

#### 4. ALISMA Linnaeus, Sp. Pl. 1: 342. 1753.

泽泻属 *ze xie shu*

Herbs, aquatic or of marshes, usually with a tuber. Leaves aerial, floating, or submerged, all basal, petiolate, margin entire. Inflorescences paniculate or occasionally umbellate; branches whorled, each one usually secondarily branched and with bracts at base. Flowers bisexual. Petals usually larger than sepals. Stamens 6. Carpels numerous in a single whorl, free, each with 1 ovule. Achene laterally compressed, 1- or 2-grooved or canaliculate abaxially, with a usually adaxial beak.

About 11 species: temperate and subtropical regions; six species (one endemic) in China.

- 1a. Anthers broader than long; style 0.1–0.2 mm; plants slender ..... 6. *A. nanum*
- 1b. Anthers narrower than long; style longer than 0.4 mm; plants ± robust.
  - 2a. Aerial leaves usually elliptic to ovate, base subcordate or truncate.
    - 3a. Petals marginally denticulate; carpels regularly arranged; styles 0.7–1.5 mm ..... 1. *A. plantago-aquatica*
    - 3b. Petals marginally undulate; carpels irregularly arranged; styles ca. 0.5 mm ..... 2. *A. orientale*
  - 2b. Aerial leaves lanceolate to broadly lanceolate, base cuneate.
    - 4a. Lateral pericarp thin, translucent; styles substraight; anthers 1–1.2 mm ..... 3. *A. lanceolatum*
    - 4b. Lateral pericarp thickish, opaque; styles recurved; anthers 0.5–0.8 mm.
      - 5a. Leaves ± falcate; achenes abaxially 1-canaliculate; styles not cirriform-recurved ..... 5. *A. canaliculatum*
      - 5b. Leaves not falcate; achenes abaxially 1- or 2-grooved; styles cirriform-recurved ..... 4. *A. gramineum*

##### 1. *Alisma plantago-aquatica* Linnaeus, Sp. Pl. 1: 342. 1753.

泽泻 *ze xie*

Tubers 1–3.5 cm in diam. Aerial leaves with petiole 1.5–30 cm; leaf blade broadly lanceolate or elliptic to ovate, 2–11 × 1.3–7 cm, sometimes larger, veins 5, base subcordate or truncate but sometimes cuneate, apex usually acuminate. Panicles 15–50 cm, in 3–8 whorls of 3–9 branches. Pedicel 1–3.5 cm. Sepals broadly ovate, 2.5–3.5 × 2–3 mm. Petals white or purplish white, suborbicular, larger than sepals, margin denticulate. Anthers elliptic, ca. 1 mm. Carpels regularly arranged; styles erect, filiform, longer than ovary, 0.7–1.5 mm, stigmatose in upper 1/9–1/5 of their length. Achenes elliptic or suboblong, ca. 2.5 × 1.5 mm, 1- or 2-grooved abaxially; lateral pericarp thickish, opaque. Fl. and fr. May–Oct.  $2n = 14^*$ .

Margins of lakes, ponds, marshes, channels, slow-moving rivers. Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Xinjiang, Yunnan [Afghanistan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Russia, Tajikistan, Thailand, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Europe, North America].

##### 2. *Alisma orientale* (Samuelsson) Juzepczuk in Komarov, Fl. URSS 1: 281. 1934.

东方泽泻 *dong fang ze xie*

*Alisma plantago-aquatica* Linnaeus var. *orientale* Samuelsson, Acta Horti Gothob. 2: 84. 1926; *A. plantago-aquatica* subsp. *orientale* (Samuelsson) Samuelsson.

Tubers 1–2 cm in diam. Aerial leaves with petiole 3–34 cm; leaf blade broadly lanceolate to elliptic, 3.5–11 × 1.3–7 cm, sometimes larger, 5–7-veined, base rounded or subcordate, apex acuminate. Panicles 20–70 cm, in 3–9 whorls of 3–9 branches. Pedicel 0.5–2.5 cm. Sepals ovate, 2–2.5 × ca. 1.5 mm. Petals white or pinkish, suborbicular, larger than sepals, margin undulate. Anthers ca. 0.5 × 0.3–0.4 mm. Carpels irregularly arranged; styles erect, ca. 0.5 mm, longer than ovary, stigmatose

in upper ca. 1/5 of their length. Achenes elliptic, 1.5–2 × ca. 1 mm, 1- or 2-grooved abaxially; lateral pericarp usually opaque, thickish. Fl. and fr. May–Sep.  $2n = 28^*$ .

Margins of lakes, ponds, marshes, channels; below 2500 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan, Zhejiang [India, Japan, Kashmir, Korea, Mongolia, Myanmar, Nepal, Russia, Vietnam].

This species is similar to *Alisma plantago-aquatica* but differs in having flowers and fruit smaller, styles only ca. 0.5 mm, and petal margins and carpels irregularly arranged.

##### 3. *Alisma lanceolatum* Withering, Bot. Arr. Brit. Pl., ed. 3, 2: 362. 1796.

膜果泽泻 *mo guo ze xie*

*Alisma plantago-aquatica* Linnaeus var. *lanceolatum* (Withering) Lejeune.

