

4. EPILOBIUM Linnaeus, Sp. Pl. 1: 347. 1753.

柳叶菜属 liu ye cai shu

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Boisduvalia Spach; *Chamaenerion* Séguier; *Zauschneria* Presl.

Herbs perennial [or annual, sometimes suffrutescent], with leafy rosettes, stolons, soboles (shoots), or turions (subterranean globose buds with fleshy scales). Stems glabrous to pubescent, often with lines of hairs decurrent from margins of petioles. Leaves opposite, becoming alternate and bractlike in inflorescence; petiolate or sessile; stipules absent; bracteoles absent. Inflorescences simple or branched racemes, panicles, spikes, or corymbs. Flowers 4-merous, often protandrous, with floral tube, producing nectar at base of style. Petals pink to rose-purple or white [or rarely cream-colored or orange-red], obcordate or obtrullate, notched at apex. Stamens 8, in two unequal whorls; pollen yellow, shed in tetrads. Style erect; stigma entire or 4-lobed. Fruit an elongate, slender capsule, 4-loculed, loculicidal. Seeds many [or rarely only 4], generally with terminal coma of silky hairs [or coma rarely lacking]. $2n = [18, 20, 24, 26, 28, 30, 32,] 36, [38, 60]$.

About 165 species: montane, boreal, and/or arctic regions of Africa, Asia, Australasia, Europe, and North and South America, from sea level to 5000 m, often in moist, disturbed places: 33 species (nine endemic) in China.

The genus is divided into seven sections, all present in North America but only one, *Epilobium* sect. *Epilobium*, in China, where the species occur in most temperate to montane habitats except extreme deserts or warm, subtropical forests.

Careful gathering of ripe seeds and perennating structures, usually at or just below the ground surface, facilitate identification. The pattern of vestiture on stems, also extremely valuable for identification, is sometimes obscure on specimens collected very late in the growing season.

- 1a. Stigma deeply 4-lobed (rarely shallowly so in *E. blinii*).
- 2a. Stems (18–)30–120(–250) cm tall, with long spreading and short erect glandular hairs; leaves 3–12 cm, subacute to acuminate, with (15–)20–60 teeth per side; seeds 0.8–1.2 mm, coarsely papillose.
 - 3a. Leaves clasping; petals (7–)10–20 mm; stigma exerted beyond anthers at anthesis 1. *E. hirsutum*
 - 3b. Leaves subsessile but not clasping; petals 5–8 mm; stigma surrounded by anthers of longer stamens at anthesis 2. *E. parviflorum*
- 2b. Stems 3–25(–45) cm tall, strigillose; leaves 0.8–3 cm, obtuse, with 3–7 indistinct teeth per side; seeds 1.2–1.8 mm, finely papillose or reticulate.
 - 4a. Loosely matted herb, stems 3–18 cm tall, branched; leaf petioles 1–3 mm; petals 1.6–3.1 cm; fruiting pedicels 4–7 mm; seeds reticulate; Taiwan 4. *E. nankotaizanense*
 - 4b. Ascending or erect herb, stems 10–25(–45) cm tall, usually simple; leaves subsessile; petals 1–1.5 cm; fruiting pedicels 15–35 mm; seeds finely papillose; SW China 3. *E. blinii*
- 1b. Stigma entire or shallowly emarginate.
 - 5a. Stems pubescent throughout, either lacking raised pubescent lines decurrent from margins of petioles, or lines inconspicuous.
 - 6a. Plants forming short basal shoots (soboles), often clumped; stems occasionally with persistent basal scales.
 - 7a. Inflorescence variously pubescent, but without glandular hairs.
 - 8a. Ovary white canescent; seeds with conspicuous chalazal collar; leaves oblong-lanceolate to narrowly ovate, 2–7 cm 29. *E. minutiflorum*
 - 8b. Ovary strigillose, not white canescent; seeds with inconspicuous chalazal collar; leaves sublinear to elliptic or lanceolate, 1–4.5 cm.
 - 9a. Plants erect, loosely clumped or not clumped; stems mostly well-branched throughout; leaves 1–4.5 cm, linear to narrowly lanceolate 10. *E. platystigmatosum*
 - 9b. Plants ascending, forming distinct clumps or mats; stems simple or branched only from base; leaves 1–2 cm, elliptic to lanceolate 11. *E. hohuanense*
 - 7b. Inflorescence variously pubescent, but always with glandular hairs, especially on inflorescence.
 - 10a. Mid-cauline and upper leaves with distinct petioles 2–7 mm, and with narrowly cuneate bases 13. *E. royleanum*
 - 10b. Mid-cauline and upper leaves subsessile or with petioles to 2 mm, and with subcordate, rounded, or broadly cuneate bases.
 - 11a. Leaves subentire, lanceolate-elliptic, seed coma tawny 28. *E. fastigiatamosum*
 - 11b. Leaves denticulate, ovate to lanceolate or oblong-lanceolate; seed coma white or dingy.
 - 12a. Petals 3–4.3(–5) mm; ovary white canescent; seeds with conspicuous chalazal collar 29. *E. minutiflorum*
 - 12b. Petals 7–11 mm; ovary pubescent but not white canescent; seeds with inconspicuous chalazal collar 16. *E. brevifolium*
 - 6b. Plants with basal rosettes, turions, or stolons, not basal shoots, rarely clumped; stems often with

- persistent basal scales.
- 13a. Plants throughout densely appressed tomentose; plants with leafy rosettes; petals 8–16 mm 15. *E. pannosum*
- 13b. Plants strigillose, villous, and/or glandular pubescent, but not tomentose; plants forming stolons or turions, not leafy rosettes; petals 4–8 mm (except to 15 mm in *E. kermodei*).
- 14a. Plants forming fleshy turions, leaving dense leathery basal scales; fruiting pedicels 5–10 mm; plants 7–25 cm tall; Taiwan 12. *E. taiwanianum*
- 14b. Plants forming stolons, usually with few or no basal scales; fruiting pedicels 7–50 mm; plants 25–120 cm tall (except *E. palustre*, (5–)15–70 cm tall); widespread, but not in Taiwan.
- 15a. Plants forming thick, ropelike stolons with fleshy terminal buds; capsules 7–11 cm; seeds 0.8–1.2 mm 14. *E. kermodei*
- 15b. Plants forming filiform, threadlike stolons, sometimes with terminal buds; capsules 3–9 cm; seeds 1.3–2.2 mm.
- 16a. Leaves sublinear to narrowly lanceolate, subentire to obscurely denticulate; stolons with fleshy terminal turions; fruiting pedicels 1–5 cm; seed comas dingy white 27. *E. palustre*
- 16b. Leaves ovate or broadly oblong to lanceolate, sharply serrulate; stolons without terminal turions; fruiting pedicels 0.7–1.5 cm; seed comas reddish 17. *E. pyrricholophum*
- 5b. Stems subglabrous below inflorescence except for 2 or 4 raised strigillose lines decurrent from margins of petiole.
- 17a. Inflorescence glabrous or rarely with scattered hairs on ovary and sepals.
- 18a. Plants low, mat-forming; stems 3–20 cm tall; leaves 0.8–2.5 cm; petals 2.5–6.5 mm; capsules 1.7–3.6 cm 33. *E. anagallidifolium*
- 18b. Plants erect, clumped; stems (5–)10–25(–60) cm tall; leaves (0.8–)1.5–7.5 cm; petals 7–14 mm; capsules 5–9 cm 22. *E. sikkimense*
- 17b. Inflorescence moderately to densely pubescent.
- 19a. Inflorescence strigillose and/or villous, but lacking short, erect glandular hairs.
- 20a. Leaves sessile (lower ones often with petioles to 2 mm).
- 21a. Stems 10–50 cm tall, erect; leaves 3.4–6 cm; seeds papillose 5. *E. roseum*
- 21b. Stems 7–25 cm tall, ascending; leaves 1–2.5 cm; seeds reticulate.
- 22a. Leaves 1.1–1.6 cm; capsules 3.5–4 cm, pedicels 6–7 mm; seeds 0.8–0.9 mm; SW China 31. *E. clarkeanum*
- 22b. Leaves 1.5–2.5 cm; capsules 4.5–5 cm, pedicels 15–20 mm; seeds 1–1.1 cm; Taiwan 32. *E. pengii*
- 20b. Leaves with distinct petioles 2–11 mm.
- 23a. Leaves narrowly spatulate to rarely broader, with prominent pale abaxial midvein, often crowded and spirally arranged on mid-stem; petioles 2–11 mm; fruiting pedicels 1.3–4 cm 9. *E. sinense*
- 23b. Leaves sublinear to narrowly ovate, without pale midvein, always opposite below inflorescence; petioles 2–7(–10) mm; fruiting pedicels 0.5–3 cm.
- 24a. Leaves narrowly lanceolate to sublinear; petioles 3–7(–10) mm; seeds 0.8–1 mm, papillose 7. *E. cylindricum*
- 24b. Leaves lanceolate to narrowly ovate; petioles 2–5 mm; seeds 1–1.3 mm, reticulate or papillose.
- 25a. Plants well-branched, not much clumped; petals 5–8 mm; stigma capitate to broadly clavate; seeds reticulate; Himalayas and SW China 8. *E. tibetanum*
- 25b. Plants mostly simple, forming clumps; petals 5.5–6.5 mm; stigma clavate or rarely subcapitate; seeds coarsely papillose; W China (Tian Shan) 6. *E. tianschanicum*
- 19b. Inflorescence variously pubescent, always with some short, erect glandular hairs.
- 26a. Plants forming fleshy turions at or below ground level; stem bases with thick, brown, leathery scales.
- 27a. Leaves elliptic or oblong to elliptic-lanceolate, with mostly cuneate bases and distinct petioles (1–)2–15 mm.
- 28a. Petioles 3–10(–15) mm; stigma broadly clavate to subcapitate; seeds 1–1.2 × 0.45–0.55 mm, obovoid; Xinjiang 5. *E. roseum*
- 28b. Petioles 1–4(–6) mm; stigma capitate; seeds 1.1–1.4 × 0.3–0.45 mm, narrowly obovoid; SW China ... 26. *E. fangii*
- 27b. Leaves ovate to lanceolate, with ± rounded bases and obscure petioles to 3 mm (except in *E. laxum* with petioles 2–8 mm on lower leaves).
- 29a. Petals 4.5–5.5 mm; stigma clavate to subcapitate; seeds 0.9–1 mm 25. *E. gouldii*
- 29b. Petals 5.5–16 mm; stigma capitate or nearly so; seeds 1.1–1.5 mm.
- 30a. Leaves 2–7 × 1.2–2.6 cm, ovate to narrowly ovate, crowded, usually longer than internodes; petals (7–)10–16 mm; fruiting pedicels 1–7(–10) mm; W Himalayas and Tian Shan 21. *E. laxum*
- 30b. Leaves 1.5–5.5 × 0.5–1.5 cm, narrowly ovate to lanceolate, not crowded, usually shorter than internodes; petals 5.5–11 mm; fruiting pedicels 4–12 mm; SW China 24. *E. subcoriaceum*
- 26b. Plants forming soboles, stolons, or rosettes, but not fleshy turions; stem bases with rather loose, ± herbaceous scales, or scales absent.

