

9. HYGROPHILA R. Brown, Prodr. 479. 1810.

水蓼衣属 shui suo yi shu

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Adenosma Nees (1847), not R. Brown (1810); *Asteracantha* Nees; *Cardanthera* Buchanan-Hamilton ex Benth. & J. D. Hooker; *Hemiadelphis* Nees; *Kita* A. Chevalier; *Nomaphila* Blume; *Physichilus* Nees; *Polyechma* Hochstetter; *Santapaua* N. P. Balakrishnan & K. Subramanyam; *Synnema* Benth. & Giordano (1832), not Sprengel (1813).

Herbs, annual or perennial, often aquatic or hygrophilous, sometimes with axillary spines, cystoliths present. Leaves sessile or shortly petiolate; leaf blade margin entire, crenulate, or sometimes undulate. Flowers sessile, in terminal spikes or several in axillary clusters; bracteoles present or absent. Calyx 5-lobed. Corolla ventricose; limb 2-lipped, lower lip 3-lobed, upper lip apex shallowly dentate; lobes contorted in bud. Stamens 2 or 4, didynamous (posterior pair similar to anterior pair or smaller); anthers 2-thecae; thecae equally inserted; staminodes 0 or 2. Ovary with 4 to many ovules per locule; stigma entire or 2-dentate. Capsule linear-ellipsoid to narrowly oblong, many seeded; retinacula present. Seeds discoid, covered with long mucilaginous trichomes.

About 100 species: widely distributed in tropical and subtropical regions; six species (one endemic) in China.

- 1a. Stamens 2 1. *H. polysperma*
- 1b. Stamens 4.
 - 2a. Flowers in terminal spikes 2. *H. biplicata*
 - 2b. Flowers solitary or clustered in leaf axils.
 - 3a. Leaf blade glabrous or scabrous-hirsute.
 - 4a. Leaf blade glabrous or slightly pubescent 3. *H. ringens*
 - 4b. Leaf blade scabrous-hirsute 4. *H. pogonocalyx*
 - 3b. Leaf blade densely strigose or hirsute on both surfaces.
 - 5a. Calyx ca. 0.7 cm; corolla ca. 1.5 cm 5. *H. erecta*
 - 5b. Calyx ca. 1.1 cm; corolla 1.8–2.2 cm 6. *H. phlomoides*

1. *Hygrophila polysperma* (Roxburgh) T. Anderson, J. Linn. Soc., Bot. 9: 456. 1867.

小狮子草 xiao shi zi cao

Justicia polysperma Roxburgh, Fl. Ind. 1: 120. 1820; *Adenosma polysperma* (Roxburgh) Sprengel; *Hemiadelphis polysperma* (Roxburgh) Nees.

Annuals [or perennials] 10–20 cm tall. Stems often prostrate, 4-angled, slightly swollen above nodes, puberulent, soon glabrescent. Petiole to 5 mm; leaf blade oblong-lanceolate to ovate, 2–3.5 × 0.6–1.3 cm, glabrous, base attenuate, margin entire, apex subobtusate. Inflorescences terminal spikes, 1.3–5 cm; bracts imbricate, ovate, elliptic, or obovate, 5–10 × 1.5–3.5 mm, both surfaces densely hirtellous, apex obtuse; bracteoles lanceolate, 3.5–5 × 0.5–1 mm, margin ciliate. Calyx 3.5–6 mm; lobes lanceolate, 2.5–3 mm, unequal, pubescent, apex acuminate. Corolla white, ca. 6 mm; tube ca. 3.5 mm; lower lip ca. 2 mm, 3-lobed, lobes orbicular and subequal; upper lip oblong-ovate, ca. 1 mm, 2-lobed. Stamens 2, slightly exerted; filaments ca. 1 mm, coherent into a membrane near base; anther thecae subequal; staminodes 2, bristlelike, short. Capsule linear-oblong, 5.5–8 mm, pubescent with non-gland-tipped trichomes (also glabrous?), 20–30-seeded. Seeds ca. 1 × 0.5 mm. Fl. Sep–Nov, fr. Oct–Jan. $2n = 32$.

Streamsides; below 600 m. Guangdong, Guangxi, Taiwan, Yunnan [Bhutan, India, Myanmar, Sri Lanka, Vietnam].

Hygrophila polysperma is a problematic (e.g., invasive) naturalized weed in some tropical and temperate regions outside of its native range.

2. *Hygrophila biplicata* (Nees) Sreemadhavan, Bull. Bot. Surv. India 10: 223. 1969.

