

CYMODOCEACEAE

丝粉藻科 si fen zao ke

Guo Youhao (郭友好)¹; Robert R. Haynes², C. Barre Hellquist³

Plants submerged in salt water. Rhizomes creeping, usually slender. Stems shortened. Leaves sessile, alternate, subopposite, or crowded at nodes, linear, with conspicuous midvein, sheathing at base. Plants dioecious. Flowers minute, unisexual, solitary or in cymes. Male flowers pedunculate; perianth of 3 small scales or absent; stamens 1–3; anthers connate, sessile, longitudinally dehiscent; pollen grains threadlike. Female flowers sessile; perianth absent or cupular or of 3 segments; carpels 2, free; style simple or divided into 2(–4) filiform stigmas; ovule 1, pendulous. Fruitlet achene- or nutlike. Seeds without endosperm.

Four genera and 16–20 species: tropical and subtropical regions worldwide; three genera and four species in China.

Guo Youhao & Li Qingyi. 1992. *Halodule* and *Syringodium*. In: Sun Xiangzhong, ed., Fl. Reipubl. Popularis Sin. 8: 96–102; Zhou Lingyun, You Jun & Zhong Xiongwen. 1992. *Cymodocea*. In: Sun Xiangzhong, ed., Fl. Reipubl. Popularis Sin. 8: 107.

- 1a. Flowers in cymes; leaves subulate-terete 3. *Syringodium*
1b. Flowers solitary; leaves linear, flattened.
2a. Styles simple; anthers attached at different levels; leaves 1–4, alternate, 3-veined 2. *Halodule*
2b. Styles divided into 2 filiform stigmas; anthers attached at same height on stalk; leaves 2–7 together on short erect shoots, 7–17-veined 1. *Cymodocea*

1. CYMODOCEA K. D. Koenig, Ann. Bot. (König & Sims) 2: 96. 1805, nom. cons.

丝粉藻属 si fen zao shu

Rhizomes branched, rooting at nodes. Leaves 2–7 together on short erect shoots, flattened, linear, 7–17-veined, margin entire or dentate; sheaths auriculate, ligulate. Flowers solitary and terminal. Perianth absent. Male flowers pedunculate; anthers 2; pollen filiform. Female flowers sessile or subsessile; styles divided into 2 filiform stigmas. Fruitlets laterally subcompressed, with bony pericarp, beaked.

About seven species: tropical to subtropical regions of the E Hemisphere; one species in China.

An additional species probably in China and so requiring further research is *Cymodocea serrulata* (R. Brown) Ascherson & Magnus (Sitzungsber. Ges. Naturf. Freunde Berlin, 84. 1870; *Caulinia serrulata* R. Brown, Prodr. 339. 1810; 齿叶丝粉藻 chi ye si fen zao).

1. *Cymodocea rotundata* Ascherson & Schweinfurth, Sitzungsber. Ges. Naturf. Freunde Berlin, 84. 1870.

丝粉藻 si fen zao

Phucagrostis rotundata (Ascherson & Schweinfurth) Ehrenberg & Hemprich.

Creeping rhizomes slender, each node with 1–3 roots and 1 short erect shoot. Leaves 2–5 together on shoots, ± falcate, 7–

15 cm × ca. 4 mm, 9–15-veined, with secondary veins between lateral veins, sometimes slightly dentate toward apex, apex rounded to truncate; sheaths 1.4–4 cm. Anthers ca. 1.1 cm. Carpel ca. 5 mm along with slender styles. Fruitlet semicircular, ca. 1 cm, abaxially with 3 parallel ridges, middle ridge 6–8-toothed.

Marine shallow sandy bottoms. S Hainan (Sanya) [India, Indonesia (Java), Malaysia, Myanmar, Philippines, Thailand, Vietnam; Africa, Australia; W Pacific Ocean and Indian Ocean to Red Sea].

2. HALODULE Endlicher, Gen. Pl. 1368. 1841.

二药藻属 er yao zao shu

Diplanthera Thouars (1806), not Gleditsch (1764).

Rhizomes branched, rooting at nodes. Shoots erect, with 2 scales at base. Leaves 1–4, alternate, flattened, linear, 3-veined, margin toothed at apex; sheaths compressed, auriculate, ligulate. Flowers solitary and terminal, enclosed in a leaf. Male flowers consisting of 2 unequally inserted anthers, without filament; pollen filiform. Female flowers subsessile; style simple. Fruitlet laterally subcompressed, with bony pericarp, beaked.

About seven species: throughout most tropical regions; two species in China.

