15. **LIMNOPHILA** R. Brown, Prodr. 442. 1810.

Herbs, annual or perennial, in marshy areas or aquatic, often aromatic when bruised, with transparent dots. Stems erect, prostrate, or creeping, simple or much branched. Submerged leaves in aquatic species whorled, pinnately parted to capillary-multiparted, glabrous. Aerial leaves opposite to whorled, sessile or petiolate; leaf blade lanceolate or pinnately divided, glandular punctate, margin entire to serrate, if leaf undivided then veins pinnate or parallel. Flowers axillary and solitary or in axillary or terminal spikes or racemes, sessile or pedicellate. Bracteoles 2 or absent. Calyx tubular; lobes subequal or upper lobe larger than others. Corolla tubular or funnelform, 2-lipped; lower lip 3-lobed; upper lip entire or 2-lobed. Stamens 4, included, didynamous; anther locules stipitate. Ovary glabrous. Stigma 2-lamellate. Capsule included within calyx, septicidal. Seeds minute, numerous.

About 40 species: tropical to subtropical Africa, Asia, Australia, and Pacific Islands; ten species in China.

1a. Plants with both submerged and aerial leaves.
   2a. Aerial leaves undivided, 3–5-veined ............................................................... 4. *L. heterophylla*
   2b. Aerial leaves divided, 1–3-veined.
      3a. Pedicel often as long as calyx or longer; bracteoles 1.5–3.5 mm; corolla 1–1.4 cm ........... 3. *L. indica*
      3b. Pedicel lacking or rarely to 1.5 mm; bracteoles absent or to 1.5 mm; corolla less than 1 cm.
         4a. Stems and calyx glandular hairy; calyx ca. 2 mm; corolla ca. 4 mm ......................... 2. *L. borealis*
         4b. Stems and calyx eglandular hairy; calyx 4–6 mm; corolla 6–10 mm ......................... 1. *L. sessiliflora*

1b. Plants with aerial leaves only.
   5a. Leaf veins parallel ......................................................................................... 5. *L. connata*
   5b. Leaf veins pinnate or only midrib conspicuous.
      6a. Calyx smooth or with 5 raised veins in fruit; bracteoles lacking ....................... 6. *L. rugosa*
      6b. Calyx with numerous raised veins in fruit; bracteoles present.
         7a. Fruiting pedicel recurved ................................................................. 10. *L. erecta*
         7b. Fruiting pedicel not recurved.
            8a. Pedicel 5–20 mm ............................................................................ 7. *L. aromatica*
            8b. Pedicel 0.5–5 mm.
               9a. Pedicel 3–5 mm, villous to subglabrous; corolla 1–1.5 cm ............................ 8. *L. chinensis*
               9b. Pedicel 0.5–3 mm, hispidulous; corolla 0.5–1 cm ................................. 9. *L. repens*

1. **Limnophila sessiliflora** (Vahl) Blume, Bijdr. 749. 1826.

*石龙尾 shi long wei*

*L. sessiliflora* Vahl, Symb. Bot. 2: 35. 1791;
*Ambulia sessiliflora* (Vahl) Baillon ex Wettstein;
*L. taoyuanensis* Yang & Yen.

Perennials, amphibious. Submerged stems slender, long, glabrous or subglabrous. Aerial stems 6–40 cm, simple or sparsely branched, eglandular hairy, rarely subglabrous. Submerged leaves 0.5–3.5 cm, multiparted; segments flattened or capillary. Aerial leaves whorled; leaf blade elliptic-lanceolate, 5–18 × 3–4 mm, glabrous, densely glandular punctate, margin crenate to lobed; veins 1–3. Flowers sessile or rarely with a pedicel to 1.5 mm, solitary in axils of submerged and aerial leaves. Bracteoles absent or rarely present and to 1.5 mm. Calyx 4–6 mm, eglandular hairy, without raised veins in fruit; lobes 2–4 mm, ovate, apex narrowly acuminate. Corolla purple-blue to reddish, 6–10 mm. Capsule compressed, subglobose. Fl. and fr. Jul–Jan.