- 31a. Plants forming leafy rosettes; seed surface with conspicuous longitudinal ridges of flattened fused papillae; NE China 30. *E. ciliatum*
- 31b. Plants forming soboles or stolons; seed surface papillose or reticulate, without longitudinal ridges.
- 32a. Stems ascending, forming clumps or mats; leaves subentire to scarcely denticulate; capsules 1.7–3.6 cm; pedicels 1–3.5(–5) cm; seeds reticulate 33. *E. anagallidifolium*
- 32b. Stems mostly erect, loosely or not clumped; leaves denticulate or serrulate; capsules (1.5–)3.5–11 cm; pedicels 0.3–2.5 cm; seeds papillose.
- 33a. Plants forming thick ropelike stolons 1–12 cm with fleshy terminal bud; robust stems 40–120(–200) cm tall; capsules 7–11 cm 14. *E. kermodei*
- 33b. Plants forming soboles, not stolons; stems 4–80(–150) cm, mostly less than 50 cm; capsules 1.5–7.5 cm (rarely to 9 cm in *E. sikkimense*).
- 34a. Stem bases with crowded brown scales; stems 5–25(–60) cm tall.
- 35a. Stems mostly erect; leaves (0.8–)1.5–7.5 cm; petals 7–14 mm; capsules 5–9 cm; pedicels 0.6–2(–2.5) cm 22. *E. sikkimense*
- 35b. Stems mostly ascending; leaves 0.7–2.2 cm; petals 5–6.5 mm; capsules 3.5–5(–6) cm; pedicels 0.4–1 cm 23. *E. williamsii*
- 34b. Stem bases without scales; stems (10–)20–150 cm tall, mostly more than 25 cm tall (except *E. kingdonii*, with stems 8–25 cm tall).
- 36a. Plants 8–25 cm tall, ascending; floral tube with sparse, even pubescence; seeds 1.4–1.6 mm, very finely papillose 19. *E. kingdonii*
- 36b. Plants (10–)20–150 cm tall, erect; floral tube usually with tufts of hairs on costae and at insertion of sepals at mouth of floral tube; seeds 0.8–1 mm, coarsely papillose.
- 37a. Stems 15–80 cm tall, somewhat 4-angled, with (2 or)4 raised strigillose lines on internodes; leaves oblong, oblong-ovate, or elliptic, apex obtuse or rarely acute; petals 5.5–13 mm; fruiting pedicels 1–2.5 cm 20. *E. wallichianum*
- 37b. Stems (10–)20–150 cm tall, subterete, with 2 raised strigillose lines on internodes; leaves ovate to oblong-lanceolate, apex acute or acuminate; petals 4.5–8 mm; fruiting pedicels 0.3–1.3 cm 18. *E. amurense*

1. *Epilobium hirsutum* Linnaeus, Sp. Pl. 1: 347. 1753.

柳叶菜 liu ye cai

Chamaenerion hirsutum (Linnaeus) Scopoli; *Epilobium hirsutum* var. *laetum* Wallich ex C. B. Clarke; *E. hirsutum* var. *sericeum* Benth. ex C. B. Clarke; *E. hirsutum* var. *tomentosum* (Ventenat) Boissier; *E. hirsutum* var. *villosum* (Thunberg) H. Hara; *E. tomentosum* Ventenat; *E. velutinum* Nevski (1937), nom. illeg. superfl., not H. Léveillé (1916); *E. villosum* Thunberg.

Herbs robust, perennial, sometimes woody near base with long, thick, ropelike hypogean stolons often terminating in a rosette of leaves. Stems 25–120(–250) cm tall, much branched in upper half, densely villous pubescent, with short glandular hairs especially on inflorescence, rarely sparsely pubescent, or rarely densely white tomentose. Leaves sessile and clasping stem; cauline blade lanceolate-elliptic to narrowly obovate or elliptic, rarely very narrowly lanceolate, 4–12(–23) × 0.3–4(–5) cm, both surfaces villous, very rarely glabrescent, base subcuneate and clasping, margin serrulate with 20–50 teeth per side, apex acute to acuminate. Inflorescence and flowers erect. Sepals 6–12 mm, often keeled. Petals bright pink to dark purple, 8–20 mm. Stigma deeply 4-lobed. Capsules 2.5–9 cm, pubescent or rarely glabrescent; pedicels 0.5–2 cm. Seeds dark brown, 0.8–1.2 mm, coarsely papillose, with inconspicuous chalazal collar; coma tawny or dull white, detaching easily. Fl. Jun–Aug, fr. Jul–Sep. $2n = 36$.

Wet places near streams, ditches, marshes, gravel or sandy beds of rivers, roadsides; (200–)500–2000 m in N China, (100–)500–

2800(–3500) m in SW China. Anhui, Gansu, Guangdong, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan, Zhejiang [Afghanistan, India, Japan, Korea, Mongolia, Nepal, Pakistan, Russia; widespread in Africa, SW Asia, Europe, and naturalized in North America].

This is an extremely widespread and variable species that spreads aggressively by vegetative growth in wet habitats.

Populations from Xinjiang tend to have strikingly tomentose pubescence, unlike plants from other regions, but the pattern of variability for entire species obscures these differences, so no subdivision is recognized.

2. *Epilobium parviflorum* Schreber, Spicil. Fl. Lips. 146. 1771.

小花柳叶菜 xiao hua liu ye cai

Epilobium parviflorum var. *vestitum* Benth. ex C. B. Clarke.

Herbs robust, perennial, with short-stalked leafy basal rosettes. Stems 18–100(–160) cm tall, well-branched above, densely gray villous on lower part, mixed above with short glandular hairs, often with raised lines decurrent from margins of petioles. Leaves subsessile or lower ones with petioles 1–3 mm; cauline blade lanceolate-elliptic to narrowly lanceolate or oblong-lanceolate, 3–12 × 0.5–2.5 cm, both surfaces villous, base usually rounded, margin denticulate with 15–60 teeth per side, apex subacute. Inflorescence and flowers erect. Sepals 2.5–6 mm, keeled. Petals bright pink to dark purple, 4–8.5 mm. Stigma deeply 4-lobed. Capsules 3–7 cm, pubescent or rarely glabrescent; pedicels 0.5–1.8 cm. Seeds dark brown, 0.8–1.1 mm, coarsely papil-

lose, with inconspicuous chalazal collar; coma tawny or dull white, detaching easily. Fl. Jun–Sep, fr. Jul–Oct. $2n = 36$.

Usually in disturbed wet places near streams, bogs, and rivers, open waste slopes and meadows in mountains; (300–)500–1800(–2500) m. Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan [Afghanistan, India, Japan, Korea, Nepal, Pakistan, Russia; Africa, SW Asia, naturalized in New Zealand, North America].

3. *Epilobium blinii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 7: 338. 1909.

长柱柳叶菜 chang zhu liu ye cai

Epilobium forrestii Diels.