Tubers 1–2 cm in diam. Aerial leaves with petiole 13–25 cm; leaf blade lanceolate to broadly lanceolate or elliptic, 9–13 × 2.5–5 cm, sometimes larger, 5–7-veined, base cuneate, apex acute to acuminate. Panicles 15–45, in 3–6 whorls of 3–6 branches. Pedicel 1.5–2.5 cm. Sepals broadly ovate, 1.5–3.2 × 2–2.5 mm. Petals white or pinkish, suborbicular, 4–6.5 mm, larger than sepals, margin irregular. Anthers elliptic or oblong, 1–1.2 mm. Carpels regularly arranged; styles ± erect, 0.6–1 mm, equaling or shorter than ovary, stigmatose in upper 1/3–1/2 of their length. Achenes obovoid, 1.6–2(–3) mm, 1-grooved abaxially; lateral pericarp translucent, thin. Fl. and fr. Jun–Sep.  $2n = 24, 26, 28$ .

Margins of lakes, marshes, channels, slow-moving rivers. Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Xinjiang, Yunnan [Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan; N Africa, SW Asia, Australia, Europe].

Fl. China 23: 87–88. 2010.

4. ***Alisma gramineum*** Lejeune, Fl. Spa 1: 175. 1811.

草泽泻 *cao ze xie*

*Alisma loeselii* Gorski ex Juzepczuk.

Tubers small or not evident. Aerial leaves with petiole 2–31 cm; leaf blade lanceolate, 3–12.5 × 0.6–2 cm, sometimes larger, 3–5-veined, base cuneate, apex acuminate. Panicles 6–56 cm, in 2–5 whorls of 3–9 branches. Pedicel 1.5–4.5 cm. Sepals broadly ovate, 2.5–4.5 × 1.5–2.5 mm. Petals white, suborbicular, larger than sepals. Anthers elliptic, ca. 0.5 mm. Carpels regularly arranged; styles erect, ca. 0.4 mm, shorter than ovary, cirriform-recurved, stigmatose in upper 1/3–1/2 of their length. Achenes obovoid or triangular, 2–3 mm, 1- or 2-grooved abaxially; lateral pericarp splendent, opaque, thickish. Fl. and fr. Jun–Sep.  $2n = 14, 16$ .

Margins of lakes, ponds, marshes, channels. Gansu, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shanxi, Xinjiang [Afghanistan, Kazakhstan, Mongolia, Pakistan, Russia, Tajikistan, Uzbekistan; Africa, SW Asia, Europe, North America].

5. ***Alisma canaliculatum*** A. Braun & C. D. Bouché, Index Seminum Hort. Berol. 1867(App.): 4. 1867.

窄叶泽泻 *zhai ye ze xie*

*Alisma plantago-aquatica* Linnaeus var. *canaliculatum* (A. Braun & C. D. Bouché) Miyabe & Kudô.

Tubers 1–3 cm in diam. Aerial leaves with petiole 9–30 cm; leaf blade slightly falcate, lanceolate, 6–45 × 1–5 cm, 3–5-veined, base cuneate or gradually attenuate to petiole, apex acuminate. Panicles 35–65 cm, in 3–6 whorls of 3–9 branches. Pedicel 2–4.5 cm. Sepals oblong, 3–3.5 mm. Petals white, suborbicular, margin irregular. Anthers ca. 0.8 mm. Carpels regularly arranged; styles recurved, ca. 0.5 mm, stigmatose in upper ca. 1/3 of their length. Achenes obovoid, 2–2.5 mm, 1-canaliculate on back; lateral pericarp opaque, thickish. Fl. and fr. May–Oct.  $2n = 28, 34, 40, 42^*$ .

Margins of lakes, ponds, marshes, streams. Anhui, Fujian, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Taiwan, Zhejiang [India, Japan (including Ryukyu Islands), Korea].

6. ***Alisma nanum*** D. F. Cui, Bull. Bot. Res., Harbin 12: 369. 1992.

小泽泻 *xiao ze xie*

Plants slender, without tubers. Aerial leaves with petiole 1.2–4 cm, slender; leaf blade broadly lanceolate or elliptic to ovate, 1.5–3.7 × 0.6–2.3 cm, base rounded or slightly cuneate, apex acute. Panicles 2–9 cm, in 1–3 whorls of 3–9 branches, rarely umbellate. Pedicel 1–2.5 cm. Sepals broadly ovate, ca. 1.5 × 1.2 mm. Petals white or pinkish, equaling or larger than sepals. Anthers ca. 0.2 × 0.5 mm. Carpels 8–12; styles 0.1–0.2 mm, shorter than ovary, stigmatose in upper 1/5–1/3 of their length. Achenes elliptic, ca. 1.5 mm, 1-grooved abaxially; lateral pericarp translucent, thin. Fl. and fr. Jul–Sep.

• Marshes; ca. 600 m. Xinjiang.

Fl. China 23: 87–88. 2010.