

2. POLYGONUM Linnaeus, Sp. Pl. 1: 359. 1753, nom. cons.

蓼属 liao shu

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Herbs, rarely subshrubs, or small shrubs, rarely dioecious. Stems erect, prostrate, or ascending, usually with conspicuously swollen nodes, glabrous or pubescent, rarely prickly. Leaves simple, alternate, sessile; leaf blade variously shaped, margin entire; ocrea tubular, membranous, margin entire or lacerate, apex truncate or oblique. Inflorescence terminal or axillary, racemose, spicate, capitate, or paniculate, sometimes flowers fascicled or solitary in axils of leaves. Pedicel often articulate. Flowers bisexual, rarely unisexual; bracts and bracteoles membranous. Perianth persistent, 5(or 4)-parted. Stamens 7 or 8, rarely 4. Styles 2 or 3, deciduous, mostly elongate. Achenes trigonous or biconvex, rarely biconcave.

About 230 species: worldwide, mostly in N temperate regions; 113 species (23 endemic) in China.

Treatments of *Polygonum* and related genera (subfamily Polygonoideae), e.g., those by Haraldson (Symb. Bot. Upsal. 22(2): 1–95. 1978) and Ronse Decraene & Akeroyd (Bot. J. Linn. Soc. 98: 321–371. 1988), have segregated species of *Polygonum* in the broad sense adopted here into two separate tribes, Polygoneae and Persicarieae. As represented in China, the former is restricted to *P. sect. Polygonum*, i.e., species 1–16 below (*Polygonum* s.str.), along with various other genera, e.g., *Fagopyrum* (incl. *Pteroxygonum*) by Haraldson, and *Fallopia* (incl. *Reynoutria*) by Ronse Decraene & Akeroyd. The remainder of *Polygonum* in the broad sense (species 17–113 below) is generally assigned to *Persicaria* (or a varying number of segregate genera, such as *Aconogonon* and *Bistorta*) which, with *Antenoron* and *Koenigia* (and *Fagopyrum*, incl. *Pteroxygonum* by Ronse Decraene & Akeroyd), comprises the tribe Persicarieae. Of the six sections of *Polygonum* recognized here, the first, *P. sect. Polygonum*, represents *Polygonum* in the narrow sense, and the remaining five either fall within a broadly defined genus, *Persicaria*, or are variously recognized as distinct genera, e.g., *Aconogonon* and *Bistorta* by Haraldson. As circumscribed in earlier work (e.g., Meisner in Candolle, Prodr. 14(1), 1856), *P. sect. Cephalophilon* included a number of species now treated as belonging to the genus *Koenigia*; Ronse Decraene & Akeroyd (op. cit.) treated the residue of *P. sect. Cephalophilon* and *P. sect. Echinocaulon* as components of an expanded *Persicaria* sect. *Persicaria*.

- 1a. Flowers in axillary fascicles, if in spikes then with leaves; petioles articulate at base; ocrea membranous, 2-cleft or lacerate; filaments dilated at base (1. *P. sect. Polygonum*).
- 2a. Subshrub or small shrub.
 - 3a. Subshrub.
 - 4a. Stems prostrate or ascending; leaves linear, green, apex spinose 1. *P. paronychioides*
 - 4b. Stems erect; leaves elliptic or oblong, gray-green, apex not spinose 3. *P. schischkinii*
 - 3b. Small shrub.
 - 5a. Leaves orbicular or broadly elliptic, 1–1.3 cm wide; achenes densely granular punctulate, slightly shiny 2. *P. intramongolicum*
 - 5b. Leaves oblong or elliptic, 3–4 mm wide; achenes smooth, shiny 4. *P. popovii*
- 2b. Annual or perennial herb.
 - 6a. Perennial herb; roots ligneous; petioles 2–5 mm 5. *P. cognatum*
 - 6b. Annual herb; roots not ligneous; petioles very short or nearly absent.
 - 7a. Leaves linear or subulate.
 - 8a. Stems slender, glabrous; perianth membranous, cleft to 3/4; achenes biconvex, smooth, shiny 13. *P. molliiforme*
 - 8b. Stems not slender, scabrous or papillate; perianth herbaceous, cleft to 1/3 or 1/2; achenes trigonous, punctate, slightly shiny.
 - 9a. Perianth cleft to 1/3; achenes densely punctate; flowers 1 or 2 10. *P. polycnemoides*
 - 9b. Perianth cleft to 1/2; achenes slightly punctate; flower solitary 15. *P. acerosum*
 - 7b. Leaves lanceolate, oblanceolate, elliptic, or oblong.
 - 10a. Stems erect; inflorescence spicate, terminal.
 - 11a. Leaves caducous; achenes smooth, shiny 12. *P. argyrocoleon*
 - 11b. Leaves not caducous; achenes densely punctate, slightly shiny 11. *P. patulum*
 - 10b. Stems prostrate, procumbent, ascending, or erect; flowers 1–7, in axillary fascicles.
 - 12a. Pedicels articulate at middle; achenes smooth, shiny 9. *P. plebeium*
 - 12b. Pedicels articulate at apex; achenes densely punctate or granular-striate, opaque or slightly shiny.
 - 13a. Achenes densely granular-striate, opaque.
 - 14a. Perianth cleft to 2/3–3/4; achenes included or slightly exceeding persistent perianth 6. *P. aviculare*
 - 14b. Perianth cleft to 1/2; achenes included in persistent perianth 8. *P. arenastrum*
 - 13b. Achenes densely minutely punctate, slightly shiny.
 - 15a. Plant gray-green; ocrea silvery, with inconspicuous veins; achenes included in persistent perianth 14. *P. acetosum*
 - 15b. Plant green; ocrea: lower part brownish, upper part white, membranous, with conspicuous veins;

- achenes exceeding persistent perianth.
- 16a. Ocrea 5–9-veined; leaf blade adaxially with conspicuous midvein and lateral veins 16. *P. rigidum*
- 16b. Ocrea 3- or 4-veined; leaf blade adaxially with conspicuous midvein and inconspicuous lateral veins 7. *P. humifusum*
- 1b. Inflorescence spicate, capitate, or paniculate; ocrea neither 2-cleft nor lacerate; petiole not articulate; filaments not dilated at base.
- 17a. Stems and petioles with retrorse prickles (6. *P.* sect. *Echinocaulon*).
- 18a. Ocrea expanding into green herbaceous wings at apex.
- 19a. Leaf blade triangular-peltate; perianth accrescent and fleshy in fruit 100. *P. perfoliatum*
- 19b. Leaf blade not triangular-peltate, perianth not accrescent nor fleshy in fruit.
- 20a. Leaves triangular or narrowly triangular.
- 21a. Apex of ocrea with green reniform-orbicular wings; peduncles shortly glandular hairy 104. *P. senticosum*
- 21b. Apex of ocrea with green lanceolate-auriculate wings; peduncles not glandular hairy 105. *P. darrisii*
- 20b. Leaves hastate or narrowly hastate.
- 22a. Leaves narrowly hastate, both surfaces densely stellate hairy; wings of ocrea with dentate margin 101. *P. maackianum*
- 22b. Leaves hastate, both surfaces sparsely bristly, sometimes rarely stellate hairy; wings of ocrea with entire or crenate margin.
- 23a. Perianth 5-parted; achenes trigonous 102. *P. thunbergii*
- 23b. Perianth 4-parted; achenes biconvex 103. *P. biconvexum*
- 18b. Ocrea not expanding into wings at apex.
- 24a. Apex of ocrea oblique, shortly ciliate or not ciliate.
- 25a. Apex of ocrea shortly ciliate; peduncles with glandular hairs; bracts funnel-shaped.
- 26a. Leaves lanceolate or narrowly oblong, base sagittate; apex acute; perianth 4-parted 106. *P. praetermissum*
- 26b. Leaves ovate-elliptic, base hastate or cordate, apex acuminate; perianth 5-parted 107. *P. dissitiflorum*
- 25b. Apex of ocrea not ciliate; peduncles with or without glandular hairs; bracts elliptic.
- 27a. Leaves basally sagittate; styles 3, connate to below middle; achenes ovoid, trigonous 108. *P. sagittatum*
- 27b. Leaves basally cuneate, truncate, or subhastate; styles 2, free, achenes nearly orbicular, biconvex 109. *P. dichotomum*
- 24b. Apex of ocrea truncate, long ciliate.
- 28a. Leaves basally cuneate; spikes interrupted at base; bracts funnel-shaped; peduncles densely glandular hairy 110. *P. bungeanum*
- 28b. Leaves basally not cuneate; spikes not interrupted; bracts elliptic or ovate; peduncles densely pubescent and sparsely glandular hairy.
- 29a. Leaves ovate or oblong-ovate; inflorescence spicate, several spikes aggregated, becoming panicle-like 111. *P. muricatum*
- 29b. Leaves lanceolate or elliptic; inflorescence spicate, not aggregated nor panicle-like.
- 30a. Leaves basally weakly cordate, truncate, or subsagittate; base of ocrea with dense retrorse prickles; pedicels 1–2 mm, glabrous 112. *P. strigosum*
- 30b. Leaves basally sagittate or subhastate; base of ocrea without retrorse prickles; pedicels 4–6 mm, with glandular hairs 113. *P. hastatosagittatum*
- 17b. Stems and petioles without retrorse prickles.
- 31a. Inflorescence spicate.
- 32a. Stems branched, without basal leaves, sometimes with slender horizontal rhizomes; apex of ocrea truncate, usually ciliate; annual or perennial herb (2. *P.* sect. *Persicaria*).
- 33a. Perennial herb.
- 34a. Amphibious plant; leaves of aquatic plants oblong, basally subcordate; those of terrestrial plants lanceolate, basally rounded 17. *P. amphibium*
- 34b. Terrestrial plant; leaves lanceolate, basally cuneate, rarely subrounded.
- 35a. Leaf blade sericeous on both surfaces; cilia of ocrea 4–6 mm.
- 36a. Leaves narrowly cuneate at base; achenes orbicular, biconvex; styles 2, free 18. *P. pulchrum*
- 36b. Leaves cuneate at base; achenes ellipsoid, trigonous; styles 3, connate below middle 19. *P. huananense*
- 35b. Leaf blade appressed hispidulous or pubescent on both surfaces; cilia of ocrea 1–2 cm.
- 37a. Cilia of ocrea 1–1.2 cm; stems glabrous, sometimes sparsely hispidulous; leaf blade sparsely appressed hispidulous on both surfaces; achenes 2.5–3 mm 20. *P. japonicum*
- 37b. Cilia of ocrea 1.5–2 cm; stems pubescent; leaf blade pubescent on both surfaces; achenes 1.5–2 mm 21. *P. barbatum*
- 33b. Annual herb.
- 38a. Plant glabrous throughout 22. *P. glabrum*