Herbs perennial, with short-stalked leafy basal rosettes. Stems 10–45 cm tall, simple or with few branches, strigillose throughout, mixed with glandular hairs on inflorescence or rarely subglabrous, with raised strigillose lines decurrent from margins of petioles. Leaves subsessile or lower ones with petioles 1–5 mm; cauline blade narrowly elliptic to lanceolate-elliptic, 1–3 × 0.4–0.9 cm, both surfaces sparsely strigillose, base subcuneate to rarely rounded, margin remotely denticulate with 3–7 teeth per side, apex obtuse. Inflorescence suberect or nodding; flowers erect. Sepals 5–7.5 mm. Petals pink to rose-purple, 1–1.5 cm. Stigma deeply to shallowly 4-lobed. Capsules 3–5.5 cm, strigillose, sometimes glandular; pedicels 1.5–3.5 cm. Seeds brown, 1.2–1.5 mm, minutely papillose, with short chalazal collar; coma tawny, detaching easily. Fl. Apr–Aug(–Sep), fr. May–Aug(–Oct). $2n = 36^*$.

• Uncommon in permanently wet places, including sphagnum bogs; 1500–2700(–3300) m. Sichuan, Yunnan.

This highly distinctive, Chinese endemic species is quite rare and possibly endangered due to habitat loss.

4. *Epilobium nankotaizanense* Yamamoto, Icon. Pl. Formosan., Suppl. 2: 29. 1926.

南湖柳叶菜 nan hu liu ye cai

Herbs perennial, loosely matted with wiry spreading roots and fleshy soboles that creep and root at nodes, with dense basal scales. Stems 3–18 cm tall, usually branched above, strigillose throughout, mixed with glandular hairs on inflorescence. Leaves crowded on upper stems, leathery, rather fleshy; petiole 1–3 mm; cauline blade broadly elliptic to obovate or ovate, rarely to suborbicular, 0.8–2.1 × 0.5–1.2 cm, sparsely strigillose on margin and veins, otherwise glabrous, base attenuate or rarely subtruncate, margin weakly denticulate with 3–7 teeth per side, apex obtuse. Inflorescence ascending; flowers slightly nodding in bud. Sepals 1.1–1.7 cm. Petals rose-purple, 1.6–3.3 cm. Stigma subglobose, shallowly 4-lobed. Capsules 2–4.5 cm, sparsely strigillose and glandular; pedicels 0.4–0.7 cm. Seeds brown, 1.6–1.8 mm, finely reticulate, with short chalazal collar; coma tawny, persistent. Fl. Jul–Aug, fr. Aug–Sep. $2n = 36^*$.

• Local on moist open scree slopes in high mountains; 2600–3800 m. Taiwan.

5. *Epilobium roseum* Schreber, Spicil. Fl. Lips. 147. 1771.

长柄柳叶菜 chang bing liu ye cai

Herbs erect, perennial, with fleshy elongated turions that leave leathery, obovate scales, rarely forming thin stolons. Stems 10–50 cm tall, simple or branched, strigillose usually mixed with glandular hairs throughout upper stem, glabrescent below, with 2 or 4 raised strigillose lines decurrent from margins of petioles. Leaves subsessile or petioles 2–10(–15) mm; cauline blade elliptic to oblong or lanceolate to narrowly ovate, 2.2–6 × 0.8–2.5 cm, subglabrous with strigillose margin and veins adaxially, base cuneate to rounded or subcordate, margin denticulate with 9–45 teeth per side, apex subobtusate to acute. Inflorescence and flowers erect. Sepals 3.5–5 mm. Petals pink to rose-purple, 5–8 mm. Stigma clavate to subcapitate, entire. Capsules 3–6 cm, strigillose and glandular pubescent; pedicels 0.6–1.5 cm. Seeds dark brown, 1–1.2 mm, papillose, with inconspicuous chalazal collar; coma white, detaching easily. $2n = 36$.

Damp areas near streams, roadsides, ditches in mountains; 1500–2200 m. Xinjiang [Kazakhstan, Russia; C and SW Asia, Europe].

- 1a. Plants with fleshy elongated basal turions; leaf petioles 3–10(–15) mm; stigma broadly clavate to subcapitate; capsules 4–6 cm 5a. subsp. *roseum*
- 1b. Plants with filiform epigeous stolons or shorter, fleshy soboles; leaves subsessile (lower ones with petioles to 2 mm); stigma clavate; capsules 3–6 cm 5b. subsp. *subsessile*

5a. *Epilobium roseum* subsp. *roseum*

长柄柳叶菜(原亚种) chang bing liu ye cai (yuan ya zhong)

Herbs perennial, variable, with fleshy elongated basal turions that leave leathery, ovate scales 6–8 × 4–6 mm. Leaves with petioles 3–10(–15) mm; cauline blade elliptic to oblong or lanceolate, 2.2–5 × 0.8–1.8 cm, base cuneate to broadly so, margin weakly denticulate with 9–25 teeth per side, apex subobtusate. Inflorescence strigillose, sometimes with glandular hairs. Stigma broadly clavate to subcapitate. Capsules 4–6 cm, sparsely strigillose. Fl. Jul–Sep, fr. Aug–Sep. $2n = 36$.

Damp areas near streams, roadsides, ditches in mountains; 1800–2200 m. Xinjiang [Kazakhstan, Russia; SW Asia, Europe].

5b. *Epilobium roseum* subsp. *subsessile* (Boissier) P.H. Raven, Notes Roy. Bot. Gard. Edinburgh 24: 194. 1962.

多脉柳叶菜 duo mai liu ye cai

Epilobium roseum var. *subsessile* Boissier, Fl. Orient. 2: 749. 1872; *E. almaatense* Steinberg; *E. nervosum* Boissier & Buhse; *E. smyrnaeum* Boissier & Balansa.

Herbs perennial, with filiform epigeous stolons with widely spaced small leaves, or shorter fleshy basal soboles. Leaves subsessile or lower ones with petioles to 2 mm; cauline blade 3.4–6 × 0.9–2.5 cm, lower ones oblong-lanceolate with base broadly cuneate and apex subobtusate, upper ones narrowly ovate to lanceolate with base rounded or subcordate and apex acute to acuminate, margin remotely denticulate with 23–45 teeth per side. Inflorescence strigillose. Stigma clavate. Capsules 3–6 cm,

strigillose. Fl. Jun–Aug, fr. Jul–Sep. $2n = 36$.

Damp areas near streams, ditches in mountains; 1500–2100 m. Xinjiang [Kazakhstan, Russia; C and SW Asia].

6. *Epilobium tianschanicum* Pavlov, Uchen. Zap. Moskovsk. Gosud. Univ. 2: 327. 1934.

天山柳叶菜 tian shan liu ye cai

Herbs perennial, clumped, with fleshy basal soboles or leafy rosettes that leave brown scales or leaves around caudex. Stems 30–50 cm tall, simple, often basally decumbent, strigillose throughout upper stem, subglabrous below, with 2 or 4 raised strigillose lines decurrent from margins of petioles. Leaves with petioles 2–4 mm; cauline blade 3–5 × 0.9–1.4 cm, narrowly ovate to lanceolate, subglabrous with strigillose margin and veins, base subrounded or broadly cuneate, margin serrulate with 14–25 teeth per side, apex acute. Inflorescence slightly nodding; flowers erect. Sepals 4–5.5 mm, keeled. Petals rose-purple, 5.5–6.5 mm. Stigma clavate to subcapitate, entire. Capsules 4–6 cm, sparsely strigillose; pedicels 1.5–2.9 cm. Seeds brown, 1–1.3 mm, coarsely papillose, with inconspicuous chalazal collar; coma dingy white, detaching easily. Fl. Jul–Aug, fr. Aug–Sep. $2n = 36$.

Along rivers, streams, and ditches in mountains; 1000–1700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Tajikistan; endemic to Tian Shan region].

7. *Epilobium cylindricum* D. Don, Prodr. Fl. Nepal. 222. 1825.

圆柱柳叶菜 yuan zhu liu ye cai

Epilobium beauverdianum H. Léveillé; *E. christii* H. Léveillé; *E. roseum* Schreber var. *cylindricum* (D. Don) C. B. Clarke.

Herbs perennial, robust, with thick caudex and leafy basal soboles or loose rosettes. Stems 10–110 cm tall, well-branched above, strigillose or rarely subglabrous on upper stem, glabrescent below with indistinct, sparsely strigillose lines decurrent from margins of petioles. Leaves subleathery; petiole 3–7(–10) mm; cauline blade narrowly lanceolate to sublinear, 3–12 × 0.4–2 cm, glabrous with sparsely strigillose margin and veins, base cuneate, margin densely serrulate with (20–)30–50 teeth per side, apex acute. Inflorescence erect, strigillose, rarely with a few glandular hairs; flowers suberect. Sepals 3–5 mm, keeled. Petals pink or rose-purple, rarely white, 3.6–7 mm. Stigma capitate or broadly clavate, entire. Capsules 4–8.5 cm, sparsely strigillose; pedicels (0.5–)1–2.5 cm. Seeds brown, 0.8–1 mm, papillose, with inconspicuous chalazal collar; coma dingy white, detaching easily. Fl. Jun–Sep, fr. Jul–Sep. $2n = 36$.

Disturbed wet places along rivers, streams, and lakes, often along roadside ditches in mountains; (400–)1300–3200 m. Gansu, Guizhou, Hubei, Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Kashmir, Kyrgyzstan, Nepal, Pakistan, Russia; SW Asia].

8. *Epilobium tibetanum* Haussknecht, Oesterr. Bot. Z. 29: 53. 1879.