- 1a. Leaf apex trifid, lateral teeth conspicuous, leaves 0.8–1.4 mm wide; styles 3–4 mm, apical 1. *H. uninervis*
1b. Leaf apex truncate or obtuse, lateral teeth inconspicuous, leaves 0.5–0.8 mm wide; styles ca. 1.3 mm, lateral 2. *H. pinifolia*

¹ Herbarium, College of Life Sciences, Wuhan University, Wuhan, Hubei 430072, People's Republic of China.

² Herbarium, Biological Sciences, Biodiversity and Systematics Department, University of Alabama, Box 870345, Tuscaloosa, Alabama 35487-0345, U.S.A.

³ Department of Biology, Massachusetts College of Liberal Arts, 375 Church Street, North Adams, Massachusetts 01247-4100, U.S.A.

1. Halodule uninervis (Forsskål) Ascherson in Boissier, Fl. Orient. 5: 24. 1882.

二药藻 er yao zao

Zostera uninervis Forsskål, Fl. Aegypt.-Arab. 157. 1775; *Diplanthera uninervis* (Forsskål) F. N. Williams.

Internodes of rhizome 2.5–3(–5) cm. Scales elliptic, membranous. Leaves narrowly linear, 4–11(–15) cm × 0.8–1.4 mm, veins 3, midvein conspicuous, basally gradually narrowed, lateral teeth conspicuous, apex trifid; sheaths 2–3 cm. Flowers small. Peduncle of male flowers 1–2 cm; anthers ca. 0.5 mm. Style of female flowers 3–4 mm, apical. Fruitlet ovoid, ca. 2.5 × 2 mm; beak apical, ca. 1 mm.

Marine shallow sandy bottoms. Hainan, Taiwan [India, Indonesia, Japan (including Ryukyu Islands), Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Africa, SW Asia, Australia; W Pacific Ocean and Indian Ocean to Red Sea].

2. Halodule pinifolia (Miki) Hartog, Blumea 12: 309. 1964.

羽叶二药藻 yu ye er yao zao

Diplanthera pinifolia Miki, Bot. Mag. (Tokyo) 46: 787. 1932.

Internodes of rhizome 1–3 cm. Scales ovate, membranous. Leaves narrowly linear, 2–8 cm × 0.5–0.8 mm, veins 3, midvein conspicuous, lateral teeth inconspicuous, apex truncate or obtuse; sheaths 1–1.4(–2.8) cm. Flowers small. Peduncle of male flowers ca. 1 cm; anthers ca. 0.5 mm, sometimes with scales at base. Style of female flowers lateral, ca. 1.3 mm. Fruitlet ovoid, ca. 2 mm; beak lateral, ca. 1 mm.

Marine. Hainan, Taiwan [India, Indonesia, Japan (including Ryukyu Islands), Malaysia, Myanmar, Philippines, Sri Lanka, Vietnam; Australia].

3. SYRINGODIUM Kützing in Hohenacker, Algae Mar. Sicc. 9: 426. 1860.

针叶藻属 zhen ye zao shu

Rhizomes branched, rooting at nodes. Shoots erect, with leaves 2 or 3, alternate, subulate-terete; sheaths broader, auriculate, ligulate. Plants dioecious; flowers in terminal cymes, enclosed in a leaf. Male flowers pedunculate, consisting of 2 equally inserted anthers, without filament; pollen filiform. Female flowers sessile; carpels free; style short, divided into 2 filiform stigmas. Fruitlet with bony pericarp, beaked.

Two species: one distributed in the Caribbean Sea and one in tropical areas of the Indian and W Pacific Oceans; one species in China.

1. Syringodium isoetifolium (Ascherson) Dandy, J. Bot. 77: 116. 1939.

针叶藻 zhen ye zao

Cymodocea isoetifolia Ascherson, Sitzungsber. Ges. Naturf. Freunde Berlin, 3. 1867; *Phucagrostis isoetifolia* (Ascherson) Kuntze; *Phycoschoenus isoetifolius* (Ascherson) Nakai.

Creeping rhizomes slender, each node with 1–3 roots. Scales ca. 5 mm. Leaves 7–10(–30) cm × 1–2 mm; sheaths 1.5–

4 cm, ligule obtuse. Cymes 2.5–5 cm, enclosed in sheath of a reduced leaf. Peduncles of male flowers ca. 7 mm; anthers ovoid, ca. 4 mm. Ovary 3–4 mm; style ca. 2 mm; stigmas 4–8 mm. Fruitlet obliquely obovoid, ca. 4 mm; beak ca. 2 mm, apical.

Marine shallow sandy bottoms. Dongsha Qundao, SW Guangdong (Naozhou Dao) [India, Indonesia (Java), Malaysia, Myanmar, Philippines, Sri Lanka, Vietnam; Africa, Australia; tropical areas from W Pacific Ocean and its marginal seas to Indian Ocean].