- 38b. Plant not glabrous throughout.
- 39a. Peduncles glandular hairy or glandular.
- 40a. Peduncles glandular hairy.
- 41a. Peduncles, stems, and branches densely glandular hairy and hirsute; achenes trigonous 23. *P. viscosum*
- 41b. Peduncles sparsely glandular hairy or glabrous; stems and branches sparsely pubescent or glabrescent; achenes biconvex, rarely trigonous 24. *P. persicaria*
- 40b. Peduncles glandular.
- 42a. Peduncles sparsely viscid-glandular; perianth 5(or 4)-parted; achenes ovoid, trigonous 25. *P. viscoferum*
- 42b. Peduncles glandular; perianth 4(or 5)-parted; achenes broadly ovoid, biconcave 26. *P. lapathifolium*
- 39b. Peduncles not glandular hairy and glandular.
- 43a. Apex of ocrea usually with green leaflike wing; leaf blade 5–12 cm wide 27. *P. orientale*
- 43b. Apex of ocrea without wing; leaf blade 0.3–4 cm wide.
- 44a. Leaves dark blue-green when dry.
- 45a. Leaves ovate or broadly elliptic, apex obtuse or slightly acute; achenes broadly ovoid, trigonous 28. *P. tinctorium*
- 45b. Leaves elliptic-ovate or broadly lanceolate, apex acute; achenes ovoid, biconvex 29. *P. assamicum*
- 44b. Leaves not dark blue-green when dry.
- 46a. Perianth punctate.
- 47a. Leaves ovate, 1–2.5 cm; tepals 4–5 mm 30. *P. paralimicola*
- 47b. Leaves lanceolate, 4–10 cm; tepals 2–3 mm.
- 48a. Stems glabrous; perianth white or pink above; leaves with peppery taste 31. *P. hydro Piper*
- 48b. Stems sparsely hispidulous; perianth red above; leaves without peppery taste 32. *P. pubescens*
- 46b. Perianth not punctate.
- 49a. Spikes dense, not interrupted.
- 50a. Leaves narrowly lanceolate, 4–8 mm wide; achenes biconvex, 1–1.5 mm 37. *P. kawagoeanum*
- 50b. Leaves elliptic-lanceolate or ovate-lanceolate, 10–25 mm wide; achenes trigonous, 2.5–3 mm.
- 51a. Stems erect; leaves 6–10 cm, base cuneate; pedicels 7–8 mm 38. *P. jucundum*
- 51b. Stems stoloniferous, rooting from nodes; leaves 2–4 cm, base broadly cuneate; pedicels 5–6 mm 39. *P. limicola*
- 49b. Spikes lax, slender, interrupted.
- 52a. Cilia of ocrea 6–8 mm, achenes trigonous.
- 53a. Leaves ovate-lanceolate or ovate, apex caudate-acuminate, base broadly cuneate 33. *P. posumbu*
- 53b. Leaves lanceolate or broadly lanceolate, apex acute or acuminate, base cuneate or rounded 34. *P. longisetum*
- 52b. Cilia of ocrea 0.5–5 mm; achenes biconvex, rarely trigonous.
- 54a. Spikes to 10 cm, pendulous, interrupted; cilia of ocrea 3–5 mm 35. *P. taquetii*
- 54b. Spikes 3–5 cm, erect, interrupted below; cilia of ocrea 0.5–3 mm 36. *P. foliosum*
- 32b. Stems simple, rarely branched, with basal leaves; rhizomes ligneous, large, usually curved; apex of ocrea oblique, not ciliate; perennial herb, subshrub, or small shrub (3. *P. sect. Bistorta*).
- 55a. Subshrub or small shrub.
- 56a. Subshrub; leaves oblanceolate or lanceolate; spikes dense, 1–1.5 cm in diam.; tepals obovate 59. *P. affine*
- 56b. Small shrub; leaves elliptic or lanceolate; spikes lax, 0.5–0.8 cm in diam.; tepals elliptic.
- 57a. Leaves elliptic, 1–2 cm; tepals narrowly elliptic; stamens exserted 60. *P. vacciniifolium*
- 57b. Leaves lanceolate, 3–15 cm; tepals broadly elliptic; stamens included 61. *P. emodi*
- 55b. Perennial herb.
- 58a. Inflorescence lower part with bulbils.
- 59a. Basal leaves ovate or narrowly ovate; cauline leaves: upper ones sessile, clasping 40. *P. suffultoides*
- 59b. Basal leaves oblong, ovate-lanceolate or linear; cauline leaves not clasping 41. *P. viviparum*
- 58b. Inflorescence without bulbils.
- 60a. Basal leaves basally decurrent along petiole, forming wings or slightly decurrent.
- 61a. Basal leaves narrowly ovate or orbicular-ovate, 3–7 cm wide.
- 62a. Basal leaves narrowly ovate, apex acute; cauline leaves clasping 42. *P. pacificum*
- 62b. Basal leaves orbicular-ovate, apex obtuse; cauline leaves not clasping 43. *P. honanense*
- 61b. Basal leaves neither narrowly ovate nor orbicular-ovate, 1–3(–5) cm wide.
- 63a. Rhizomes horizontal, not curved; ocrea brown throughout, cleft to base 44. *P. sinomontanum*
- 63b. Rhizomes curved; ocrea: lower part green, upper part brown, cleft to middle.
- 64a. Cauline leaves: upper ones clasping.
- 65a. Leaves glabrous on both surfaces; basal leaves basally cuneate; cauline leaves auriculate;

- spikes 4–8 cm, ca. 1 cm in diam. 45. *P. manshuriense*
- 65b. Leaves densely gray-white pubescent abaxially; basal leaves basally rounded or subcordate; cauline leaves not auriculate; spikes 2–3 cm, 1–1.5 cm in diam. 46. *P. ochotense*
- 64b. Cauline leaves: upper ones not clasping.
- 66a. Leaves subleathery; perianth purple-red, tepals 4–5 mm; styles 3, connate to below 47. *P. milletii*
- 66b. Leaves papery; perianth pinkish or white, tepals 2–3.5 mm; styles 3, free.
- 67a. Spikes 2–3 cm, 1.5–2 in diam.; tepals 3–3.5 mm 48. *P. ellipticum*
- 67b. Spikes 4–8 cm, 0.8–1.2 in diam.; tepals 2–3 mm.
- 68a. Basal leaves narrowly oblong or oblong-lanceolate, 1–2 cm wide 49. *P. alopecuroides*
- 68b. Basal leaves broadly lanceolate or narrowly ovate, 2–5 cm wide 50. *P. bistorta*
- 60b. Basal leaves basally not decurrent.
- 69a. Stems simple or branched; basal leaves ovate.
- 70a. Rhizomes usually torulose; stems slender; leaf margin not revolute, apex acuminate or acute 51. *P. suffultum*
- 70b. Rhizomes horizontal, not torulose; stems robust; leaf margin slightly revolute, apex long acuminate 52. *P. amplexicaule*
- 69b. Stems simple; basal leaves not ovate.
- 71a. Rhizomes horizontal; spikes lax, nutant; pedicels 10–12 mm, articulate at middle 53. *P. griffithii*
- 71b. Rhizomes curved; spikes erect; pedicels 3–6 mm, articulate at apex.
- 72a. Basal leaves oblong or lanceolate; perianth pinkish or white, tepals 2–3 mm.
- 73a. Spikes 1.5–2.5 cm, 1–1.5 cm in diam.; basal leaves oblong, lanceolate, or linear-lanceolate; anthers black-purple 54. *P. macrophyllum*
- 73b. Spikes 4–6 cm, 0.8–1.2 cm in diam.; basal leaves narrowly oblong or lanceolate; anthers red-brown 55. *P. paleaceum*
- 72b. Basal leaves elliptic, ovate-elliptic, or ovate-lanceolate; perianth red or purple-red, tepals 3–5 mm.
- 74a. Leaf blade yellow-brown tomentose abaxially 56. *P. subscaposum*
- 74b. Leaf blade glabrous or sparsely pubescent.
- 75a. Basal leaves elliptic, veins purple-red; styles 3, connate to below middle 57. *P. purpureonervosum*
- 75b. Basal leaves ovate-elliptic or ovate-lanceolate, veins green; styles 3, free 58. *P. coriaceum*
- 31b. Inflorescence capitate or paniculate.
- 76a. Inflorescence capitate (4. *P.* sect. *Cephalophilon*).
- 77a. Perennial herb.
- 78a. Leaves palmate 62. *P. palmatum*
- 78b. Leaves not palmate.
- 79a. Ocrea glabrous, 1.5–3 cm, apex oblique; perianth accrescent in fruit, fleshy 63. *P. chinense*
- 79b. Ocrea glandular hairy or pilose, less than 1.2 cm, apex truncate; perianth not accrescent in fruit, not fleshy.
- 80a. Stems creeping or prostrate.
- 81a. Stems ligneous at base, tufted; leaves ovate or elliptic; petioles 2–3 mm; ocrea glandular hairy 64. *P. capitatum*
- 81b. Stems not ligneous at base, not tufted; leaves cordate or ovate-cordate; petioles 1–2 cm; ocrea pilose 65. *P. strindbergii*
- 80b. Stems erect or decumbent.
- 82a. Leaves pinnatifid 66. *P. runcinatum*
- 82b. Leaves entire.
- 83a. Leaves not decurrent at base; petioles not winged 69. *P. wallichii*
- 83b. Leaves decurrent at base; petioles winged.
- 84a. Leaves ovate-oblong, apex long acuminate 67. *P. umbrosum*
- 84b. Leaves broadly ovate or triangular-ovate, apex acuminate 68. *P. microcephalum*
- 77b. Annual herb.
- 85a. Stems prostrate, tufted; leaves narrowly lanceolate or lanceolate 70. *P. criopolitanum*
- 85b. Stems erect or decumbent; leaves ovate or lanceolate-ovate.
- 86a. Leaves sparsely long glandular hairy on both surfaces 71. *P. humile*
- 86b. Leaves pilose, strigose, or glabrous on both surfaces.
- 87a. Peduncles with glandular hairs; petioles winged.
- 88a. Leaves sparsely pellucid yellow glandular punctate; petioles winged; bracts glabrous 72. *P. nepalense*
- 88b. Leaves not glandular punctate; petioles narrowly winged; bracts sparsely glandular hairy 73. *P. glaciale*
- 87b. Peduncles without glandular hairs; petioles not winged.

