

## PODOSTEMACEAE

川苔草科 chuan tai cao ke

Qiu Huaxing (邱华兴 Chiu Hua-hsing, Kiu Hua-xing)<sup>1</sup>; C. Thomas Philbrick<sup>2</sup>

Herbs, annual or perennial, aquatic. Roots usually flattened, thalloid or filiform. Leaves distichous, scattered, or imbricate, base often sheathed, margin entire or dissected. Flowers bisexual, solitary, actinomorphic or zygomorphic, enclosed or not by a spathella or spathella lacking. Tepals 2–5, free or ± connate. Stamens 1–4, hypogynous; filaments free or partially connate; anthers 2–4-loculed, longitudinally or irregularly dehiscent. Ovary superior, 2- or 3-loculed; ovules numerous, placenta central. Styles 2 or 3. Fruit a septicidal capsule. Seeds numerous, minute, without endosperm.

About 40 genera and 200 species: widespread in tropical regions, a few species in temperate regions: three genera and four species (two endemic) in China.

The plants live attached to submerged rocks or wood in rushing water in rapids or cataracts of streams and rivers. They are easily overlooked, and more field work is needed in China.

Wu Te-lin. 1988. Podostemaceae. In: Kiu Hua-shing & Ling Yeou-ruenn, eds., Fl. Reipubl. Popularis Sin. 24: 1–5.

- 1a. Flowers axillary; spathella absent; tepals 3; stamens 2 or 3 ..... 1. *Dalzellia*
- 1b. Flowers terminal; spathella present; tepals 2; stamens 1 or 2.
  - 2a. Leaves of fertile stems scale-like, distichous; capsule ribbed ..... 2. *Hydrobryum*
  - 2b. Leaves of fertile stems digitate, 3–9-segmented, scattered, imbricate; capsule smooth ..... 3. *Cladopus*

### 1. DALZELLIA Wight, Icon. Pl. 5: 34. 1852.

川藻属 chuan zao shu

*Terniopsis* H. C. Chao.

Herbs, perennial. Roots flattened, branched. Stems arising laterally from root, distichous, simple or shortly branched. Leaves small, elliptic, flattened, sessile, imbricate in 3 ranks, smaller on lateral ranks. Flowers 1 or 2, axillary to basal leaf, sessile, subtended by 2 bracts; bracts unequal, opposite. Tepals 3, membranous, basally connate. Stamens 2 or 3; filaments free; anther basifixed, 4-loculed. Ovary 3-loculed. Stigmas 3. Capsule smooth, 3-valved.

Four species: Cambodia, China, India, Laos, Sri Lanka, Thailand; one species (endemic) in China.

**1. *Dalzellia sessilis*** (H. C. Chao) C. Cusset & G. Cusset, Bull. Mus. Natl. Hist. Nat., B, Adansonia 10: 173. 1988.

川藻 chuan zao

*Terniopsis sessilis* H. C. Chao, Contr. Inst. Bot. Natl. Acad. Peiping 6: 4. 1949 [“1948”].

Roots pink to purple, sometimes yellowish green, flat-

tened, 1–1.5 mm wide. Stems 7–9 mm tall, with 5–10 leaves. Leaf blade elliptic, 0.5–1 × 0.4–0.5 mm. Bracts ovate, concave, ca. 1 mm. Tepals purple, ca. 2.5 mm. Stamens 1–2.5 mm. Ovary ellipsoid, ca. 0.7 mm. Stigma ± triangular. Capsule ellipsoid, ca. 1.5 mm; pedicel ca. 1 mm. Seeds ovoid, ca. 0.2 mm. Fl. and fr. Nov–Dec.

• 100–400 m. Fujian.

### 2. HYDROBRYUM Endlicher, Gen. Pl. 1375. 1841.

水石衣属 shui shi yi shu

Herbs, perennial. Roots expanded, thalloid, rarely branched. Leaves scale-like, distichous, equitant, sometimes linear or partly linear. Flowers solitary, terminal, shortly pedicellate, enclosed in a spathella before anthesis; spathella longitudinally dehiscent. Tepals (1 or)2(–4), at both sides of filament base. Stamens 2; filaments basally united; anther 2-loculed. Ovary 2-loculed. Stigmas 2. Capsule 2-valved, equal, prominently 5- or 6-ribbed.

Four species: E and S Asia; one species in China.

**1. *Hydrobryum griffithii*** (Wallich ex Griffith) Tulasne, Ann. Sci. Nat., Bot., sér. 3, 11: 104. 1849.

水石衣 shui shi yi

*Podostemon griffithii* Wallich ex Griffith, Asiat. Res. 19: 105. 1838.