光籽柳叶菜 guang zi liu ye cai

Epilobium leiospermum Haussknecht; *E. nuristanicum* K. H. Rechinger; *E. pseudobscurum* Haussknecht; *E. roseum* Schreber var. *anagallidifolium* C. B. Clarke, p.p.

Herbs erect, perennial, with short leafy soboles and rhizome with dense, fibrous rootlets. Stems 13–100 cm tall, well-branched, sparsely strigillose throughout upper stem, glabrescent below with indistinct raised lines decurrent from margins of petioles. Leaves subleathery; petiole 2–5 mm; cauline blade lanceolate to narrowly ovate, 1.2–6.5 × 0.5–1.5 cm, glabrous with sparsely strigillose margin and veins, base cuneate or subrounded, margin serrulate with 15–35 teeth per side, apex acute or acuminate. Inflorescence and flowers suberect. Sepals 3.5–5 mm, keeled. Petals pink or rose-purple, rarely white, 5–8 mm. Stigma capitate or broadly clavate, entire. Capsules 4–8.8 cm, sparsely strigillose; pedicels 0.8–2.5 cm. Seeds brown, 1.1–1.3 mm, reticulate, with inconspicuous chalazal collar; coma dingy white, detaching easily. Fl. Jul–Sep, fr. Aug–Oct. $2n = 36$.

Scattered but locally common in disturbed moist places along rivers, streams, and ditches in mountains; 2300–4500 m. Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Nepal, Pakistan; SW Asia].

9. *Epilobium sinense* H. Léveillé, Bull. Herb. Boissier, sér. 2, 7: 590. 1907.

中华柳叶菜 zhong hua liu ye cai

Herbs perennial, robust, clumped with short leafy basal soboles. Stems 10–50 cm tall, simple or few-branched, very densely leafy, glabrescent throughout except for raised strigillose lines decurrent from margins of petioles. Leaves often spirally arranged on upper stem, crowded, subleathery; petiole 2–11 mm; cauline blade narrowly spatulate to oblong or lanceolate-linear, or rarely narrowly obovate, 1.2–7 cm × 3–10 mm, glabrous with sparsely strigillose margin and midvein, midvein conspicuously pale, prominent abaxially, base narrowly cuneate, margin weakly denticulate with 3–12 teeth per side, apex obtuse. Inflorescence and flowers erect. Sepals 4.5–6.5 mm. Petals white or pink, rarely rose-purple, 5.5–8 mm. Stigma capitate or broadly clavate, entire. Capsules 2.5–5.5 cm, glabrescent or sparsely strigillose; pedicels 1.3–4 cm. Seeds brown, 1.2–1.3 mm, finely papillose, with inconspicuous chalazal collar; coma reddish, detaching easily. Fl. Jun–Sep, fr. Aug–Oct(–Dec). $2n = 36^*$.

• Moist places along rivers and streams, occasionally in other rocky, exposed places; 500–2400 m. Gansu, Guizhou, Henan, Hubei, Hunan, Sichuan, Yunnan.

10. *Epilobium platystigmatosum* C. B. Robinson, Philipp. J. Sci. 3: 210. 1908.

阔柱柳叶菜 kuo zhu liu ye cai

Epilobium cephalostigma Haussknecht var. *linearifolium* Hisauti; *E. formosanum* Masamune; *E. sohayakiense* Koidzumi.

Herbs perennial, loosely clumped with leafy basal soboles. Stems (9–)15–70 cm tall, usually branched throughout, densely leafy, strigillose throughout, lacking raised lines. Petiole 1–4 mm; cauline leaf blade sublinear to narrowly lanceolate, 1–4.5 cm × 1.5–5 mm, glabrous with strigillose margin and midvein,

base attenuate to narrowly cuneate, margin weakly denticulate with 3–8 teeth per side, apex acute or obtuse. Inflorescence slightly nodding before anthesis; flowers erect. Sepals 2.5–3.2 mm. Petals white or pink, rarely rose-purple, 3–5 mm. Stigma capitate to broadly clavate, entire. Capsules 2.3–5 cm, glabrescent or sparsely strigillose; pedicels 0.8–2.2 cm. Seeds brown, 0.8–0.9 mm, coarsely papillose, with inconspicuous chalazal collar; coma dingy white, easily detaching. Fl. Aug–Oct, fr. Sep–Nov. $2n = 36^*$.

Moist, often disturbed places along streams and rivers in mountains; (400–)1000–2000(–3500) m. Gansu, Guangxi, Hebei, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Taiwan, Yunnan [Japan, Philippines].

11. *Epilobium hohuanense* S. S. Ying, Quart. J. Chin. Forest. 8: 121. 1975.

合欢柳叶菜 he huan liu ye cai

Herbs perennial, caespitose or clumped, with thin, fleshy soboles that leave small scattered basal scales. Stems 5–20(–30) cm tall, ascending, simple or rarely branched, strigillose throughout, sometimes with broad indefinite lines decurrent from margins of petioles. Leaves sessile or lower ones with petioles 1–3 mm; cauline blade elliptic or oblong to lanceolate, often narrowly so, spatulate near base, (0.5–)1–2 × 0.15–0.7 cm, subglabrous with faintly strigillose margin and midvein, base attenuate to narrowly cuneate, margin denticulate with 4–10 teeth per side, apex subacute to obtuse. Inflorescence erect; flowers suberect. Sepals 2–3.5 mm. Petals white, later turning pink or rose, 3.5–6.5 mm. Stigma capitate to broadly clavate, entire. Capsules 2.6–5.5 cm, glabrescent or sparsely strigillose; pedicels 0.9–2.2 cm. Seeds light brown, 1–1.3 mm, papillose, with inconspicuous chalazal collar; coma white, persistent. Fl. Jul–Sep, fr. Aug–Nov. $2n = 36^*$.

• Loose scree or gravel in open moist (rarely shaded) places in mountains; 2600–3600 m. Taiwan.

12. *Epilobium taiwanianum* C. J. Chen et al., Syst. Bot. Monogr. 34: 95. 1992.

台湾柳叶菜 tai wan liu ye cai

Herbs perennial, suberect, often clumped, with fleshy turions that leave brown leathery basal scales. Stems 7–25 cm tall, simple or sparsely branched, strigillose throughout, lacking raised decurrent lines. Leaves sessile or lower ones with petioles 1–2 mm; cauline blade ovate to lanceolate to lanceolate-elliptic, spatulate near base, 1–2.5 × 0.5–1 cm, subglabrous with faintly strigillose margin and midvein, base cuneate to broadly so, margin denticulate with 3–9 teeth per side, apex acute to obtuse. Inflorescence nodding before anthesis; flowers erect. Sepals 3–5 mm, keeled. Petals rose-purple, 4–6.5 mm. Stigma capitate to broadly clavate, entire. Capsules 2.5–5 cm, strigillose; pedicels 0.5–1 cm. Seeds light brown, 1.1–1.5 mm, low papillose, with inconspicuous chalazal collar; coma white, detaching easily. Fl. Jul–Sep, fr. Aug–Oct(–Dec). Chromosome number unknown.

• Subalpine scree or gravel slopes where moisture is sufficient, rarely in shaded places; 3000–3900 m. Taiwan.

13. *Epilobium royleanum* Haussknecht, Oesterr. Bot. Z. 29: 55. 1879.

短梗柳叶菜 duan geng liu ye cai

Epilobium himalayense Haussknecht; *E. lividum* Haussknecht; *E. roseum* Schreber var. *dalhousieanum* C. B. Clarke; *E. roseum* var. *indicum* C. B. Clarke; *E. royleanum* f. *glabrum* P. H. Raven; *E. royleanum* f. *glandulosum* P. H. Raven.

Herbs perennial, erect or ascending, with fleshy soboles that leave brown basal scales. Stems 10–60 cm tall, well-branched or simple, strigillose and usually glandular pubescent throughout, lacking raised decurrent lines. Petiole 2–7 mm; cauline leaf blade narrowly ovate to lanceolate, sometimes elliptic or oblong-lanceolate, 1.5–5.5(–7) × 0.5–2.5(–3.3) cm, subglabrous with faintly strigillose margin and midvein, base cuneate (subrounded), margin densely serrulate with 10–24 teeth per side, apex acute or subacuminate. Inflorescence and flowers erect. Sepals 3.8–6 mm. Petals pink to rose-purple, 5–7.2 mm. Stigma capitate to broadly clavate, entire. Capsules 3.5–7 cm, strigillose, glandular; pedicels 0.4–1 cm. Seeds light brown, 0.9–1.2 mm, papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Sep, fr. Aug–Oct. $2n = 36$.

Moist weedy places in valleys, along roads and streams, sometimes in high mountain meadows; 1400–3300(–4300) m. Gansu, Guizhou, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang, Yunnan [Afghanistan, Bhutan, India, Kashmir, Nepal, Pakistan; SW Asia].

14. *Epilobium kermodei* P. H. Raven, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 364. 1962.