- 89a. Perianth 4-parted.
 - 90a. Leaves obovate or elliptic, 3–6 mm, both surfaces glabrous or sparsely pilose abaxially 77. *P. fertile*
 - 90b. Leaves ovate, 1–1.5 cm, both surfaces pilose 78. *P. sparsipilosum*
- 89b. Perianth 5-parted.
 - 91a. Leaves ovate, 4–8 mm, glabrous, base cordate; petioles short or nearly absent 74. *P. delicatulum*
 - 91b. Leaves ovate or lanceolate-ovate, 1–3 cm, strigose or pilose, base cuneate or subtruncate; petioles 3–10 mm.
 - 92a. Leaves strigose on both surfaces; stamens 3 or 4 75. *P. filicaule*
 - 92b. Leaves pilose or glabrescent on both surfaces; stamens 8 76. *P. cyanandrum*
- 76b. Inflorescence paniculate (5. *P.* sect. *Aconogonon*).
- 93a. Subshrub.
 - 94a. Perianth accrescent and fleshy in fruit, tepals elliptic; leaves elliptic or elliptic-lanceolate, base cuneate 79. *P. molle*
 - 94b. Perianth not accrescent nor fleshy in fruit, tepals obovate; leaves not elliptic nor elliptic-lanceolate, base rounded, cordate, or truncate, but cuneate in *P. tibeticum*.
 - 95a. Branches forked; leaves sessile, ovate, base rounded or subcordate 80. *P. tortuosum*
 - 95b. Branches not forked; leaves petiolate, lanceolate, elliptic, or oblong, base hastate-cordate, subtruncate, or cuneate.
 - 96a. Panicle spreading; leaves broadly lanceolate or oblong-lanceolate, or narrowly lanceolate or narrowly oblong, 6–17 cm, base hastate-cordate or subtruncate 81. *P. polystachyum*
 - 96b. Panicle not spreading; leaves elliptic or obovate-oblong, 3–5 cm, base cuneate 82. *P. tibeticum*
- 93b. Perennial herb.
 - 97a. Stems creeping, forming tufts; leaves orbicular or reniform.
 - 98a. Leaves 0.3–0.5 cm in diam., base rounded; tepals elliptic; achenes broadly ovoid, biconvex 83. *P. nummulariifolium*
 - 98b. Leaves 1–4 cm in diam.; base cordate; tepals obovate; achenes ellipsoid, trigonous 84. *P. forrestii*
 - 97b. Stems erect; leaves not orbicular or reniform.
 - 99a. Stems simple, with basal leaves; flowers unisexual and plants dioecious 85. *P. hookeri*
 - 99b. Stems branched, without basal leaves; flowers bisexual.
 - 100a. Leaves ovate.
 - 101a. Perianth red; pedicels articulate at middle 86. *P. songaricum*
 - 101b. Perianth white; pedicels articulate at apex or not articulate.
 - 102a. Pedicels 3–4 mm, not articulate or ?articulate; achenes equaling persistent perianth 87. *P. coriarium*
 - 102b. Pedicels 1–2 mm, articulate at apex; achenes distinctly exceeding persistent perianth.
 - 103a. Leaves basally cuneate, petioles short or nearly absent; achenes usually erect 88. *P. platyphyllum*
 - 103b. Leaves basally rounded, petioles 2–4 cm; achenes pendulous 89. *P. limosum*
 - 100b. Leaves elliptic or lanceolate to linear, or oblong, but narrowly ovate to broadly ovate in *P. campanulatum*.
 - 104a. Leaves basally usually hastate 90. *P. sibiricum*
 - 104b. Leaves basally not hastate.
 - 105a. Tepals obovate, 3–4 mm wide.
 - 106a. Leaf blade usually constricted below, base truncate or cuneate; bracts 1–1.5 cm; pedicels pubescent 96. *P. pinetorum*
 - 106b. Leaf blade not constricted below, base broadly cuneate; bracts 2–3 mm; pedicels glabrous.
 - 107a. Pedicels articulate at apex; styles ca. 2 mm 97. *P. campanulatum*
 - 107b. Pedicels not articulate at apex; styles ca. 0.5 mm.
 - 108a. Leaf blade abaxially densely grayish tomentose 98. *P. lichiangense*
 - 108b. Leaf blade abaxially pilose 99. *P. cathayanum*
 - 105b. Tepals elliptic, 2–3 mm.
 - 109a. Achenes distinctly exceeding persistent perianth.
 - 110a. Stems branched from above middle, usually sparsely hirsute; branches not divaricate; leaves ovate-lanceolate or lanceolate, base broadly cuneate 94. *P. alpinum*
 - 110b. Stems branched from base, glabrous; branches divaricate; leaves lanceolate or oblong, base cuneate or narrowly cuneate 95. *P. divaricatum*
 - 109b. Achenes included in persistent perianth.
 - 111a. Leaves linear, 2–4 mm wide, margin conspicuously revolute 91. *P. angustifolium*
 - 111b. Leaves lanceolate 5–15 mm wide, margin not revolute.
 - 112a. Leaves lanceolate or linear lanceolate, 5–8 mm, base narrowly cuneate 92. *P. ocreatum*

112b. Leaves lanceolate or broadly lanceolate, 8–15 mm wide, base broadly cuneate 93. *P. ajanense*

1. *Polygonum* sect. *Polygonum*

蒺藜组 bian xu zu

Herbs or low shrubs. Petioles articulate at base; ocrea often lacinate. Flowers axillary, solitary or in small clusters, sometimes forming lax leafy spikes. Perianth (4- or)5-parted, not enlarged in fruit. Stamens 5–8, reduced in number in outer whorl; filaments, especially the inner, strongly dilated at base.

Between 50 and 80 species: worldwide; 16 species (one endemic) in China.

1. *Polygonum paronychioides* C. A. Meyer ex Hohenacker, Bull. Soc. Imp. Naturalistes Moscou 11: 356. 1838.

线叶蒺藜 xian ye bian xu

Polygonum englerianum H. Gross; *P. himalayense* H. Gross.

Subshrubs prostrate or ascending, 5–15 cm tall, papillate. Petiole short, articulate; leaf blade green, linear, 8–15 × 0.7–1.5 mm, both surfaces scabrous, midvein conspicuous, base narrowly cuneate, margin revolute, apex spinose; ocrea broadly lanceolate, 5–8 mm, thinly membranous, hyaline, margin lacerate, apex acute. Flower solitary, axillary; bracts lanceolate, longer than perianth. Pedicel very short. Perianth pinkish, 5-cleft to 1/2; tepals unequal, outer 2 narrowly lanceolate, ca. 2 mm, apex acuminate, inner 3 elliptic, short, apex obtuse. Stamens 8; filaments dilated at base. Achenes included in persistent perianth, shiny, narrowly ellipsoid, trigonous, ca. 2 mm, smooth. Fl. Jun–Aug, fr. Jul–Sep.

Gravelly mountain slopes; ca. 3500 m. W Xizang (Zanda) [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

2. *Polygonum intramongolicum* Borodina, Rast. Tsentral. Azii 9: 102. 1989.

圆叶蒺藜 yuan ye bian xu

Atraphaxis tortuosa Losinskaja, Izv. Glavn. Bot. Sada SSSR 26: 6. 1927; *Polygonum tortuosum* (Losinskaja) Lovelius (1975), not D. Don (1825).

Shrubs erect, 40–50 cm tall, much branched. Bark gray-brown, exfoliating; branches curved; branchlets densely papillate. Petiole short, base articulate; leaf blade gray-green abaxially, green adaxially, orbicular or broadly elliptic, 1–1.5 × 1–1.3 cm, subleathery, abaxially with prominent midvein and conspicuous lateral veins, adaxially with conspicuous midvein, base broadly cuneate or rounded, margin crisped, apex obtuse; ocrea brown, oblique, membranous, apex acute. Inflorescence terminal, racemose, lax, 3–5 cm; bracts brown, funnel-shaped, membranous, each 2- or 3-flowered. Pedicel 3–4 mm, articulate at middle. Perianth pinkish or white, 5-parted; tepals obovate, ca. 4 mm, veined, apex obtuse. Stamens 8, included; filaments dilated at base. Styles 3, connate to below middle; stigmas 3, capitate. Achenes included in persistent perianth, black-brown, slightly shiny, broadly ovoid, trigonous, 3.5–4 mm, densely granular punctulate. Fl. Jun–Jul, fr. Jul–Aug.

Dry mountain slopes, hilly regions; 1000–2300 m. Nei Mongol [Mongolia].

Fu and Zhao (in Fl. Intramongol. 2: 57. 1978) previously published this *nomen novum*; however, it was invalid under Art. 33.3 of the St. Louis Code because they did not give a full and direct reference to the place of publication of the replaced synonym.

3. *Polygonum schischkini* Ivanova ex Borodina, Rast. Tsentral. Azii 9: 104. 1989.

新疆蒺藜 xin jiang bian xu

Polygonum glareosum Schischkin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 7: 121. 1938, not Philippi (1895).