连丝草 lian si cao

Adenosma biplicata Nees in Wallich, Pl. Asiat. Rar. 3: 79. 1832; *Cardanthera avana* (Wallich ex Benth.) Benth. & C. B. Clarke; *Hygrophila avana* (Wallich ex Benth.) E. Hossain; *Pedicularis avana* Wallich ex Benth.; *Synnema avanum* (Wallich ex Benth.) Benth.

Annuals to 30 cm tall, ascending. Stems 4-angled, hirsute. Leaves sessile; leaf blade oblong, 2.5–3.8 × 1–1.8 cm, white pubescent, secondary veins 3–5 on each side of midvein, base truncate to subcordate, margin crenulate, apex obtuse. Inflorescences terminal spikes, 2.5–10 cm; bracts narrowly elliptic, 6–8 × 3–4 mm, margin crenulate or dentate; bracteoles linear, ca. 8 × 3 mm. Calyx 8–9 mm, inside white hirsute; lobes linear, margin ciliate. Corolla purple, 1.2–1.6 cm, outside pilose; lower lip elliptic, ca. 8 × 5 mm, 3-dentate, lobes triangular and ca. 1 × 1 mm; upper lip oblong-ovate, ca. 6 × 3 mm, 2-dentate. Stamens 4, slightly exerted; filaments with longer pair ca. 3 mm and shorter pair ca. 2 mm; anther thecae ca. 1 mm. Ovary ca. 3 mm, comose; style ca. 1 cm, hirsute. Capsule ca. 8 mm, pubescent. Fl. Dec, fr. Mar.

Paddy fields, wet places; 800–1000 m. Yunnan [Myanmar, Thailand].

3. *Hygrophila ringens* (Linnaeus) R. Brown ex Sprengel, Syst. Veg. 2: 828. 1825.

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Perennials to 80 cm tall, branched. Stems erect or decumbent at base, 4-angled, striate, slightly pubescent. Petiole 0.5–1 cm, glabrous; leaf blade narrowly lanceolate to oblanceolate, 3–10 × 0.5–1.5 cm, both surfaces with numerous cystoliths and glabrous or slightly pubescent, secondary veins 8–11 on each side of midvein, base attenuate and decurrent onto petiole, margin entire or slightly undulate, apex acute to obtuse. Flowers (solitary or) 2–10 clustered in leaf axils, sessile; bracteoles narrowly ovate, 3–5 mm, margin pubescent, apex obtuse. Calyx narrowly campanulate, ca. 6 cm, 5-lobed to middle; lobes linear-lanceolate, grayish pubescent or fulvous strigose, apex acuminate. Corolla pale purple, 1–2.5 cm; tube ca. 7 mm, ca. 2 mm wide, glabrous; limb 2-lipped; lower lip obovate, ca. 3 mm, 3-lobed to middle, lobes ovate with an obtuse apex; upper lip elliptic, ca. 3 mm, shallowly 2-lobed, outside puberulent. Stamens 4, included; filaments glabrous, longer pair ca. 5 mm, shorter pair ca. 3 mm; anther thecae 1–2 mm. Ovary glabrous; style filiform, ca. 8 mm, included; stigma unequally 2-lobed. Capsule narrowly oblong, 0.8–2.2 cm, ca. 1.5 mm wide, glabrous, 12–18-seeded. Seeds ca. 1 mm, pubescent. Fl. Aug–Oct, fr. Dec–Feb.

Along streams, wet places; below 1000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam].

- 1a. Bracts and calyx grayish pubescent 3a. var. *ringens*
1b. Bracts and calyx fulvous strigose 3b. var. *longihirsuta*

3a. *Hygrophila ringens* var. *ringens*

水蓑衣(原变种) shui suo yi (yuan bian zhong)

Ruellia ringens Linnaeus, Sp. Pl. 2: 635. 1753; *Dipteracanthus ringens* (Linnaeus) Abeywickrama; *Hygrophila angustifolia* R. Brown; *H. lancea* (Thunberg) Miquel; *H. megalantha* Merrill; *H. quadrivalvis* (Buchanan-Hamilton) Nees; *H. salicifolia* (Vahl) Nees; *H. salicifolia* var. *megalantha* (Merrill) H. S. Lo & L. D. Chou; *Justicia lancea* Thunberg; *R. quadrivalvis* Buchanan-Hamilton; *R. salicifolia* Vahl.

Calyx grayish pubescent. Corolla to 1.2 cm.

Along streams, wet places; below 1000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam].

3b. *Hygrophila ringens* var. *longihirsuta* (H. S. Lo & D. Fang) Y. F. Deng, **comb. nov.**

贵港水蓑衣 gui gang shui suo yi

Basionym: *Hygrophila salicifolia* (Vahl) Nees var. *longihirsuta* H. S. Lo & D. Fang, *Guihaia* 17: 41. 1997.