锐齿柳叶菜 rui chi liu ye cai

Herbs perennial, robust, erect, with fleshy stolons 1–12 cm, extending underground and terminating in thickened buds. Stems 40–120(–200) cm tall, simple or sparsely branched, densely glandular and strigillose throughout, with faint raised strigillose lines decurrent from margins of petioles. Leaves sessile above, lower ones with petioles 1–6 mm; cauline blade narrowly ovate to lanceolate, 3.5–8(–11) × 1.5–4(–4.5) cm, subglabrous with densely strigillose margin and midvein, base broadly cuneate to subrounded, margin sharply serrulate with 28–42(–60) teeth per side, apex acute. Inflorescence erect, congested; flowers erect. Sepals 5–8 mm. Petals rose-purple, 7–15(–18) mm. Stigma capitate to broadly clavate, entire. Capsules 7–11 cm, strigillose, glandular; pedicels 0.7–1.5 cm. Seeds dark brown, 0.8–1.2 mm, coarsely papillose, with short chalazal collar; coma white, detaching easily. Fl. May–Aug, fr. (May–)Jul–Sep. $2n = 36^*$.

Moist disturbed places along roads and streams, boggy areas, meadows, forest margins; 400–1400 m in C China to 1800–2800(–3800) m in SW China. Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan [Myanmar].

Most populations of this species were earlier determined as *Epilobium tanguticum* (*E. wallichianum* in this treatment), prior to Raven's study of the genus in the Himalayan region.

15. *Epilobium pannosum* Haussknecht, Oesterr. Bot. Z. 29: 54.

1879.

硬毛柳叶菜 *ying mao liu ye cai*

Epilobium brevifolium D. Don subsp. *pannosum* (Haussknecht) P. H. Raven; *E. khasianum* C. B. Clarke.

Herbs perennial, robust, erect, sprouting from caudex or with leafy basal rosettes. Stems 20–120 cm tall, sparsely branched above, densely appressed-tomentose, sometimes mixed with glandular hairs on inflorescence, lacking obvious raised decurrent lines. Leaves crowded, subleathery, sessile and often clasping; cauline blade elliptic to lanceolate or ovate, 1–4.8 × 0.5–1.7 cm, both surfaces densely appressed-tomentose, base subrounded, margin remotely denticulate with 3–15 teeth per side, apex acuminate to acute or subobtuse. Inflorescence nodding initially, later erect; flowers nodding to suberect. Sepals 5.5–8 mm. Petals pink to rose-purple, 8–16 mm. Stigma cylindrical to broadly clavate, entire. Capsules 3.5–6.5 cm, tomentose, glandular; pedicels 1.2–2.8 cm. Seeds dark brown, 0.9–1 mm, finely papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Oct, fr. Sep–Nov. $2n = 36^*$.

Moist semishaded disturbed places by streams, or in valleys in evergreen broad-leaved forests; (700–)1500–2200 m. Guizhou, Sichuan, Yunnan [India, Myanmar, Vietnam].

16. *Epilobium brevifolium* D. Don, Prodr. Fl. Nepal. 222. 1825.

短叶柳叶菜 *duan ye liu ye cai*

Herbs perennial, erect or ascending, with fleshy soboles that leave loose brown basal scales. Stems 15–90 cm tall, simple or branched, strigillose throughout, sometimes mixed with glandular hairs on inflorescence, lacking raised decurrent lines. Leaves sessile or petioles to 4 mm; cauline blade broadly ovate to broadly lanceolate-elliptic, 1.5–5(–8) × 0.5–2.2(–3) cm, subglabrous with strigillose margin and midvein, base subcordate to cuneate, margin sharply denticulate with 7–22 teeth per side, apex subobtuse to acute. Inflorescence and flowers erect to slightly nodding. Sepals 4.5–6.5 mm, keeled. Petals pink to rose-purple, 7–11 mm. Stigma clavate or broadly so, entire. Capsules 3.5–7 cm, strigillose, often glandular; pedicels 0.4–1.5 cm. Seeds dark brown, 0.9–1.1 mm, coarsely papillose, with short chalazal collar; coma white, detaching easily. $2n = 36$.

Moist or open disturbed places by streams in valleys and mountains; 600–2500(–3600) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, Philippines, Vietnam].

- 1a. Leaves broadly ovate to ovate, base subcordate, usually herbaceous, petiole to 2 mm; petals 9–11 mm; stigma broadly clavate to clavate; capsules 5–7 cm 16a. subsp. *brevifolium*
- 1b. Leaves lanceolate or elliptic to narrowly ovate, base rounded or cuneate, subleathery, petiole 1–4 mm; petals 7–10 mm; stigma clavate; capsules

3.5–7 cm 16b. subsp. *trichoneurum*

16a. *Epilobium brevifolium* subsp. *brevifolium*

短叶柳叶菜(原亚种) *duan ye liu ye cai* (*yuan ya zhong*)

Epilobium trichoneurum Haussknecht var. *brachyphyllum* Haussknecht.

Stems 25–60 cm tall, simple or branched. Leaves herbaceous, subsessile or petiole to 2 mm; cauline blade broadly ovate or ovate, 2.5–4.5 × 1.5–2.2 cm, base subcordate, margin sharply denticulate with 15–22 teeth per side, apex acute or subobtuse. Petals 9–11 mm. Stigma broadly clavate or clavate. Capsules 5–7 cm. Seeds 0.9–1.1 mm. Fl. Jun–Jul, fr. Aug–Sep. $2n = 36$.

Rare in moist disturbed places by streams in mountains; 1700–2100 m. Xizang, Yunnan [India, Nepal].

16b. *Epilobium brevifolium* subsp. *trichoneurum* (Haussknecht) P. H. Raven, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 362. 1962.

腺茎柳叶菜 *xian jing liu ye cai*

Epilobium trichoneurum Haussknecht, Oesterr. Bot. Z. 29: 54. 1879; *E. cavalierei* H. Léveillé; *E. cordouei* H. Léveillé; *E. esquirolii* H. Léveillé; *E. hookeri* C. B. Clarke; *E. philippinense* C. B. Robinson.

Stems 15–90 cm tall, simple to well-branched above. Leaves subleathery; petiole to 4 mm; cauline blade lanceolate or elliptic to narrowly ovate, 1.5–5(–8) × 0.5–2(–3) cm, base rounded or cuneate, margin sharply denticulate with 7–17 teeth per side, apex subobtuse to acute. Petals 7–10 mm. Stigma clavate. Capsules 3.5–7 cm. Seeds 1–1.1 mm. Fl. Jul–Sep(–Oct), fr. Sep–Oct. $2n = 36^*$.

Open disturbed places along streams in valleys and mountains; 600–2500(–3600) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, NE India (Assam), Myanmar, Nepal, Philippines (Luzon), Vietnam].

17. *Epilobium pyrricholophum* Franchet & Savatier, Enum. Pl. Jap. 2: 370. 1879.

长籽柳叶菜 *chang zi liu ye cai*

Epilobium arcuatum H. Léveillé; *E. axillare* Franchet ex Koidzumi; *E. chrysocoma* H. Léveillé; *E. hakkodense* H. Léveillé; *E. japonicum* (Miquel) Haussknecht; *E. japonicum* var. *glandulosopubescens* Haussknecht; *E. kiusianum* Nakai; *E. makinoense* H. Léveillé; *E. myokense* Koidzumi; *E. nakaianum* H. Léveillé; *E. oligodontum* Haussknecht; *E. prostratum* H. Léveillé (1907), not Warburg (1893); *E. pyrricholophum* var. *anuoleucholophum* H. Léveillé; *E. pyrricholophum* var. *curvatopilosum* H. Hara; *E. pyrricholophum* var. *japonicum* (Miquel) H. Hara; *E. pyrricholophum* f. *kiusianum* (Nakai) Nakai; *E. quadrangulum* H. Léveillé; *E. rouyanum* H. Léveillé; *E. tetragonum* Linnaeus var. *japonicum* Miquel.

Herbs perennial, erect, with basal filiform stolons with small widely spaced leaves. Stems 25–80 cm tall, usually well-

branched or simple, strigillose and glandular pubescent throughout, especially dense on inflorescence. Leaves crowded, subsessile; cauline blade ovate to broadly oblong, upper ones narrowly ovate to lanceolate, 2–6 × 0.5–2 cm, both surfaces strigillose especially on margin and veins, base obtuse to subcordate, margin usually sharply serrulate with 7–15 teeth per side, apex acute or subobtuse. Inflorescence and flowers erect. Sepals 4–7 mm. Petals pink to purple, 6–8 mm. Stigma clavate to subcapitate, entire. Capsules 3.5–7.5 cm, strigillose, glandular; pedicels 0.7–1.5 cm. Seeds brown, 1.5–1.8 mm, finely papillose, with conspicuous chalazal collar 0.08–0.1 mm; coma reddish brown, rather persistent. Fl. Jul–Sep, fr. Aug–Nov. 2n = 36.

Wet places along streams and low areas, disturbed moist hillsides in mountains; (100–)300–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, E Sichuan, Zhejiang [Japan, Russia (Far East)].

18. *Epilobium amurense* Haussknecht, Oesterr. Bot. Z. 29: 55. 1879.