Subshrubs erect, 20–30 cm tall, branched from base. Branches curved, angulate, glabrous. Petiole 1–2 mm, articulate at base; leaf blade gray-green, elliptic or oblong, ×0.8–1.5 cm × 3–6 mm, leathery, both surfaces glabrous, abaxially with prominent midvein, base cuneate, margin revolute, apex acute or obtuse; ocrea: lower part brown, herbaceous, upper part white, membranous, 2-lobed. Inflorescence racemose, 4–7 cm; bracts green, each 1- or 2-flowered. Pedicel ca. 1.5 mm. Perianth green, margin pinkish or white, 5-parted; tepals narrowly ovate, 2–2.5 mm. Stamens 8; filaments unequal. Styles 3; stigmas capitate. Achenes included in persistent perianth, black-brown, shiny, narrowly ovoid, trigonous, 3–3.5 mm. Fl. Jun–Jul, fr. Jul–Aug.

Gravelly areas, saline places; 600–1500 m. Xinjiang [Mongolia].

4. *Polygonum popovii* Borodina, Rast. Tsentral. Azii 9: 104. 1989.

库车蒺藜 ku che bian xu

Shrubs erect, 20–50 cm tall, branched. Bark brownish, longitudinally exfoliating; branchlets papillate. Leaves alternate, usually fasciculate; petiole 1–2 mm, papillate, articulate; leaf blade green, oblong or elliptic, 0.7–1.5 cm × 3–4 mm, leathery, abaxially minutely papillate along midvein, adaxially glabrous, with conspicuous midvein on both surfaces, base cuneate, margin revolute, apex obtuse; ocrea: lower part brownish, herbaceous, upper part white, membranous, lacerate. Inflorescence terminal, racemose; bracts 1(or 2)-flowered. Pedicel 1.5–2 mm, apex articulate. Perianth green, margin pinkish, 5-parted, membranous; tepals elliptic, 2–2.5 mm. Stamens 8; filaments dilated at base. Styles 3; stigmas capitate. Achenes black-brown, shiny, ovoid, trigonous, 2–3 mm, smooth. Fl. Jun–Jul, fr. Jul–Aug.

• Dry mountain slopes; 1000–2600 m. Xinjiang (Tian Shan).

5. *Polygonum cognatum* Meisner, Monogr. Polyg. 91. 1826.

岩蒺藜 yan bian xu

Polygonum myriophyllum H. Gross; *P. rupestre* Karelina &

Kirilov.

Herbs perennial. Root ligneous, stout, ca. 1.5 cm in diam. Stems prostrate, 8–15 cm, branched from base, angulate, minutely papillate along angles. Petiole 2–5 mm, base articulate; leaf blade elliptic, 1–2 cm × 5–13 mm, both surfaces glabrous, abaxially with prominent midvein, adaxially with conspicuous midvein; ocrea silvery, thinly membranous, hyaline, veined, apex lacerate. Flowers 1–5, in axillary fascicles; bracts ca. as long as lower leaves, membranous, apex acuminate. Pedicel 1–3 mm. Perianth green, margin pinkish or white, 5-cleft to 1/2; tepals ovate, 1.5–2 mm, becoming hard in fruit. Stamens 8, included; filaments dilated at base. Styles 3; stigmas capitate. Achenes included in persistent perianth, black, shiny, ovoid, trigonous, 2.5–3 mm. Fl. Jun–Aug, fr. Jul–Sep.

Gravelly mountain slopes, dry riverbeds; 1400–4600 m. Nei Mongol, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia (Siberia), Tajikistan].

6. Polygonum aviculare Linnaeus, Sp. Pl. 1: 362. 1753.

蒺藜 bian xu

Herbs annual. Stems prostrate, ascending, or erect, 10–40 cm tall, much branched from base. Petiole short or nearly absent, articulate at base; leaf blade lanceolate or narrowly elliptic, 1–4 cm × 3–12 mm, both surfaces glabrous, midvein and lateral veins conspicuous, base cuneate, margin entire, apex acute or nearly obtuse; ocrea: lower part brown, upper part white or throughout brown, membranous, veined, apex lacerate. Flowers 1–5; axillary; bracts thinly membranous. Pedicel slender, articulate at apex. Perianth green, margin white or pinkish, 5-cleft to 2/3–3/4; tepals elliptic, 2–2.5 mm. Stamens 8; filaments dilated at base. Styles 3, free, short; stigmas capitate. Achenes included or slightly exceeding persistent perianth, black-brown, opaque, ovoid, trigonous, 2.5–3 mm, minutely granular striate. Fl. May–Jul, fr. Jul–Aug. 2n = 40, 60.

Near fields, roadsides, waste places; sea level to 4200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [widely distributed in N temperate zone; widely naturalized in S temperate zone].

- 1a. Ocrea: lower part brown, upper part white 6a. var. *aviculare*
- 1b. Ocrea brown throughout 6b. var. *fusco-ochreatum*

6a. Polygonum aviculare var. *aviculare*

蒺藜(原变种) bian xu (yuan bian zhong)

Polygonum aviculare var. *heterophyllum* Munshi & Javed; *P. aviculare* var. *vegetum* Ledebour; *P. heterophyllum* Lindman, nom. illeg. superfl.; *P. monspeliense* Thiebaut ex Persoon.

Ocrea: lower part brown, upper part white.

Near fields, roadsides, waste places; sea level to 4200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [widely distributed in N temperate zone; widely naturalized in S temperate zone].

This variety is used medicinally.

6b. Polygonum aviculare var. *fusco-ochreatum* (Komarov) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 9. 1998.

褐鞘蒺藜 he qiao bian xu

Polygonum fusco-ochreatum Komarov, Fl. URSS 5: 719. 1936; *P. argenteum* Skvortsov; *P. fusco-ochreatum* f. *stans* (Kitagawa) C. F. Fang; *P. stans* Kitagawa.

Ocrea brown throughout.

Near fields, roadsides; sea level to 900 m. Heilongjiang, Jilin, Liaoning [Russia (Far East)].

7. Polygonum humifusum Merk ex C. Koch, Linnaea 22: 205. 1849.

普通蒺藜 pu tong bian xu

Polygonum humifusum f. *yamatutae* (Kitagawa) C. F. Fang; *P. mandshuricum* Skvortsov; *P. yamatutae* Kitagawa.

Herbs annual. Stems prostrate or ascending, 20–30 cm tall. Petiole very short, articulate at base; leaf blade elliptic or oblanceolate, 1–1.5 cm × 3–5 mm, abaxially with slightly prominent midvein and conspicuous lateral veins, adaxially with conspicuous midvein and inconspicuous lateral veins, base narrowly cuneate, apex slightly obtuse or acute; ocrea: lower part brownish, upper part white, membranous, 3- or 4-veined. Flowers 2–5, in axillary fascicles. Perianth green, margin white or pinkish, 5-parted to 2/3; tepals oblong, 1.5–2 mm. Achenes exceeding persistent perianth, dark brown, slightly shiny, narrowly ovoid, trigonous, 2–2.5 mm, densely minutely punctate, apex acute. Fl. Jun–Jul, fr. Aug–Sep.

Near fields, roadsides, in sand by riversides; sea level to 400 m. Heilongjiang, Jilin, Liaoning [Mongolia, Russia; North America].

8. Polygonum arenastrum Boreau, Fl. Centre France, ed. 3, 2: 559. 1857.

伏地蒺藜 fu di bian xu

Polygonum planum Skvortsov; *P. polyneuron* Franchet & Savatier; *P. prostratum* Skvortsov (1943), not R. Brown (1810), nor Roxburgh ex D. Don (1825).

Herbs annual. Stems procumbent or ascending, 15–30 cm tall, branched from base. Petiole short, articulate at base; leaf blade elliptic or oblanceolate, 0.5–2 cm × 2–5 mm, both surfaces with conspicuous veins, base narrowly cuneate, margin entire, apex usually obtuse; ocrea white, 2–3 mm, membranous, 5–7-veined, lacerate. Flowers 3–5, in axillary fascicles; bracts narrowly ovate, apex acute. Pedicel articulate at apex. Perianth green, 5-cleft to 1/2, veined, margin white; tepals oblong. Stamens 8; filaments dilated at base. Styles 3, very short; stigmas capitate. Achenes included in persistent perianth, dark brown, opaque, narrowly ovoid, trigonous, rarely biconvex, 2–2.5 mm, densely minutely granular striate. Fl. Jun–Aug, fr. Jul–Sep. 2n = 40, 60.

In sand at riversides, grasslands; 100–300 m. Heilongjiang [Japan, Korea, Mongolia, Russia; Europe, North America; widely introduced elsewhere including Australia].

9. Polygonum plebeium R. Brown, Prodr. 420. 1810.

铁马鞭 tie ma bian

Polygonum aviculare Linnaeus var. *minutiflorum* Franchet; *P. changii* Kitagawa; *P. humifusum* Pallas ex Ledebour var. *mandshuricum* Skvortsov; *P. parviflorum* Y. L. Chang & S. H. Li (1959), not Schott (1818), nor Gromov (1917); *P. plebeium* subsp. *changii* (Kitagawa) V. N. Voroschilov.

Herbs annual. Stems prostrate, 10–40 cm tall, much branched from base, usually internodes shorter than leaves. Petiole very short or nearly absent; leaf blade narrowly elliptic or oblanceolate, 5–15 × 2–4 mm, both surfaces with conspicuous midvein and inconspicuous lateral veins, base narrowly cuneate, margin entire, apex obtuse or acute; ocrea white, 2.5–3 mm, membranous, apex lacerate. Flowers 3–6, in axillary fascicles; bracts membranous. Pedicels shorter than bracts, articulate at middle. Perianth green, margin white or pinkish, 5-parted; tepals narrowly elliptic, 1–1.5 mm, abaxially with prominent veins. Stamens 5; filaments included, slightly dilated at base. Styles 3, rarely 2, very short; stigmas capitate. Achenes included in persistent perianth, black-brown, shiny, broadly ovoid, trigonous or biconvex, 1.5–2 mm, smooth. Fl. May–Aug, fr. Jun–Sep. $2n = 20$.