Flowers 2 to several in a cluster; bracts and calyx fulvous strigose. Corolla 1.2–1.7 cm.

- Along streams; 200–300 m. Guangxi.

4. *Hygrophila pogonocalyx* Hayata, *Icon. Pl. Formosan.* 9: 81.

1920.

大安水蓑衣 da an shui suo yi

Annuals to 50 cm tall. Stems erect, 4-angled, internodes subglabrous, nodes densely hirsute. Leaves sessile; leaf blade linear-lanceolate, 5–9 × 0.7–1.2 cm, papery, both surfaces scabrous-hirsute, secondary veins 5–7 on each side of midvein, base broadly attenuate, margins subentire, apex obtuse. Flowers several clustered in leaf axils, sessile; bracteoles ovate to lanceolate, ca. 1.5 × 0.4–0.6 cm, abaxially glabrous, adaxially strigose, apex acuminate. Calyx ca. 1.5 cm, 5-lobed to middle; lobes linear, subequal, apex acuminate. Corolla ca. 2.5 cm; lower lip ± spreading, 3-lobed; lobes of lower lip oblong, 2.5–3 × ca. 2 mm, subequal, inside barbate, apex obtuse; upper lip erect, ca. 1 cm, 2-lobed. Stamens 4; anther thecae ca. 3 mm. Ovary ca. 2.5 mm, glabrous; style glabrous. Fl. Aug–Oct, fr. Oct–Jan.

- Wet places. Taiwan.

5. *Hygrophila erecta* (N. L. Burman) Hochreutiner, *Candollea* 5: 230. 1934.

小叶水蓑衣 xiao ye shui suo yi

Ruellia erecta N. L. Burman, *Fl. Indica*, 135. 1768; *Hygrophila phlomoides* Nees var. *roxburghii* C. B. Clarke.

Perennials to 1 m tall. Stems erect, 4-angled, 2-sulcate. Petiole (0–)3–5 mm, sulcate, hispid; leaf blade elliptic, obovate, or oblong, 2–9 × 1–3 cm, with numerous cystoliths, both surfaces densely strigose, secondary veins 8–15 on each side of midvein and abaxially prominent, base decurrent onto petiole, margin entire or slightly undulate, apex acute to obtuse. Flowers several clustered in leaf axils, sessile; bracteoles linear-oblong, ca. 6 mm, densely hispid-ciliate. Calyx ca. 1.1 cm, 5-lobed to middle; lobes linear-lanceolate, densely white hispid-ciliate. Corolla purplish blue, 1.8–2.2 cm, pilose; tube basally cylindrical for ca. 5 mm and ca. 2 mm wide then gradually widened to ca. 6 mm at mouth; limb 2-lipped; lower lip oblong, 3-lobed, lobes ovate and ca. 2 × 2 mm; upper lip triangular, 2-lobed. Stamens 4; filaments glabrous, longer pair ca. 6 mm, shorter pair ca. 3 mm; anther thecae ca. 2 mm. Ovary glabrous; style pilose. Capsule 1.2–1.5 cm. Seeds blackish brown, ca. 1.5 × 1 mm, pubescent.

Wet places; below 1000 m. Guangdong, Hainan, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

6. *Hygrophila phlomoides* Nees in Wallich, *Pl. Asiat. Rar.* 3: 80. 1832.

毛水蓑衣 mao shui suo yi

Perennials to 1 m tall, erect. Stems 4-angled, brown strigose. Petiole 0–3 mm, hirsute; leaf blade elliptic, obovate, or oblong, 2–9 × 1–3 cm, papery, cystoliths dense, both surfaces hirsute, secondary veins 8–15 on each side of midvein, base usually attenuate and decurrent onto petiole, margin entire or undulate, apex acute to sometimes obtuse. Flowers axillary, several clustered or in whorls upward; bracteoles linear-oblong, ca. 5 × 2 mm, hirsute. Calyx ca. 1.1 cm, white hirsute, 5-lobed to middle; lobes linear. Corolla 1.8–2.2 cm, pubescent; lower

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lip oblong, sparsely pilose, 3-lobed; upper lip triangular, 2-lobed. Stamens 4; filaments glabrous, longer pair ca. 5 mm, shorter pair ca. 3 mm; anther thecae ca. 2 mm. Ovary glabrous; style ca. 1.8 cm, pubescent. Capsule not seen.

Wet places; below 1200 m. Yunnan [Cambodia, India, Indonesia, Laos, Myanmar, Pakistan, Philippines, Thailand, Vietnam].

Fl. China 19: 430–432. 2011.