Small herb. Roots green, many branched, ca. 2.5 cm in diam., leathery when dry. Stems short, with 4–6 leaves. Sterile stem leaves in a rosette, linear, 3–4 mm; leaf blade 1–2 mm. Spathella ca. 2.5 mm. Tepals 2, linear, membranous, ca. 1.5 mm. Stamens 2, filaments connate to middle, ca. 1.5 mm; anther ca. 0.3 mm. Ovary ellipsoid, ca. 2 mm. Stigmas bluntly

<sup>1</sup> Department of Taxonomy, South China Institute of Botany, Chinese Academy of Sciences, Wushan, Guangzhou, Guangdong 510650, People's Republic of China.

<sup>2</sup> George Safford Torrey Herbarium, Biological Sciences Group, University of Connecticut, Life Sciences U-43, Storrs, Connecticut 06269-3042, U.S.A.

subulate. Capsule ellipsoid, ca. 2.2 mm, stipitate; valves delicately ribbed. Fl. Aug–Oct, fr. Mar–Apr.

900–1900 m. S Yunnan [Bhutan, E India, Myanmar, Nepal, N Vietnam].

**3. CLADOPUS** H. Möller, Ann. Jard. Bot. Buitenzorg 16: 115. 1899.

川苔草属 chuan tai cao shu

*Lawiella* Koidzumi.

Herbs, perennial. Roots flat, cylindric to flattened, branched. Stems arising laterally from root margins, simple. Sterile stem leaves in a rosette, simple or digitate, with 3–9 segments. Fertile stems to 1 cm tall; leaves densely imbricate, digitate. Flowers solitary, terminal, zygomorphic, pedicellate, enclosed in spathella before anthesis; spathella ovoid, apex nipple-shaped, usually irregularly dehiscent, sometimes by a lateral slit. Tepals 2, at both sides of filament base, narrowly triangular to linear, membranous. Stamen 1, rarely 2, filament curved, anther basifixed, 2-loculed. Ovary 2-loculed. Stigmas 2. Capsule smooth, 2-valved; largest valve persistent.

Five species: E and SE Asia; two species (one endemic) in China.

- 1a. Flowering stem 5–6 mm tall; stigmas linear ..... 1. *C. nymanii*  
 1b. Flowering stem 3–4 mm tall; stigmas rhombic ..... 2. *C. chinensis*

**1. *Cladopus nymanii*** H. Möller, Ann. Jard. Bot. Buitenzorg 16: 115. 1899.

飞瀑草 fei pu cao

*Cladopus fukienensis* (H. C. Chao) H. C. Chao; *Lawiella fukienensis* H. C. Chao.

Roots dark green, usually turning reddish, flattened, 1–3 mm wide. Leaves on sterile stems simple or digitate with linear segments, 2–4 mm. Fertile stems 5–6 mm tall; leaves with 3–7(–9) segments, 1–2 × 1–3 mm. Spathella ca. 2 mm, irregularly dehiscent. Tepals linear, ca. 1 mm. Stamen 1 or 2; filament ca. 1.8 mm, basally united when 2; anther elliptic, ca. 1 mm. Ovary obovoid to ± globose, ca. 1.5 mm. Stigma linear, 0.5–0.7 mm. Capsule ± globose, 1.5–2 mm; stipe 1.5–3 mm. Fl. and fr. Sep–Feb.

Swift-running streams and cascades, clinging to rocks; near sea level to 600 m. Fujian, Guangdong, Hainan [Indonesia, S Japan, Thailand].

**2. *Cladopus chinensis*** (H. C. Chao) H. C. Chao, Fl. Fujian. 1: 481. 1982.

川苔草 chuan tai cao

*Lawiella chinensis* H. C. Chao, Contr. Inst. Bot. Natl. Acad. Peiping 6: 6. 1949 [“1948”].

Roots dark green to yellowish green, flattened, 1–3 mm wide. Leaves on sterile stems linear, 3–3.5 mm. Fertile stems 3–4 mm tall; leaves with 6–9 segments, 1–2 × 1–3 mm. Spathella ca. 2 mm, apically and transversely dehiscent. Tepals linear, ca. 0.8 mm. Stamens 1 or 2; filaments 0.8–1.3 mm, basally united when 2; anther ovoid to globose, ca. 0.5 mm. Ovary ± globose, 1–1.5 mm. Stigma rhombic, ca. 0.5 mm. Capsule ± globose 1–2 mm; stipe 1.5–2.5 mm. Fl. Sep–Dec, fr. Jan–Mar.

- 200–400 m. Fujian, E Guangdong.

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