Near fields and roads, wet areas; sea level to 2200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [India, Indonesia, Japan, Kazakhstan, Myanmar, Nepal, Philippines, Russia (Far East), Thailand; N Africa, Australia, ?introduced in Europe].

10. *Polygonum polycnemoides* Jaubert & Spach, III. Pl. Orient. 2: 30. 1844.

针叶蒿蓄 zhen ye bian xu

Herbs annual. Stems prostrate or suberect, 5–20 cm tall, scabrous, internodes shorter than leaves. Petiole very short or nearly absent; leaf blade linear or subulate-linear, 5–13 × 1–1.5 mm, midvein slightly prominent abaxially, conspicuous adaxially, lateral veins inconspicuous on both surfaces, base narrowly cuneate, margin entire, apex acute; ocrea white, narrowly ovate, connate at base, thinly membranous, margin sparsely lacerate, apex 2-lobed. Flowers 1 or 2, axillary. Perianth green, margin white or pinkish, 5-cleft to 1/3, herbaceous, minutely papillate; tepals elliptic, 0.5–1 mm. Stamens 8, included; anthers purple-red. Styles 3, very short; stigmas capitate. Achenes included in persistent perianth, black-brown, slightly shiny, ovoid, trigonous, 1.5–2 mm, densely punctate. Fl. Jun–Jul, fr. Jul–Aug.

Dry slopes, rocky deserts, gravelly grasslands; 600–2200 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

11. *Polygonum patulum* Marschall von Bieberstein, Fl. Taur.-Caucas. 1: 304. 1808.

展枝蒿蓄 zhan zhi bian xu

Polygonum bellardii Allioni var. *gracilius* Ledebour; *P. gracilius* (Ledebour) Klokov; *P. patulum* var. *gracilius* (Ledebour) Rouy; *P. patulum* var. *patulum* f. *gracilius* (Ledebour) I. Grint; *P. salinum* Baranov & Skvortsov.

Herbs annual. Stems erect, 20–80 cm tall, usually much

branched; branchlets spreading. Leaves persistent; petiole short or nearly absent; leaf blade lanceolate or narrowly lanceolate, abaxially with slightly prominent midvein and conspicuous lateral veins, adaxially with conspicuous midvein and lateral veins, base narrow, apex acute; ocrea: lower part brown, upper part white, tubular, 7–8 mm, membranous, 6- or 7-veined, usually lacerate. Inflorescence terminal, spicate, interrupted. Pedicel 1.5–2 mm, slender. Perianth green, margin pinkish, 5-parted; tepals elliptic, ca. 1.5 mm. Stamens 8; filaments dilated at base. Styles 3, short; stigmas capitate. Achenes equaling or slightly exceeding persistent perianth, brown, slightly shiny, ovoid, trigonous, 2–3 mm, densely punctate. Fl. Jun–Jul, fr. Aug–Sep.

Ditches, wet areas; 400–1800 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan; SW Asia, Europe].

12. *Polygonum argyrocoleon* Steudel ex Kuntze, Linnaea 20: 17. 1847.

帚蒿蓄 zhou bian xu

Herbs annual. Stems erect, 50–80 cm tall, glabrous, angulate, much branched; branches ascending, fastigiate, nodes inflated, internodes 3–5 cm. Leaves caducous; petiole short, articulate at base; leaf blade usually caducous, lanceolate or linear-lanceolate, 1.5–4 cm × 6–8 mm, both surfaces with conspicuous veins, base narrowly cuneate, apex acute; ocrea lower part brown, upper part white, tubular, membranous, 6–8-veined, lacerate at apex. Inflorescence terminal, spicate, interrupted. Pedicel slender, articulate at apex. Perianth green, margin pinkish or white, 5-parted; tepals elliptic, ca. 2 mm. Stamens 7 or 8; filaments dilated at base. Styles 3; stigmas capitate. Achenes included in persistent perianth, brown, shiny, ovoid, trigonous, 2–2.5 mm, smooth. Fl. Jun–Jul, fr. Jul–Aug.

Marshy areas, streamsides; 200–2500 m. Gansu, Nei Mongol, Qinghai, Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

13. *Polygonum molliiforme* Boissier, Diagn. Pl. Orient., ser. 1, 7: 84. 1846.

丝茎蒿蓄 si jing bian xu

Herbs annual. Stems erect, usually purple-red, 5–10 cm tall, slender, 3–5 mm in diam., glabrous, internodes 1–1.5 cm. Petiole short; leaf blade spreading or curved, linear or subulate, 7–15 × 0.5–1 mm, both surfaces with conspicuous midvein, base articulate, apex mucronulate; ocrea silvery, narrowly ovate, thinly membranous, pellucid, base connate, margin entire or slightly denticulate, apex acute. Flower solitary, axillary. Pedicel short. Perianth white, 5-cleft to 3/4, membranous; tepals elliptic, 2–3 mm, apex obtuse. Stamens 5, sometimes fertile ones 2 or 3; filaments dilated at base; anthers black. Styles 2, very short; stigmas capitate. Achenes equaling or slightly exceeding persistent perianth, shiny, ovoid, biconvex, ca. 2 mm, smooth, apex acute. Fl. Jun–Jul, fr. Jul–Aug.

In sand at riversides, dry mountain slopes; 300–500 m. Xinjiang [Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

14. *Polygonum acetosum* Marschall von Bieberstein, Fl. Taur.-Caucas. 1: 304. 1808.

灰绿篇蓄 hui lü bian xu

Herbs annual. Stems prostrate or ascending, gray-green, 10–30 cm tall, much branched from base. Petiole very short or nearly absent, articulate at base; leaf blade gray-green, oblong-linear, 1–2.5 cm × 3–5 mm, midvein abaxially slightly prominent, adaxially conspicuous, lateral veins inconspicuous on both surfaces, base narrowly cuneate, margin minutely papillate, apex acute; ocrea silvery, ovate-lanceolate, 4–5 mm, membranous, with inconspicuous veins, base connate. Flowers 3–7 in axillary fascicles. Pedicel 1–3 mm, apex articulate. Perianth gray-green, margin white, 5-parted, veined; tepals oblong, 1.5–2 mm. Stamens 7 or 8; filaments dilated at base. Styles 3; stigmas capitate. Achenes included in persistent perianth, brown, slightly shiny, broadly ovoid, trigonous, 2–2.5 mm, densely minutely punctate. Fl. May–Jun, fr. Jun–Jul.

Fields, near ditches; 500–2000 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan, Uzbekistan].

15. *Polygonum acerosum* Ledebour ex Meisner in Candolle, Prodr. 14(1): 92. 1856.

松叶篇蓄 song ye bian xu

Herbs annual. Stems ascending, often pinkish, 15–25 cm tall, papillate, branched from base. Leaves sessile; leaf blade green, linear or linear-lanceolate, 8–20 × 2–3 mm, nearly fleshy, abaxially midvein prominent, adaxially midvein conspicuous, lateral veins inconspicuous on both surfaces, base narrowly cuneate, margin entire, slightly revolute, apex acute, with mucro; ocrea silvery, ovate-lanceolate, 4–5 mm, membranous, base connate, apex lacerate. Flower solitary, axillary. Pedicel very short, articulate at apex. Perianth 5-cleft to 1/2, herbaceous, minutely papillate, margin white; tepals elliptic, 1–1.5 mm. Stamens 7 or 8. Styles 3, very short. Achenes included in persistent perianth, dark brown, slightly shiny, ovoid, trigonous, 2–2.5 mm, punctulate. Fl. May–Jun, fr. Jun–Jul.

Riverbanks, moist valleys; 500–1500 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan].

16. *Polygonum rigidum* Skvortsov in Baranov & Skvortsov, Diagn. Pl. Nov. Mandsh. 5. 1943.

尖果篇蓄 jian guo bian xu

Herbs annual. Stems erect or ascending, 30–50 cm tall, much branched, angulate. Petiole short, articulate at base; leaf blade elliptic or oblong, 1–3 cm × 3–7 mm, both surfaces with conspicuous veins, base cuneate, margin entire, apex obtuse or subacute; ocrea: lower part brown, upper part white, 5–9-veined, lacerate. Flowers 2–7 in axillary fascicles. Pedicel 1.5–2 mm, apex articulate. Perianth green, margin white or pinkish, 5-parted to 2/3; tepals oblong, 2–2.5 mm. Stamens 8; filaments dilated at base. Styles 3, short. Achenes exserted from persistent perianth, brown, slightly shiny, ovoid, trigonous, 2.5–3.5 mm, densely minutely punctate, apex long acute. Fl. Jun–Aug, fr. Jul–Sep. $2n = ca. 60$.

Near fields, roadsides, shaded grassy places in valleys; 400–2500 m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi [Mongolia, Russia].

2. *Polygonum* sect. *Persicaria* (Miller) Meisner, Monogr. Polyg. 43, 66. 1826.

春蓼组 chun liao zu

Persicaria Miller, Gard. Dict. Abr., ed. 4, [1054]. 1754.

Plants without prickles. Leaves generally narrowly elliptical to ovate, not hastate or sagittate. Inflorescence spicate, spikes usually several. Tepals fused for about 1/3 their length. Nectaries free, globular. Styles 1, bifid or trifid.

About 100 species: cosmopolitan; 23 species (four endemic) in China.

In members of *Polygonum* sect. *Aconogonon*, *P.* sect. *Bistorta*, *P.* sect. *Cephalophilon*, *P.* sect. *Echinocaulon*, and *P.* sect. *Persicaria* (often recognized as belonging to the genus *Persicaria*) the inflorescence is many flowered, the petioles lack articulation, the ocrea is variously entire, ciliate, or pectinate, but not lacinate, the perianth is 4- or 5-parted, the tepals have 3-fid venation, the stamens are 4–8, with reduction in number occurring in the inner whorl, and the filaments are not dilated at the base, but are associated with nipple-like nectaries.

