

## ZANNICHELLIACEAE

角果藻科 jiao guo zao ke

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Plants submerged in fresh or brackish water. Rhizomes creeping, usually slender, branched, rooting at nodes. Stems elongated, slender, much branched. Leaves submerged, sessile, alternate, subopposite, or crowded at nodes, linear, with conspicuous midvein, sheathing at base, margin entire. Plants monoecious. Flowers axillary, minute, unisexual, solitary or in cymes. Male flower solitary, pedunculate, without perianth; stamens 1(or 2); filament slender; anthers 2-theous; pollen grains globose or nearly so. Female flowers with a cupular perianth, sessile; carpels 1–9, free; ovule 1, pendulous; styles simple, slender, elongated; stigmas usually obliquely peltate. Fruitlet achene- or nutlike, slightly compressed, subsessile or stipitate, abaxially keeled; keel usually winged. Seeds without endosperm.

One extremely polymorphic species: cosmopolitan.

The Angiosperm Phylogeny Group [APG] (Bot. J. Linn. Soc. 161: 105–121. 2009) included this family in the Potamogetonaceae. However, for the Flora of China, we treat the families separately.

Several species have been recognized by some authors, and the taxonomy of the genus needs considerable reevaluation.

Zhou Lingyun, You Jun & Zhong Xiongwen. 1992. *Zannichellia*. In: Sun Xiangzhong, ed., Fl. Reipubl. Popularis Sin. 8: 102–107.

### 1. ZANNICHELLIA Linnaeus, Sp. Pl. 2: 969. 1753.

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*Aponogeton* Hill (1756), not Linnaeus f. (1782, nom. cons.).

Morphological characters and geographical distribution are the same as those of the family.

#### 1. *Zannichellia palustris* Linnaeus, Sp. Pl. 2: 969. 1753.

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*Pelta palustris* (Linnaeus) Dulac; *Zannichellia palustris* subsp. *pedicellata* (Wahlenberg & Rosén) J. D. Hooker; *Z. palustris* var. *pedicellata* Wahlenberg & Rosén; *Z. pedicellata* (Wahlenberg & Rosén) E. M. Fries.

Stems 3–20(–50) cm, 0.3–0.5 mm in diam. Leaves 2–10 cm × 0.3–0.5 mm, apex acuminate; sheaths usually free from leaf base, stipuliform, membranous, evanescent. Anthers 0.6–1 mm; filaments ca. 3 mm. Carpels usually 3 or 4. Fruitlet often

curved, reniform to semilunate, 2–2.5 mm, abaxially remotely cristate-dentate, long beaked. Fl. and fr. spring to autumn.  $2n = 12, 24, 28, 32, 36$ .

Fresh or brackish water. Anhui, Hebei, Heilongjiang, Hubei, Jiangsu, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Taiwan, Xinjiang, Xizang, Zhejiang [cosmopolitan].

The specimens with stigma obliquely peltate, fruitlets reniform, and pedicel 4–6 mm are described as *Zannichellia palustris* var. *pedicellata*. But specimens from China are variable in the shape of the stigma, characters of fruit, and degree of stipitation. Because of this, the plants are here regarded as forming a single variable species.

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