Ponds, swamps, rice fields, wet places along streams; below 1900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangsu, Jiangxi, Liaoning, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia (Java), Japan, Korea, Malaysia, Myanmar, Nepal, Sikkim, Sri Lanka, Vietnam].


*北方石龙尾 bei fang shi long wei*

*Limnophila trichophylla* (Komarov) Komarov has been reported from NE China and Taiwan. From illustrations and the original description, the species is similar to *L. sessiliflora*, but we have not seen any specimens. The same is true for the recently described *L. taoyuanensis* (Bot. Bull. Acad. Sinica 38: 285–295. 1997).


- *lichens*; low elevations. Nei Mongol (Hinggan Meng).

4. **Limnophila heterophylla** R. Brown, Prodr. 442. 1810.

*石龙尾 shi long wei*

*L. heterophylla* (Vahl) Blume, Bijdr. 749. 1826.

*L. heterophylla* has been reported from NE China and Taiwan. From illustrations and the original description, the species is similar to *L. sessiliflora*, but we have not seen any specimens. The same is true for the recently described *L. taoyuanensis* (Bot. Bull. Acad. Sinica 38: 285–295. 1997).
Limnophila connata

Perennials, amphibious. Submerged stems much branched, glabrous. Aerial stems to 15 cm, simple or branched, glabrous, with stalked or sessile glands to nearly smooth. Submerged leaves whorled, 1.5–2.5 cm, pinnatisect; segments flattened to capillary. Aerial leaves usually whorled, pinnately lobed, 0.4–2 cm, sometimes few opposite and crenate. Flowers axillary from aerial leaves, solitary. Pedicel slender, 2–10 mm, usually longer than bract, with sessile or stalked glands. Bracteoles 2, 1.5–3.5 mm, margin entire or sparsely serrate, apex acute. Calyx 3.5–5 mm, without raised veins in fruit; lobes 2–3 mm, ovate to lanceolate, apex short acuminate. Corolla white, pale purple, or red, 1–1.4 cm. Fl. and fr. Mar–Nov.

Ponds, wet places; below 1800 m. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Nepal, Pakistan, Sikkim, Sri Lanka, Thailand, Vietnam; Africa, SW Asia, Australia, Oceania].

4. Limnophila heterophylla (Roxburgh) Bentham, Scroph. Ind. 25. 1835.

Perennials, aquatic. Aerial stems with sessile glands or without raised veins in fruit. Bracteoles 2, 1.5–3.5 mm, margin entire or sparsely serrate, apex acute. Calyx 3.5–5 mm, without raised veins in fruit. Corolla white, pale purple, or red, 1.1–1.5 cm, outside sparsely pubescent, inside villous. Capsule subglobose, ca. 3.5 × 3 mm, veins 2 and bulging. Fl. and fr. Sep–Nov.

Along streams, grassland, wet places; below 1400 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Yunnan [India, Laos, Myanmar, Nepal, Thailand, Vietnam].


Perennials, 10–50 cm tall. Rhizomes transverse. Stems 1 to few, ± fascicled, erect or ascending, usually unbranched, glabrous. Leaves opposite; petiole 1–2 cm, narrowly winged; leaf blade ovate, rhomboid-elliptic, or elliptic, 3–9 × 1–5 cm, abaxially hispidulous along veins, adaxially glabrous or sparsely hispidulous, margin crenate; veins pinate, ca. 10 on each side of midrib, abaxially raised. Peduncle 0.2–3 cm, bracts sub-spatulate-oblong, with flattened membranous glands, margin entire or apically undulate-toothed and ciliate. Flowers axillary, solitary, sessile, usually appearing capitate. Bracteoles absent. Calyx 6–8 mm, without raised veins in fruit or with 5 raised veins and flattened membranous glands, margin ciliate. Corolla purple-red to blue, to 1.6 cm. Style slender, apically cylindric, pubescent, with a membranous auricle on both sides. Capsule pale brown, ovoid, ca. 5 mm. Fl. and fr. Aug–Nov.