17. *Polygonum amphibium* Linnaeus, Sp. Pl. 1: 361. 1753.

两栖蓼 liang qi liao

Persicaria amphibia (Linnaeus) S. F. Gray; *P. amphibia* var. *terrestris* (Leysser) Munshi & Javeid; *P. amurensis* (Korshinsky) Nieuwland; *P. muhlenbergii* (Meisner) Small; *Polygonum amphibium* var. *amurense* Korshinsky; *P. amphibium* var. *muhlenbergii* Meisner; *P. amphibium* var. *natans* Michaux; *P. amphibium* var. *terrestre* Leysser; *P. amphibium* var. *vestitum* Hemsley.

Herbs perennial, amphibious. Rhizomes horizontal. Aquatic plants: stems floating, glabrous, rooting at nodes; leaves long petiolate, floating; leaf blade oblong or elliptic, 5–12 × 2.5–4 cm, glabrous, base subcordate, margin entire, not ciliate, apex obtuse or slightly acute; ocrea tubular, thinly membranous, apex truncate, not ciliate. Terrestrial plants: stems erect, 40–60 cm tall, simple or branched at base. Petiole 3–5 mm; leaf blade lanceolate or oblong-lanceolate, 6–14 × 1.5–2 cm, both surfaces appressed-hispidulous, base rounded, margin entire, ciliate, apex acute; ocrea tubular, 1.5–2 cm, membranous, sparsely hirsute, apex truncate, shortly ciliate. Inflorescence terminal or axillary, spicate, 2–4 cm; bracts broadly funnel-shaped. Perianth pinkish or white, 5-parted; tepals oblong, 3–4 mm. Stamens usually 5, included. Styles 2, exserted, connate to middle; stigmas capitate. Achenes included in persistent perianth, black, shiny, orbicular, biconvex, 2.5–3 mm in diam. Fl. Jul–Aug, fr. Aug–Sep. *2n* = 66, 96.

In ponds, riverbanks, wet fields, waste areas; sea level to 3700 m. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Very widely distributed: Bhutan, NW India, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Russia, Tajikistan, Turkmenistan, Uzbekistan; Asia, Europe, North America].

18. *Polygonum pulchrum* Blume, Bijdr. Fl. Ned. Ind. 530. 1826.

丽蓼 li liao

Persicaria attenuata subsp. *pulchra* (Blume) K. L. Wilson; *P. pulchra* (Blume) Soják; *Polygonum tomentosum* Willdenow (1799), not Schrank (1789).

Plants perennial, rhizomatous. Stems erect, sometimes prostrate below, 80–100 cm tall, robust, simple, pilose or glabrescent. Petiole 1–2 cm; leaf blade broadly lanceolate, 10–15 × 1.5–3 cm, both surfaces densely sericeous, base narrowly cuneate, margin entire, ciliate, apex long acuminate; ocrea tubular, 1.5–2 cm, membranous, densely pubescent, apex truncate, cilia 4–6 mm. Inflorescence terminal, of paniced spikes, erect, 3–6 cm; bracts ovate, adpressed hispidulous, each 3- or 4-flowered. Pedicels longer than bracts. Perianth white, 5-parted; tepals elliptic, 3–3.5 mm. Stamens 7 or 8, included. Styles 2, free;

stigmas capitate. Achenes included in persistent perianth, black, shiny, orbicular, biconvex, 3–4 mm in diam. Fl. Sep–Oct, fr. Oct–Nov.

In shallow water of swamps, marshy areas; 100–300 m. Guangdong, Guangxi, Taiwan [India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand; ?Africa, Australia].

19. *Polygonum huananense* A. J. Li, Bull. Bot. Res., Harbin 15: 413. 1995.

华南蓼 hua nan liao

Herbs perennial. Stems erect, 100–150 cm tall, robust, simple, sometimes branched above, densely villous. Petiole 5–10 mm, villous; leaf blade broadly lanceolate, 10–20 × 2–4.5 cm, both surfaces sparsely sericeous, base cuneate, margin shortly ciliate, apex long acuminate; ocrea tubular, 1.5–3 cm, membranous, apex truncate, cilia 4–5 mm. Inflorescence terminal, of paniced spikes, erect; bracts broadly ovate, villous, margin long ciliate, each 2- or 3-flowered. Pedicels longer than bracts, stout, articulate at apex. Perianth white, 5-parted; tepals elliptic, ca. 3 mm. Stamens exserted. Styles 3, connate below middle; stigmas capitate. Achenes included in persistent perianth, black-brown, slightly shiny, ellipsoid, trigonous, ca. 3 mm. Fl. Jul–Aug, fr. Sep–Oct.

• Lake edges, streamsides; ca. 100 m. Guangdong.

20. *Polygonum japonicum* Meisner in Candolle, Prodr. 14(1): 112. 1856.

蚕茧蓼 can jian liao

Herbs perennial. Rhizomes horizontal. Stems erect, 50–100 cm tall, glabrous, sometimes sparsely hispidulous. Petiole short or nearly absent; leaf blade lanceolate, 7–15 × 1–2 cm, thinly leathery, densely minutely punctate, both surfaces sparsely appressed hispidulous, base cuneate, margin entire, hispidulous, apex acuminate; ocrea tubular, 1.5–2 cm, membranous, appressed hirsute, apex truncate, cilia 1–1.2 cm. Inflorescences terminal, spicate, usually numerous, 6–12 cm; bracts green, funnel-shaped, ciliate, each 3–6-flowered. Flowers dimorphic. Pedicel 2.5–4 mm. Perianth white or pinkish, 5-parted, minutely punctate; tepals elliptic, 2.5–3 mm. Stamens 8, exserted. Styles 2 or 3, connate below middle, included or stamens included and styles exserted on separate plant; stigmas capitate. Achenes included in persistent perianth, black, shiny or opaque, ovoid, trigonous or biconvex, 2.5–3 mm.

Marshy areas, ditches, streamsides, riverbanks; sea level to 1700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Korea].

- 1a. Perianth 3–4 mm, not glandular dotted;
achenes shiny 20a. var. *japonicum*

- 1b. Perianth 5–6 mm, glandular dotted;
achenes opaque 20b. var. *conspicuum*

20a. *Polygonum japonicum* var. *japonicum*

蚕茧蓼(原变种) can jian liao (yuan bian zhong)

Persicaria japonica (Meisner) H. Gross ex Nakai; *Polygonum macranthum* Meisner; *P. martini* H. Léveillé & Vaniot; *P. mysurus* Franchet.

Flowers small. Perianth 3–4 mm, not glandular dotted. Achenes shiny.

Marshy areas, ditches, streambanks; sea level to 1700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Korea].

20b. *Polygonum japonicum* var. *conspicuum* Nakai, J. Coll. Sci. Imp. Univ. Tokyo 23: 10. 1908.

显花蓼 xian hua liao

Persicaria conspicua (Nakai) Nakai ex T. Mori; *P. sterilis* (Nakai) Nakai & Ohki; *Polygonum conspicuum* (Nakai) Nakai; *P. japonicum* var. *micranthum* Nakai; *P. japonicum* var. *micranthum* Nakai f. *brevistylum* Nakai; *P. sterile* Nakai; *P. sterile* var. *brevistylum* (Nakai) Nakai.

Flowers large. Perianth 5–6 mm, glandular dotted. Achenes opaque.

Streambanks, riverbanks; sea level to 1500 m. Anhui, Fujian, Jiangsu, Taiwan, Zhejiang [Japan, Korea].

21. *Polygonum barbatum* Linnaeus, Sp. Pl. 1: 362. 1753, nom. cons.

毛蓼 mao liao

Persicaria barbata (Linnaeus) H. Hara; *P. omerostroma* (Ohki) Sasaki; *Polygonum kotoshoense* Ohki; *P. omerostromum* Ohki.

Herbs perennial, rhizomatous. Stems erect, 40–90 cm tall, robust, pubescent, simple or branched above. Petiole 5–8 mm, densely hispidulous; leaf blade lanceolate or elliptic-lanceolate, 7–15 × 1.5–4 cm, both surfaces pubescent, base cuneate, margin ciliate, apex acuminate; ocrea tubular, 1.5–2 cm, membranous, densely hispidulous, apex truncate, cilia 1.5–2 cm. Inflorescence terminal, spicate, erect, 4–8 cm, several spikes aggregated and panicle-like, rarely solitary; bracts funnel-shaped, glabrous, margin ciliate, each 3–5-flowered. Pedicel short. Perianth white or greenish, 5-parted, elliptic, 1.5–2 mm. Stamens 5–8, included. Styles 3; stigmas capitate. Achenes included in persistent perianth, black, shiny, ovoid, trigonous, 1.5–2 mm. Fl. Aug–Sep, fr. Sep–Oct. $2n = 60$.

Streambanks, wet areas; water sides; sea level to 1300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam].

22. *Polygonum glabrum* Willdenow, Sp. Pl. 2: 447. 1799.

光蓼 guang liao

Persicaria glabra (Willdenow) M. Gomez; *Polygonum densiflorum* Meisner; *P. portoricense* Bertoloni ex Endlicher.

Herbs annual, glabrous throughout. Stems erect, 70–100 cm tall, dilated at nodes, rarely branched. Petiole 8–10 mm, robust; leaf blade lanceolate or oblong-lanceolate, 8–18 × 1.5–3 cm, base narrowly cuneate, margin entire, not ciliate, apex narrowly acuminate; ocrea tubular, 1–3 cm, membranous, veins numerous. Inflorescence terminal, spicate, 4–12 cm, usually with several dense spikes aggregated and panicle-like; bracts funnel-shaped, not ciliate, usually each 3- or 4-flowered. Pedicel large, longer than bracts, articulate at apex. Perianth white or pinkish, 5-parted; tepals elliptic, 3–4 mm, veins slender, furcate at apex, not curved downward. Stamens 6–8. Styles 2, connate to below middle. Achenes included in persistent perianth, black-brown, shiny, ovoid, biconvex, 2.5–3 mm. Fl. Jun–Aug, fr. Jul–Sep.