毛脉柳叶菜 mao mai liu ye cai

Herbs perennial, erect, with leafy basal soboles, elongated rosettes, or rarely fleshy stolons. Stems (10–)20–150 cm tall, simple or branched, densely strigillose, often mixed with glandular hairs on upper parts, with 2(or 4) ± distinct raised strigillose lines decurrent from margins of petioles, or rarely subglabrous throughout. Leaves subsessile or petioles 1–6 mm; cauline blade ovate to narrowly so, or rarely lanceolate-oblong, 2–9.5 × 0.5–2.5 cm, subglabrous with strigillose margin and veins, base rounded or cuneate, margin serrulate or denticulate with 6–35 teeth per side, apex acute or acuminate. Inflorescence and flowers erect to slightly nodding. Sepals 3.5–6 mm, often keeled. Petals white, pink or rose-purple, 4.5–8(–10) mm. Stigma capitate or broadly capitate, entire. Capsules 1.5–7 cm, sparsely strigillose or rarely glabrous; pedicels 0.3–1.3 cm. Seeds brown, 0.8–1 mm, coarsely papillose, with short chalazal collar; coma dull white, readily detached. 2n = 36.

Moist stream banks, wet areas along streams, roadside ditches, disturbed grassy slopes and moist areas in mountains; 600–4200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar, Nepal, Pakistan, Russia (Far East, Kamchatka)].

- 1a. Stems with prominent raised strigillose lines decurrent from margins of petioles; inflorescence strigillose with scattered glandular hairs; floral tube with tufts of hairs at insertion of sepals; leaves mostly ovate 18a. subsp. *amurense*
- 1b. Stems with weak, barely raised strigillose lines, often incomplete through internodes; inflorescence strigillose but eglandular; floral tube evenly strigillose, without tufts; leaves oblong-lanceolate to narrowly ovate 18b. subsp. *cephalostigma*

18a. *Epilobium amurense* subsp. *amurense*

毛脉柳叶菜(原亚种) mao mai liu ye cai (yuan ya zhong)

Epilobium amurense subsp. *laetum* (Wallich ex Haussknecht) P. H. Raven; *E. gansuense* H. Léveillé; *E. laetum* Wallich ex Haussknecht; *E. miyabei* H. Léveillé; *E. nepalense* Haussknecht; *E. organifolium* Lamarck var. *pubescens* Maximowicz; *E. ovale* Takeda; *E. tenue* Komarov; *E. yabei* H. Léveillé.

Herbs perennial, erect, with short leafy soboles, rosettes, or rarely fleshy stolons. Stems (10–)20–50(–80) cm tall, strigillose and glandular on upper part, sparsely strigillose below with two raised densely strigillose lines decurrent from margins of petiole, or rarely stem subglabrous. Leaves subsessile or lower ones with petioles 1–4 mm; cauline blade ovate, oblong, or lanceolate, to obovate below, 2–7 × 0.5–2.5 cm, margin sharply serrulate with 6–25 teeth per side. Inflorescence strigillose with scattered glandular hairs. Sepals 3.5–5 mm, sparsely strigillose, with tufts of hairs at junctures of sepal bases. Petals 5–8(–10) mm. Fl. (May–)Jul–Aug, fr. (Jun–)Aug–Oct. 2n = 36*.

Moist stream banks, roadside ditches, disturbed grassy slopes in mountains; 1300–4200 m. Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, India, Japan, Korea, Myanmar, Nepal, Pakistan, Russia (Far East, Kamchatka)].

18b. *Epilobium amurense* subsp. *cephalostigma* (Haussknecht) C. J. Chen et al., Syst. Bot. Monogr. 34: 127. 1992.

光滑柳叶菜 guang hua liu ye cai

Epilobium cephalostigma Haussknecht, Oesterr. Bot. Z. 29: 57. 1879; *E. angulatum* Komarov; *E. calycinum* Haussknecht; *E. cephalostigma* Haussknecht var. *nudicarpum* (Komarov) H. Hara; *E. consimile* Haussknecht var. *japonicum* Nakai; *E. coreanum* H. Léveillé; *E. cylindrostigma* Komarov; *E. nudicarpum* Komarov; *E. sugaharae* Koidzumi.

Herbs perennial, erect, with leafy basal soboles. Stems 25–150 cm tall, usually well-branched, strigillose on upper part, lacking any glandular hairs, with two faint strigillose lines decurrent from margins of petioles, or rarely subglabrous. Leaves subsessile or lower ones with petioles 1–6 mm; cauline blade oblong-lanceolate to narrowly ovate or rarely narrowly rhombic, 3–9.5 × 0.8–2.5 cm, margin sharply denticulate with 13–35 teeth per side. Inflorescence strigillose or very rarely subglabrous. Sepals 3.8–6 mm, sparsely and evenly strigillose or rarely subglabrous. Petals 4.5–7 mm. Fl. Jun–Sep, fr. Aug–Oct. 2n = 36.

Wet areas along streams, roadside ditches at low elevations or in mountains in south; 600–2100 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

19. *Epilobium kingdonii* P. H. Raven, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 377. 1962.

矮生柳叶菜 ai sheng liu ye cai

Herbs perennial, loosely clumped or matted with fleshy

soboles 2–6 cm below ground, caudex with scales. Stems 8–25 cm tall, simple or rarely branched, strigillose and scarcely glandular above, subglabrous below with 2 raised strigillose lines decurrent from margins of petioles. Leaves crowded, subsessile above, lower ones with petioles to 2 mm; cauline blade ovate, 0.8–2(–2.7) × 0.4–1(–1.6) cm, glabrous except for sparsely strigillose margin and midvein, base cuneate to obtuse, margin obscurely serrulate with 8–15 teeth per side, apex acute. Inflorescence slightly nodding in bud; flowers suberect. Sepals 4–5 mm. Petals rose-purple, 7–8 mm. Stigma capitate, entire. Capsules 3.5–5.5 cm, subglabrous; pedicels 0.4–1.2 cm. Seeds dark brown, 1.4–1.6 mm, finely papillose, with short chalazal collar; coma white, detaching easily. Fl. Aug–Sep, fr. Aug–Oct. Chromosome number unknown.

• Shaded moist slopes along rivers and streams; 3300–3700 m. W Sichuan, SE Xizang, NW Yunnan.

20. *Epilobium wallichianum* Haussknecht, Oesterr. Bot. Z. 29: 54. 1879.

滇藏柳叶菜 dian zang liu ye cai

Epilobium duclouxii H. Léveillé; *E. mairei* H. Léveillé; *E. souliei* H. Léveillé; *E. sykesii* P. H. Raven; *E. tanguticum* Haussknecht; *E. wallichianum* subsp. *souliei* (H. Léveillé) P. H. Raven.

Herbs perennial, erect or ascending, with leafy basal soboles. Stems 15–80 cm tall, simple to well-branched, sparsely strigillose and glandular above, subglabrous below with 4 or rarely 2 raised strigillose lines decurrent from margins of petioles, usually 4-angled. Leaves subleathery, subsessile; cauline blade oblong or elliptic to subovate, 2–6 × 0.6–2.5 cm, subglabrous except for sparsely strigillose margin and midvein, base subrounded or subcordate to broadly cuneate, margin serrulate with 10–25 teeth per side, apex obtuse or acute. Inflorescence and flowers often nodding. Sepals 4–8 mm. Petals pink to rose-purple, 5.5–13 mm. Stigma capitate to broadly clavate, entire. Capsules 3.8–7.5 cm, sparsely strigillose and glandular; pedicels 1–2.5 cm. Seeds brown, 0.9–1 mm, low papillose, with short chalazal collar; coma dull white, detaching easily. Fl. (May–)Jul–Aug, fr. Aug–Sep. $2n = 36$.

Moist places along rivers, streams, and bogs, and along forest margins in mountains; (1300–)1800–4100 m. Gansu, Guizhou, Hubei, Sichuan, Xizang, Yunnan [Bhutan, NE India (Assam, W Bengal, Sikkim), Myanmar, Nepal].

21. *Epilobium laxum* Royle, Ill. Bot. Himal. Mts. 211. 1835.

大花柳叶菜 da hua liu ye cai

Epilobium amplexens (Bentham ex C. B. Clarke) Haussknecht; *E. duthiei* Haussknecht; *E. sadae* H. Léveillé; *E. subnivale* Popov ex Pavlov; *E. tetragonum* Linnaeus var. *amplexens* Bentham ex C. B. Clarke.

Herbs perennial, erect, often clumped, with fleshy turions just below ground that leave brown basal scales. Stems 10–70 cm tall, branched or simple, strigillose and sparsely glandular above, glabrous below with raised strigillose lines decurrent from margins of petioles. Leaves sessile above, lower ones with petioles 2–8 mm; cauline blade ovate to broadly lanceolate

above to obovate below, 2–7 × 1.2–2.6 cm, subglabrous except for sparsely strigillose margin and midvein, base rounded, margin sharply denticulate with 15–20 teeth per side or subtire below, apex subacuminate. Inflorescence and flowers nodding to suberect. Sepals 4–7.5 mm. Petals bright rose-purple, (7–)10–16 mm. Stigma subcapitate, entire. Capsules 3.5–7.5 cm, sparsely strigillose, erect and appressed to stem; pedicels 0.1–1 cm. Seeds brown, 1.2–1.5 mm, finely papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Sep, fr. Jul–Sep. $2n = 36$.

Along rocky streams in mountains; 2500–4300 m. Xinjiang [India, Pakistan; SW Asia].

22. *Epilobium sikkimense* Haussknecht, Oesterr. Bot. Z. 29: 52. 1879.