Adjacent to water, mountain valleys, grassland; below 900 m. Anhui, Fujian, Guangdong, Guangxi, Hunan, Taiwan, Yunnan [Bhutan, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam; Pacific Islands].

Used medicinally.


Purple grass

Ambulia aromatica Lamarck, Encycl. 1: 128. 1783; Limnophila aromatoides Yang & Yen; L. chinensis subsp. aromatica (Lamarck) T. Yamazaki; L. gratissima Blume; L. punctata Blume; L. punctata var. subracemosa Bentham.

Annuals or perennials. Stems 30–70 cm, simple to much branched, glabrous or glandular, base decumbent.
and rooting from nodes. Leaves opposite or in whorls of 3, sessile, ovate-lanceolate to lanceolate-elliptic, 1–5 × 0.3–1.5 cm, base semiamplexicaul, margin crenate and serrate; veins pinnate. Flowers solitary in leaf axils or in terminal or axillary racemes. Pedicel 0.5–2 cm, glabrous or glandular. Bracteoles linear to linear-lanceolate, 1.5–2 mm. Calyx 4–6 mm, glabrous or glandular pubescent, with raised veins in fruit. Corolla white, blue-purple, or pink, 1–1.3 cm, sparsely and finely glandular, inside white villous. Style apex dilated; stigma short, 2-lamellate. Capsule ovoid, ca. 6 mm. Fl. and fr. Mar–Sep.

Around reservoirs and other moist places; low elevations. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Taiwan [Bhutan, India (Darjeeling), Indonesia (Java), Japan, Korea, Laos, Philippines, Vietnam; Australia].

The characters used by Yang & Yen (Bot. Bull. Acad. Sinica 38: 285–295. 1997) to distinguish *Limnophila aromaticoides* from *L.* *aromatica* clearly fall within the variation range of the latter.


中华石龙尾 zhong hua shi long wei

*Columnea chinensis* Osbeck, Dagb. Ostind. Resa 230. 1757; *Limnophila chevalieri* Bonati; *L. hirsuta* (Heyne ex Bentham) Bentham; *Stemodia hirsuta* Heyne ex Bentham.

Herbs, 5–50 cm tall. Stems basally prostrate, rooting from nodes, simple or basally branched, villous to subglabrous. Leaves opposite or in whorls of 3 or 4, sessile, ovate-lanceolate, linear-lanceolate, or rarely spatulate. 0.5–5.3 × 0.2–1.5 cm, abaxially villous along veins, adaxially glabrous or sparsely villous, base subamplexicaul, margin serrate; veins pinnate, inconspicuous. Flowers solitary in leaf axils, or in terminal panicles. Pedicel 3–5 mm, villous to subglabrous. Bracteoles ca. 2 mm. Calyx 5–7 mm, villous to subglabrous, with raised veins in fruit. Corolla purple-red, blue, or rarely white, 1–1.5 cm. Capsule compressed, broadly ellipsoid, ca. 5 mm. Fl. and fr. Oct–May.

Edge of water, wet fields; below 1800 m. Guangdong, Guangxi, Hainan, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam; Australia].


匍匐石龙尾 pu fu shi long wei

*Stemodia repens* Bentham in Lindley, Bot. Reg. 17: ad t. 1470. sp. 11. 1832.

Herbs, to 45 cm tall. Stems erect or ascending, simple or much branched, glabrous or hirsulous. Leaves opposite, sessile or base narrowed and appearing stalked; leaf blade linear-elliptic, 0.5–3 cm × 3–8 mm, glabrous, margin crenate and toothed, veins pinnate. Flowers solitary or axillary or in axillary terminal racemes. Pedicel 2–4 mm, glabrous or hirsulous, recurved in fruit. Bracteoles linear, 0.5–0.8 mm. Calyx 4–5 mm, glabrous, with raised veins in fruit. Corolla white or pink, 6–7 mm, outside glabrous. Capsule ovoid, ca. 3.5 mm. Fl. and fr. Jul–Oct.

Wet grassland, near water; below 1500 m. Guangdong, Yunnan [Indonesia, Malaysia, Myanmar, Thailand, Vietnam].