Riverbanks, streambanks, marshy areas; sea level to 100 m. Fujian, Guangdong, Guangxi, Hainan, Hubei, Hunan, Taiwan [Bangladesh, Bhutan, India, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, North and South America, Pacific Islands].

23. *Polygonum viscosum* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 71. 1825.

香蓼 xiang liao

Persicaria kuekenthalii H. Léveillé; *P. viscosa* (Buchanan-Hamilton ex D. Don) H. Gross ex Nakai; *Polygonum kuekenthalii* H. Léveillé; *P. viscosum* var. *minus* J. D. Hooker.

Herbs annual, odoriferous. Stems erect or ascending, 50–90 cm tall, much branched, densely hirsute and glandular hairy. Petiole short or nearly absent; leaf blade ovate-lanceolate or elliptical-lanceolate, 5–15 × 2–4 cm, both surfaces hispid, densely so along veins, margin entire, densely shortly ciliate; ocrea tubular, 1–1.2 cm, membranous, densely glandular hairy and hirsute, apex truncate, long ciliate. Inflorescence terminal or axillary, spicate, 2–4 cm, usually several spikes aggregated and panicle-like; peduncles densely hirsute and glandular hairy; bracts funnel-shaped, hirsute and glandular hairy, margin sparsely long ciliate, each 3–5-flowered. Pedicels longer than bracts. Perianth pinkish, 5-parted; tepals elliptic, ca. 3 mm. Stamens 8, included. Styles 3, connate to below middle. Achenes included in persistent perianth, black-brown, shiny, broadly ovoid, trigonous, ca. 2.5 mm. Fl. Jul–Sep, fr. Aug–Oct.

Roadsides, grasslands, by ditches; sea level to 1900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Korea, Nepal, Russia (Far East)].

24. *Polygonum persicaria* Linnaeus, Sp. Pl. 1: 361. 1753.

蓼 liao

Herbs annual. Stems erect or ascending, 40–80 cm tall, branched or simple, sparsely pubescent or glabrescent. Petiole 5–8 mm, appressed hispidulous; leaf blade lanceolate or elliptic, often with a dark triangular spot at middle, both surfaces appressed hispidulous, densely so along midvein, base narrowly cuneate, margin largely ciliate, apex acute or acuminate; ocrea tubular, 1–2 cm, membranous, sparsely pubescent, apex trun-

cate, cilia 0.4–3 mm. Inflorescence terminal or axillary, spicate, 2–6 cm, usually several spikes aggregated and panicle-like; peduncle glandular hairy or glabrous; bracts funnel-shaped, ciliate, each 5–7-flowered. Pedicel 2.5–3 mm. Perianth reddish or deep purple, usually 5-parted; tepals oblong, 2.5–3 mm, distinctly veined. Stamens 6 or 7. Styles 2, rarely 3, connate to below middle. Achenes included in persistent perianth, black-brown, shiny or opaque, suborbicular or broadly ovoid, biconvex, rarely trigonous, 2–2.5 mm, smooth. Fl. Jun–Jul, fr. Jul–Sep. $2n = 22, 42$.

Streamsides, wet areas, field margins; 100–1800 m. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, ?Yunnan, Zhejiang [Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Russia, Tajikistan, Turkmenistan, Uzbekistan; Africa, Europe, North America].

- 1a. Achenes shiny; ocrea long ciliate, cilia 1–3 mm 24a. var. *persicaria*
- 1b. Achenes opaque; ocrea shortly ciliate, cilia 0.4–1 mm 24b. var. *opacum*

24a. Polygonum persicaria var. *persicaria*

蓼(原变种) liao (yuan bian zhong)

Persicaria dolichopoda (Ohki) Sasaki; *P. maculata* (Rafinesque) A. Löve & D. Löve; *P. maculosa* S. F. Gray, nom. cons. prop.; *P. vulgaris* Webb & Moquin-Tandon; *Polygonum dolichopodum* K. Ohki; *P. persicaria* f. *humile* S. X. Li & Y. L. Chang; *P. persicaria* f. *latifolium* S. X. Li & Y. L. Chang; *P. shuchengense* Z. Z. Zhou.

Achenes shiny. Ocrea long ciliate, cilia 1–3 mm. $2n = 22$.

Streamsides, wet areas; 100–1800 m. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, ?Yunnan, Zhejiang [Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Russia, Tajikistan, Turkmenistan, Uzbekistan; Africa, Europe, North America].

24b. Polygonum persicaria var. *opacum* (Samuelsson) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 23. 1998.

暗果蓼 an guo liao

Polygonum opacum Samuelsson, Lingnan. Sci. J. 14: 299. 1935; *Persicaria opaca* (Samuelsson) Koidzumi.

Achenes opaque. Ocrea shortly ciliate, cilia 0.4–1 mm.

- Streamsides, field margins; 100–200 m. Fujian, Zhejiang.

25. Polygonum viscoferum Makino, Bot. Mag. (Tokyo) 17: 115. 1903.

粘蓼 nian liao

Persicaria excurrens (Steward) Koidzumi; *P. viscofera* (Makino) H. Gross ex Nakai; *Polygonum excurrens* Steward; *P. makinoi* Nakai.

Herbs annual. Stems 30–70 cm tall, usually branched above, pubescent. Petiole very short or nearly absent; leaf blade lanceolate or broadly lanceolate, both surfaces hispid, densely so along midvein, long ciliate at margin, base rounded or cuneate, apex acuminate; ocrea tubular, 6–12 mm, membranous, long hispid, apex ?truncate, long ciliate. Inflorescence spicate,

4–7 cm, interrupted at base, several spikes aggregated and panicle-like; peduncle glabrous, sparsely viscid-glandular; bracts green, funnel-shaped, glabrous but ciliate, each 3–5-flowered. Pedicels longer than bracts. Perianth greenish, 5(or 4)-parted; tepals elliptic, 1–1.5 mm. Stamens 7 or 8, included. Styles 3, connate to below middle. Achenes included in persistent perianth, black-brown, shiny, ovoid, trigonous, ca. 1.5 mm, smooth. Fl. Jul–Sep. fr. Aug–Oct. $2n = 24$.

Moist valleys, mountain slopes; 500–1800 m. Anhui, Fujian, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

This species shows considerable variation in leaf shape and pubescence. Plants with linear-lanceolate leaves and more or less glabrous stems and abaxial leaf surfaces are often recognized as a distinct variety, *Polygonum viscoferum* var. *robustum* Makino (Bot. Mag. (Tokyo) 17: 116. 1903; *P. viscoferum* subsp. *robustum* (Makino) Kitamura).

26. Polygonum lapathifolium Linnaeus, Sp. Pl. 1: 360. 1753.

马蓼 ma liao

Herbs annual. Stems erect, 40–90 cm tall, branched, glabrous, subglabrous, or lanose, swollen at nodes. Petiole 2–5 mm, appressed hispidulous; leaf blade with large blackish spot adaxially, lanceolate or broadly lanceolate, 5–15 × 1–3 cm, abaxially nearly glabrous or densely lanose, adaxially nearly glabrous, sometimes densely lanose on both surfaces, base cuneate, margin ciliate, apex acuminate or acute; ocrea brownish, tubular, 1.5–3 cm, membranous, glabrous, apex truncate, not ciliate or rarely shortly ciliate. Inflorescence terminal or axillary, spicate, erect or nodding, 3–8 cm, densely flowered, several spikes aggregated and panicle-like; peduncles glandular; bracts funnel-shaped, margin sparsely shortly ciliate. Perianth pink or white, 4(or 5)-parted; tepals 2.5–3 mm, veins strongly forked, curved downward near apex. Stamens usually 6. Styles 2, connate at base. Achenes included in persistent perianth, black-brown, shiny, broadly ovoid, biconcave, 2–3 mm. Fl. May–Jul, fr. Jun–Oct. $2n = 22$.

Roadsides, along ditches, field margins, watersides; sea level to 3900 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Russia (Siberia), Sikkim, Tajikistan, Thailand, Turkmenistan, Uzbekistan, Vietnam; N Africa, Australia, Europe, North America].

- 1a. Plants glabrous or subglabrous 26a. var. *lapathifolium*
- 1b. Plants lanose.
 - 2a. Leaf blade densely lanose abaxially 26b. var. *salicifolium*
 - 2b. Leaf blade and stem densely lanose 26c. var. *lanatum*

26a. Polygonum lapathifolium var. *lapathifolium*

马蓼(原变种) ma liao (yuan bian zhong)

Persicaria lapathifolia (Linnaeus) S. F. Gray; *P. nodosa* (Persoon) Opiz; *P. vaniotiana* H. Léveillé; *Polygonum koma-*

rovii H. Léveillé; *P. lapathifolium* subsp. *nodosum* (Persoon) Weinmann; *P. lapathifolium* var. *xanthophyllum* H. W. Kung; *P. nodosum* Persoon; *P. pyramidale* H. Léveillé; *P. vaniotianum* (H. Léveillé) H. Léveillé.

Plants glabrous or subglabrous. $2n = 22, 24$.

Roadsides, along ditches; sea level to 3900 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [Bangladesh, India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Tajikistan, Thailand, Turkmenistan, Uzbekistan, Vietnam; N Africa, Australia, Europe, North America].

26b. *Polygonum lapathifolium* var. *salicifolium* Sibthorp, Fl. Oxon. 129. 1794.

绵毛马蓼 mian mao ma liao

Persicaria lapathifolia subsp. *pallida* (Withering) S. Ekman & T. Knutsson var. *incana* (Roth) S. Ekman & T. Knutsson; *Polygonum lapathifolium* var. *incanum* Ledebour; *P. nodosum* Persoon var. *incanum* Ledebour; *P. persicaria* var. *incanum* Roth.

Leaf blade densely lanose abaxially. $2n = 22^*$.

Roadsides, watersides; 100–3300 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan, Zhejiang [India, Indonesia (Java), Japan, Myanmar, Russia (Siberia)].

26c. *Polygonum lapathifolium* var. *lanatum* (Roxburgh) Steward, Contr. Gray Herb., n.s., 5: 46. 1930.

