Xu & Z. B. Hu in Y. Xu et al., *Acta Phytotax. Sin.* 20: 196. 1982.

陕西石蒜 shan xi shi suan

Bulbs subglobose, ca. 5 cm in diam. Leaves appearing in early spring, ligulate, ca.  $50 \times 1.8$  cm, midvein not distinctly pale, apex obtuse. Flowering stem ca. 50 cm. Umbel 5–8-flowered; involucre 2, pale pink, lanceolate to broadly so,  $5-7 \times$  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.

**11. *Lycoris squamigera*** Maximowicz, *Bot. Jahrb. Syst.* 6: 79. 1885.

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.  $8 \times 2$  cm, apex obtuse. Flowering stem ca. 60 cm. Umbel 4- or 5-flowered; involucre 2, lanceolate, ca.  $6 \times 1.3$  cm. Perianth pale purple; tube ca. 2 cm; lobes oblanceolate, ca.  $7 \times 1.8$  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].

**12. *Lycoris anhuiensis*** Y. Xu & G. J. Fan in Y. Xu et al., *Acta Phytotax. Sin.* 20: 197. 1982.

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.  $35 \times 1.5-2$  cm, midvein pale, apex obtuse. Flowering stem ca. 60 cm. Umbel 4–6-flowered; involucre 2, narrowly ovate to lanceolate,  $3-3.5 \times$  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.  $6 \times 1.5$  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.  $50 \times 1.2$  cm, midvein inconspicuously pale, apex obtuse. Perianth white 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.  $5 \times 1.2$  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.

**14. *Lycoris sprengeri*** Comes ex Baker, *Gard. Chron.*, ser. 3, 32: 469. 1902.

换锦花 huan jin hua

Bulbs ovoid, ca. 3.5 cm in diam. Leaves appearing in early spring, green, ligulate, ca.  $30 \times 1$  cm, apex obtuse. Flowering stem ca. 60 cm. Umbel 4–6-flowered; involucre 2, ca.  $3.5 \times 1.2$  cm. Perianth pale purple; tube 1–1.5 cm; lobes often bluish at apex, oblanceolate, ca.  $4.5 \times 1$  cm, margin not undulate. Stamens nearly as long as perianth. Style slightly longer than perianth. Capsule 3-angled, loculicidal. Seeds black, subglobose, ca. 0.5 cm in diam. Fl. Aug–Sep.  $2n = 22^*$ .

- Sparse forests, bamboo forests, shady and wet places on slopes; ca. 100 m. Anhui, Hubei, Jiangsu, Zhejiang.

**15. *Lycoris longituba*** Y. Xu & G. J. Fan, *Acta Phytotax. Sin.* 12: 299. 1974.

长筒石蒜 chang tong shi suan

Bulbs ovoid, ca. 4 cm in diam. Leaves appearing in early spring, lanceolate, gradually tapering toward apex, ca.  $40 \times 1.5-2.5$  cm, midvein pale, apex rounded. Flowering stem 60–80 cm. Umbel 5–7-flowered; involucre 2, lanceolate, ca. 5 cm, apex acuminate. Perianth white or yellow, ca. 5 cm in diam.; tube 4–6 cm; lobes adaxially with pale red stripes (if perianth white), narrowly elliptic,  $6-8 \times$  ca. 1.5 cm, margin not undulate, apex slightly recurved. Stamens slightly shorter than perianth. Style longer than perianth. Fl. Jul–Aug.  $2n = 16^*$ .

- 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(原变种) chang tong shi suan (yuan bian zhong)

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

- Mountain slopes; low elevations. Jiangsu.

**15b. *Lycoris longituba* var. *flava*** Y. Xu & X. L. Huang in Y. Xu et al., *Acta Phytotax. Sin.* 20: 198. 1982.

黄长筒石蒜 huang chang tong shi suan

Perianth yellow. Fl. Aug.

- Shady and moist areas on slopes; low elevations. Jiangsu.

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