鱗片柳叶菜 lin pian liu ye cai

Epilobium sikkimense subsp. *ludlowianum* P. H. Raven; *E. slobiferum* P. H. Raven; *E. squamosum* P. H. Raven; *E. trilicetorum* P. H. Raven.

Herbs perennial, erect, often clumped, with thick fleshy soboles just at or below ground level that leave brown basal scales. Stems (5–)10–25(–60) cm tall, simple or sometimes branched, glabrous except for 2(or 4) raised strigillose lines decurrent from margins of petioles, or sometimes strigillose and glandular on inflorescence. Leaves sessile and slightly clasping above, lower ones with petioles to 3 mm; cauline blade ovate to elliptic or oblong-lanceolate, narrower below, (0.8–)1.5–7.5 × (0.6–)1–3.7 cm, glabrous except for sparsely strigillose margin and midvein, base broadly cuneate or rounded, margin serrulate with 10–35 teeth per side, apex subobtuse to acute. Inflorescence and flowers nodding to suberect. Sepals 5.5–8 mm. Petals pink to rose-purple, 7–14 mm. Stigma capitate, entire. Capsules 5–9 cm, sparsely strigillose and glandular; pedicels 0.6–2(–2.5) cm. Seeds gray-brown, 1–1.3 mm, coarsely papillose, with short chalazal collar; coma white, detaching easily. Fl. (Jun–)Jul–Aug, fr. Aug–Sep. $2n = 36^*$.

High montane and alpine meadows, moist rocky slopes along streams, rocky glacial outwashes and gravel bars; (2400–)3200–4700 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, N India (Darjeeling, Sikkim, Uttar Pradesh), Myanmar, Nepal; Himalayan region].

23. *Epilobium williamsii* P. H. Raven, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 378. 1962.

埋鱗柳叶菜 mai lin liu ye cai

Herbs perennial, clumped or matted, with fleshy, elongated soboles 1.5–7 cm that leave brown basal scales. Stems 4–17(–25) cm tall, usually branched from base or simple, strigillose and glandular above, subglabrous or sparsely strigillose below with faint raised strigillose lines decurrent from margins of petioles. Leaves crowded, subleathery, sessile or petioles to 2 mm; cauline blade ovate to elliptic-ovate, 0.7–2.2 × 0.3–1 cm, subglabrous except for sparsely strigillose margin and midvein, base subrounded to broadly cuneate or subcordate, margin serrulate with 6–18(–26) teeth per side, apex acute to subacuminate. Inflorescence and flowers nodding to sub-

erect. Sepals 3–4.5 mm. Petals rose-purple, 5–6.5 mm. Stigma capitate, entire. Capsules 3.5–5(–6) cm, sparsely strigillose; pedicels 4–10 mm. Seeds gray-brown, 0.9–1(–1.2) mm, finely papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Aug, fr. Aug–Sep. Chromosome number unknown.

Open alpine meadows, moist places by streams, or on gravel banks of glacial lakes in high mountains; (2900–)3400–4900 m. Qinghai, Sichuan, Xizang, Yunnan [India, Myanmar, Nepal].

24. *Epilobium subcoriaceum* Haussknecht, Oesterr. Bot. Z. 29: 56. 1879.

亚革质柳叶菜 *ya ge zhi liu ye cai*

Herbs perennial, erect, with fleshy turions that leave brown basal scales. Stems often reddish green, 15–45 cm tall, simple or branched, sparsely strigillose and glandular on inflorescence, otherwise subglabrous with distinct raised strigillose lines decurrent from margins of petioles. Leaves subleathery, subsessile or petioles to 3 mm; cauline blade narrowly ovate to lanceolate, 1.5–5.5 × 0.5–1.5 cm, subglabrous except for sparsely strigillose margin and midvein, base broadly cuneate, margin serrulate with 13–22 teeth per side, apex acute. Inflorescence and flowers slightly nodding. Sepals 3.5–6 mm. Petals pink to rose-purple, 5.5–11 mm. Stigma capitate, entire. Capsules 3–7 cm, sparsely strigillose and glandular; pedicels 0.4–1.2 cm. Seeds brown, 1.1–1.5 mm, coarsely papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Aug, fr. Aug–Sep. Chromosome number unknown.

• Moist places in mountains, along streams, boggy areas, and disturbed places; 2400–3700 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan.

25. *Epilobium gouldii* P. H. Raven, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 371. 1962.

鳞根柳叶菜 *lin gen liu ye cai*

Herbs perennial, erect, with rounded, fleshy turions that leave brown leathery basal scales. Stems often reddish green, 23–30 cm tall, strict, simple or scarcely branched, sparsely strigillose and glandular on inflorescence, otherwise glabrous except for raised strigillose lines decurrent from margins of petioles. Leaves herbaceous, sessile; cauline blade ovate, 2–3 × 1–1.4 cm, subglabrous except for sparsely strigillose margin and midvein, base broadly rounded, margin acutely serrulate with 16–28 teeth per side, apex acute to shortly acuminate. Inflorescence and flowers slightly nodding. Sepals 3.5–4.5 mm, sparsely strigillose with tufts of long spreading hairs at junctures of sepal bases. Petals rose-purple, 4.5–5.5 mm. Stigma clavate to subcapitate, entire. Capsules 4.5–6 cm, sparsely strigillose and glandular; pedicels 0.6–1.5 cm. Seeds light brown, 0.9–1 mm, papillose, with short chalazal collar; coma white, detaching easily. Fl. Jul–Aug, fr. Aug–Sep. Chromosome number unknown.

Moist alpine meadows; 3600–4400 m. Xizang [NE India (Sikkim)].

26. *Epilobium fangii* C. J. Chen et al., Syst. Bot. Monogr. 34: 151. 1992.

川西柳叶菜 *chuan xi liu ye cai*

Herbs perennial, erect, with fleshy, elongated turions 2–3.5 cm underground that leave brown leathery basal scales. Stems 25–40 cm tall, simple or branched, strigillose throughout with scattered glandular hairs above and faint raised strigillose lines decurrent from margins of petioles. Petiole 1–4(–6) mm; cauline leaf blade elliptic to elliptic-oblong, 1.5–4 × 0.5–1.5 cm, subglabrous except for strigillose veins and margin, subleathery, base cuneate to broadly so, margin obscurely serrulate with 5–18 teeth per side, apex subobtusate or acute. Inflorescence and flowers erect. Sepals 4–5 mm, keeled. Petals pink to rose-purple, 6–7.5 mm. Stigma capitate, entire. Capsule 3–7 cm, sparsely strigillose; pedicels 0.5–1.5 cm. Seeds brown, 1.1–1.4 mm, finely papillose, with short chalazal collar; coma dingy white, detaching easily. Fl. May–Jul(–Aug), fr. Jun–Aug(–Oct). $2n = 36^*$.

• Open places along streams, bases of rock walls or scree slopes; (1100–)1700–3500 m. W Sichuan, N Yunnan.

27. *Epilobium palustre* Linnaeus, Sp. Pl. 1: 348. 1753.

沼生柳叶菜 *zhao sheng liu ye cai*

Epilobium fischerianum Pavlov; *E. palustre* var. *lavandulifolium* Lecoq & Lamotte ex Haussknecht; *E. palustre* var. *majus* C. B. Clarke; *E. palustre* var. *minimum* C. B. Clarke; *E. rhynchocarpum* Boissier.

Herbs perennial, erect, with filiform stolons terminating in small fleshy turions that leave brown basal scales. Stems (5–)15–70 cm tall, simple or well-branched, strigillose throughout or subglabrous on lower part, rarely with lines decurrent from margins of petioles. Leaves sessile or petioles to 3 mm; cauline blade sublinear to narrowly lanceolate or elliptic, 1.2–7 × 0.3–1.2(–1.9) cm, sparsely strigillose adaxially and on abaxial veins or rarely glabrescent, base rounded or cuneate, margin entire to obscurely denticulate with 5–9 teeth per side, occasionally revolute, apex acute or obtuse. Inflorescence erect or slightly nodding in bud, densely strigillose, sometimes with glandular hairs; flowers erect. Sepals 2.5–4.5 mm. Petals white to pink, 3–7(–9) mm. Stigma clavate to subcylindric, entire. Capsules 3–9 cm, strigillose; pedicels 1–5 cm. Seeds brown, (1.1–)1.3–2.2 mm, finely papillose, with prominent chalazal collar 0.08–0.3 mm; coma dull white or rarely tawny, not easily detaching. Fl. Jun–Aug, fr. Aug–Sep. $2n = 36$.

Wet places along streams, rivers, bogs, and marshes, often disturbed, and in subalpine meadows, widespread; 200–4500(–5000) m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [India, Japan, Kazakhstan, Korea, Mongolia, Nepal, Pakistan, Russia; widespread in C, N, and SW Asia, Europe, and North America (including Greenland)].

28. *Epilobium fastigiatoramosum* Nakai, Bot. Mag. (Tokyo) 33: 9. 1919 [*“fastigiato-ramosum”*].

多枝柳叶菜 *duo zhi liu ye cai*

Epilobium baicalense Popov.

Herbs perennial, erect, with short leafy soboles or rarely short filiform stolons with scattered cataphylls. Stems 7–

50(–80) cm tall, simple to densely branched, densely strigillose throughout, mixed with glandular hairs on inflorescence, often subglabrous below, lacking raised lines. Leaves sessile or lower ones with petioles to 2 mm; cauline blade lanceolate-elliptic to lanceolate-oblong, 2–7 × 0.3–1.7 cm, sparsely strigillose adaxially and on abaxial veins, base cuneate or subrounded, margin subentire, apex acute or obtuse. Inflorescence and flowers erect. Sepals 2.5–3.3 mm, slightly keeled. Petals white, 3–4(–4.7) mm. Stigma subcapitate to clavate, entire. Capsules 1.7–7 cm, strigillose, sparsely glandular; pedicels 0.9–2.1 cm. Seeds brown, 0.9–1.3 mm, minutely papillose, with inconspicuous chalazal collar; coma tawny, persistent. Fl. Jul–Aug, fr. Aug–Sep. $2n = 36^*$.

Wet areas along streams, lakes, bogs, grassy meadows; 400–2000(–3300) m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan [Japan, Korea, Mongolia, Russia (Dauria to Ussuri regions)].

29. *Epilobium minutiflorum* Haussknecht, Oesterr. Bot. Z. 29: 55. 1879.

细籽柳叶菜 xi zi liu ye cai

Epilobium decipiens Haussknecht (1879), not F. Schultz (1861); *E. modestum* Haussknecht; *E. propinquum* Haussknecht; *E. tetragonum* Linnaeus var. *minutiflorum* (Haussknecht) Boissier.

Herbs perennial, erect, with short, fleshy basal soboles or leafy rosettes. Stems 15–100 cm tall, well-branched or rarely simple, densely strigillose throughout, with scattered glandular hairs on inflorescence, often subglabrous below, with inconspicuous lines decurrent from margins of petioles. Leaves subsessile above, lower ones with petioles 1–6 mm; cauline blade oblong-lanceolate to narrowly ovate, 2–7 × 0.4–1.7 cm, glabrous except for strigillose margin and veins, base cuneate or subrounded, margin serrulate with 20–41 teeth per side, apex subobtusate or acute. Inflorescence suberect before anthesis; flowers erect. Sepals 2.4–4 mm, sometimes keeled. Petals white, rarely pink or rose, 3–4.3(–5) mm. Stigma clavate to subcapitate, entire. Capsules 3–8 cm, strigillose or rarely glabrescent; pedicels 0.5–2 cm. Seeds brown, 0.8–1.2 mm, minutely papillose, with conspicuous chalazal collar 0.08–0.12 mm; coma white, detaching readily. Fl. Jul–Aug, fr. Aug–Sep. $2n = 36$.

Frequent in moist places by streams, bogs, roadside ditches in otherwise low, warm areas; 500–1800 m. Gansu, Hebei, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shanxi, Xinjiang, Xizang [Afghanistan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Uzbekistan; SW Asia].

30. *Epilobium ciliatum* Rafinesque, Med. Repos., ser. 2, 5: 361. 1808.

东北柳叶菜 dong bei liu ye cai

Epilobium glandulosum Lehmann var. *asiaticum* H. Hara; *E. glandulosum* var. *kurilense* (Nakai) H. Hara; *E. kurilense* Nakai; *E. maximowiczii* Haussknecht; *E. punctatum* H. Léveillé.

Herbs perennial, erect, with compact leafy rosettes or rare-

ly fleshy turions that leave brown basal scales. Stems (10–)25–90(–150) cm tall, well-branched or rarely simple, strigillose and glandular pubescent, sparsely pubescent or glabrescent below, with raised strigillose lines decurrent from margins of petioles. Leaves sessile above, lower ones with petioles 1–3 mm; cauline blade lanceolate to narrowly ovate, 2.5–6(–7) × 0.6–1.5(–2) cm, subglabrous except for strigillose margin and veins, base rounded or rarely subcordate, margin serrulate with 10–30 teeth per side, apex acute to subacuminate. Inflorescence and flowers erect. Sepals 2.4–3.5 mm, keeled. Petals pink or white, rarely rose-purple, 3.5–5(–7) mm. Stigma clavate to cylindrical, entire. Capsules 4.5–7 cm, sparsely strigillose and glandular; pedicels 0.5–0.8(–1.4) cm. Seeds brown, 0.8–1.2 mm, with conspicuous longitudinal ridges of flattened, fused papillae, with chalazal collar 0.08–0.1 mm; coma dull white, readily detaching. Fl. Jul–Aug(–Sep), fr. Aug–Oct. $2n = 36$.

Moist disturbed places along streams, rivers, roadside ditches, slopes, and seeps; (700–)1200–2100 m. Heilongjiang, Jilin [Japan, Korea, Russia (Far East); extremely widespread in North and South America; naturalized in Asia, Australia, Europe, and New Zealand].

This variable taxon, which probably originated in North America, has become the most widespread and abundant species of *Epilobium* worldwide. *Epilobium ciliatum* subsp. *glandulosum* (Lehmann) Hoch & P. H. Raven occurs throughout montane and boreal North America; *E. ciliatum* subsp. *watsonii* (Barbey) Hoch & P. H. Raven occurs along the North American Pacific shoreline from California to British Columbia.

31. *Epilobium clarkeanum* Haussknecht, Monogr. Epilob. 220. 1884.

雅致柳叶菜 ya zhi liu ye cai

Herbs perennial, loosely clumped, with short soboles that leave brown leathery basal scales. Stems 10–20 cm tall, ascending, simple or branched basally, sparsely strigillose on upper stem, glabrescent below with inconspicuous strigillose lines decurrent from margins of petioles. Leaves subsessile above, lower ones with petioles to 2 mm; cauline blade ovate-elliptic to subobovate below, 1.1–1.6 × 0.5–0.8 cm, glabrous except for sparsely strigillose margin and midvein, base broadly cuneate or subrounded, margin denticulate with 3–8 teeth per side, apex obtuse to subacute. Inflorescence and flowers nodding. Sepals 2.5–3 mm, keeled. Petals white, 5–6 mm. Stigma capitate, entire. Capsules 3.5–4 cm, sparsely strigillose; pedicels 0.6–0.7 cm. Seeds light brown, 0.8–0.9 mm, reticulate, with short chalazal collar; coma white, readily detaching. Fl. May–Jul, fr. Jul–Aug. Chromosome number unknown.

Wet, boggy places in mountains; 3600–4500 m. Yunnan [NE India (Sikkim), Myanmar].

32. *Epilobium pengii* C. J. Chen et al., Syst. Bot. Monogr. 34: 169. 1992.

网籽柳叶菜 wang zi liu ye cai

Herbs perennial, loosely clumped, with short leafy or fleshy soboles that leave brown basal scales. Stems ascending, 7–25 cm tall, simple or sparsely branched, strigillose on upper stem, subglabrous below with raised strigillose lines decurrent

from margins of petioles. Leaves subsessile above, lower ones with petioles to 2 mm; cauline blade ovate to lanceolate above to broadly elliptic below, 1.5–2.5 × 0.8–1.2 cm, subglabrous except for strigillose margin and veins, base rounded above to cuneate below, margin denticulate with 7–12 teeth per side, apex acute above to obtuse below. Inflorescence nodding; flowers erect. Sepals 4.5–5.5 mm. Petals white, fading to pink, 5–6.5 mm. Stigma capitate, entire. Capsules 4.5–5 cm, strigillose; pedicels 1.5–2 cm. Seeds light brown, 1–1.1 mm, reticulate, with short chalazal collar; coma dingy white, persistent. Fl. Jul–Sep, fr. Aug–Oct. $2n = 36^*$.

● Moist, sheltered places along streams and seeps in alpine areas; 3100–3700 m. Taiwan.

33. *Epilobium anagallidifolium* Lamarck, *Encycl.* 2: 376. 1786.

新疆柳叶菜 xin jiang liu ye cai

Epilobium alpinum Linnaeus, nom. utique rej.; *E. dielsii* H. Léveillé; *E. nakaharanum* Nakai.

Herbs perennial, forming low mats, with thin, leafy epigeous soboles. Stems many, ascending or sigmoidally bent, 3–20 cm tall, simple, subglabrous throughout or strigillose on upper stem with scattered glandular hairs, with sparsely strigillose lines decurrent from margins of petioles. Leaves subsessile above, lower ones with petioles 1–6 mm; cauline blade spatulate to oblong basally, elliptic at mid-stem, lanceolate in upper pairs, 0.8–2.5 × 0.25–1 cm, subglabrous except for sparsely strigillose margin and midvein, base attenuate to cuneate, margin subentire to barely denticulate on upper leaves, apex obtuse below to subacute above. Inflorescence nodding in bud, suberect later; flowers suberect. Sepals 1.5–5 mm. Petals pink to rose-purple, rarely white, 2.5–6.5 mm. Stigma broadly clavate or subcapitate, entire. Capsules 1.7–3.6 cm, subglabrous or with scattered short hairs; pedicels 1–3.5(–5) cm. Seeds light brown, 0.7–1.4 mm, reticulate or rarely low papillose, with short chalazal col-

lar; coma dull white, persistent. Fl. Jul–Aug, fr. Aug–Sep. $2n = 36$.

Moist rockslides, talus slopes, and gravelly areas near streams or seeps in high montane and alpine regions; 1300–1500[–4000] m. Xinjiang [Japan, Russia; widespread across N Asia, Europe, and North America].