密毛马蓼 mi mao ma liao

Polygonum lanatum Roxburgh, Fl. Ind., ed. 1832, 2: 285. 1832; ?*P. lanigerum* R. Brown var. *cristatum* Hemsley; *Persicaria lanata* (Roxburgh) Tzvelev; *P. lapathifolia* subsp. *lanata* (Roxburgh) Soják; *P. lapathifolia* (Linnaeus) S. F. Gray var. *lanata* (Roxburgh) H. Hara.

Stem and leaf blade densely lanose.

Field margins, along ditches; 200–1100 m. Fujian, Guangdong, Guangxi, Taiwan, Yunnan [Bhutan, India, Indonesia (Java), Malaysia, Myanmar, Nepal, Philippines, Sikkim].

If *Polygonum lanigerum* var. *cristatum* (Hemsley, J. Linn. Soc., Bot. 26: 342. 1891) is indeed synonymous with *P. lapathifolium* var. *lanatum* (1930), then the correct name at varietal rank under *P. lapathifolium* would be a new combination based on var. *cristatum*.

27. *Polygonum orientale* Linnaeus, Sp. Pl. 1: 362. 1753.

红蓼 hong liao

Amblygonum orientale (Linnaeus) Nakai ex T. Mori; *A. orientale* var. *pilosum* (Roxburgh ex Meisner) Nakai ex T. Mori; *Lagunea cochinchinensis* Loureiro; *L. orientalis* (Linnaeus) Nakai; *L. orientalis* var. *pilosa* (Roxburgh ex Meisner) Nakai; *Persicaria cochinchinensis* (Loureiro) Kitagawa; *P. orientalis* (Linnaeus) Spach; *P. pilosa* (Roxburgh ex Meisner) Kitagawa; *Polygonum amoenum* Blume; *P. cochinchinense* (Loureiro) Meisner; ?*P. orientale* var. *discolor* Benthams; *P.*

orientale var. *pilosum* (Roxburgh ex Meisner) Meisner; *P. pilosum* Roxburgh ex Meisner; *P. torquatum* Bruijn.

Herbs annual. Stems erect, 1–2 m tall, robust, much branched above, densely spreading villous. Petiole 2–10 cm, spreading villous; leaf blade broadly ovate, broadly elliptic, or ovate-lanceolate, 10–20 × 5–12 cm, both surfaces densely pubescent, along veins densely villous, base rounded or subcordate, slightly decurrent, margin densely ciliate, apex acuminate; ocrea tubular, 1–2 cm, membranous, villous, margin truncate, long ciliate, usually with green leaflike wing. Inflorescence terminal or axillary, spicate, slightly pendulous, 3–7 cm, several spikes aggregated and panicle-like; bracts green, broadly funnel-shaped, 3–5 mm, pubescent, margin long ciliate, each 3–5-flowered. Pedicels longer than bracts. Flowers dimorphic. Perianth pink or white, 5-parted; tepals elliptic, 3–4 mm. Stamens 7, exerted. Styles 2, connate to below middle, included or stamens included and styles exerted on separate plant; stigmas capitate. Achenes included in persistent perianth, black-brown, shiny, nearly orbicular, biconcave, 3–3.5 mm. Fl. Jun–Sep, fr. Aug–Oct.

Roadsides, near houses, wastelands, usually cultivated in gardens; sea level to 3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Indonesia, Japan, Korea, Myanmar, Philippines, Russia (Far East), Sri Lanka, Thailand, Vietnam; SW Asia, Australia, Europe].

28. *Polygonum tinctorium* Aiton, Hort. Kew. 2: 31. 1789.

蓼蓝 liao lan

Persicaria tinctoria (Aiton) Spach.

Herbs annual. Stems erect, 50–80 cm tall, usually branched. Petiole 5–10 mm; leaf blade green, dark blue-green when dry, ovate or broadly elliptic, 3–8 × 2–4 cm, abaxially sometimes appressed-pubescent along veins, adaxially glabrous, base broadly cuneate, margin shortly ciliate, apex obtuse or slightly acute; ocrea tubular, 1–1.5 cm, membranous, appressed pubescent, apex truncate, long ciliate. Inflorescence terminal or axillary, spicate, dense, 2–5 cm; bracts green, funnel-shaped, ciliate, each 3–5-flowered. Pedicels equal to bracts, slender. Perianth pinkish, 5-parted; tepals ovate, 2.5–3 mm. Stamens 6–8, included. Styles 3, connate at lower part. Achenes included in persistent perianth, brown, shiny, broadly ovoid, trigonous, 2–2.5 mm. Fl. Jun–Sep, fr. Aug–Oct.

Moist valleys, stream banks, widely cultivated; 200–1000 m. Widespread in China [Indo-China; cultivated and occasionally naturalized elsewhere].

This species is used medicinally and for dyeing.

29. *Polygonum assamicum* Meisner in Candolle, Prodr. 14(1): 111. 1856.

阿萨姆蓼 a sa mu liao

Persicaria assamica (Meisn.) Soják.

Herbs annual. Stems ascending or decumbent, 15–30 cm tall, glabrous. Petiole 3–6 mm, sparsely appressed hispidulous; leaf blade green, blue-green when dry, elliptic-ovate or broadly lanceolate, 2.5–6 × 1–2 cm, abaxially appressed hispidulous

along veins, adaxially glabrous, base broadly cuneate, apex acute; ocrea tubular, membranous, sparsely appressed hispidulous along veins, apex truncate, long ciliate. Inflorescence terminal, spicate, solitary or several aggregated and panicle-like; spike lax, 2.5–4 cm, usually decurrent at base; bracts green, herbaceous, ciliate, each 1–3-flowered. Perianth reddish, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 5 or 6, included. Styles 2; stigmas capitate. Achenes included in persistent perianth, narrowly ovoid, biconvex, ca. 2.5 mm. Fl. Jun–Jul, fr. Aug–Sep.

Stream banks, wet valleys; 200–1000 m. Guangxi, Guizhou, Sichuan, Yunnan [N India, Myanmar].

30. *Polygonum paralimicola* A. J. Li, Bull. Bot. Res., Harbin 15: 414. 1995.

湿地蓼 shi di liao

Herbs annual. Stems erect or ascending, 20–30 cm tall, branched at base, glabrous. Petiole 4–5 mm; leaf blade ovate, 1–2.5 × 0.7–1.2 cm, both surfaces pubescent, base broadly cuneate, margin shortly ciliate, apex acute; ocrea tubular, 4–5 mm, membranous, hispidulous, apex truncate, shortly ciliate. Inflorescence terminal, spicate, lax, 1.5–3 cm; bracts funnel-shaped, 2–3 mm, apex obliquely truncate, each 2- or 3-flowered. Pedicel 6–9 mm, articulate at apex. Perianth pinkish, 5-parted; tepals elliptic, 4–5 mm, yellow-brown punctate. Stamens 8, included. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, brown, narrowly ovoid, trigonous, 4–4.5 mm, densely pitted. Fl. Jul–Oct, fr. Aug–Nov.

• Mountain streams, grassy slopes; 200–500 m. Hunan, Jiangxi, Zhejiang.

31. *Polygonum hydropiper* Linnaeus, Sp. Pl. 1: 361. 1753.

辣蓼 la liao

Persicaria hydropiper (Linnaeus) Spach; ?*P. hydropiper* var. *diffusa* Kitagawa; *P. hydropiper* var. *vulgaris* (Meisner) Ohki; *P. vernalis* Nakai; ?*Polygonum hydropiper* var. *longistachyum* Y. L. Chang & S. X. Li; *P. hydropiper* var. *vulgare* Meisner; *P. schinzii* J. Schuster.

Herbs annual. Stems erect, 40–70 cm tall, much branched, glabrous, dilated at nodes. Leaves with peppery taste; petiole 4–8 mm; leaf blade lanceolate or elliptic-lanceolate, 4–8 × 0.5–2.5 cm, both surfaces glabrous, densely brown punctate, sometimes appressed hispidulous along midvein, base cuneate, margin ciliate, apex acuminate; cleistogamous flowers present in many leaf axils; ocrea tubular, 1–1.5 cm, membranous, sparsely appressed hispidulous, apex truncate, shortly ciliate. Inflorescence terminal or axillary, spicate, pendulous, interrupted below, usually lax, 3–8 cm, slender; bracts green, funnel-shaped, 2–3 mm, margin membranous, sparsely shortly ciliate, each 3–5-flowered. Pedicels longer than bracts. Perianth greenish, white or pink above, 5(or 4)-parted, brownish pellucid glandular punctate; tepals elliptic, 3–3.5 mm. Stamens 6, rarely 8, included. Styles 2 or 3. Achenes included in persistent perianth, black-brown, opaque, ovoid, biconvex or trigonous, 2–3 mm, densely small pitted. Fl. May–Sep, fr. Jun–Oct. $2n = 18-22$.

Riverbanks, streamsides, wet valleys; sea level to 3500 m. Anhui,

Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Myanmar, Nepal, Russia, Sikkim, Sri Lanka, Thailand, Uzbekistan; Australia, Europe, North America].

32. *Polygonum pubescens* Blume, Bijdr. Fl. Ned. Ind. 532. 1826.

伏毛蓼 fu mao liao

Persicaria flaccida (Meisner) H. Gross; *P. hydropiper* (Linnaeus) Spach subsp. *flaccida* (Meisner) Munshi & Javeid; *P. pubescens* (Blume) H. Hara; *Polygonum donii* Meisner; *P. flaccidum* Meisner; *P. flaccidum* var. *hispidum* (Buchanan-Hamilton ex D. Don) J. D. Hooker; *P. hispidum* Buchanan-Hamilton ex D. Don; *P. hydropiper* var. *flaccidum* (Meisner) Steward; *P. hydropiper* var. *hispidum* (Buchanan-Hamilton ex D. Don) Steward; *P. oryzetorum* Blume.

Herbs annual (?perennial). Stems erect, often reddish, 60–90 cm tall, sparsely hispidulous, branched above, swollen at nodes. Leaves without peppery taste; petiole 4–7 mm, densely hispidulous; leaf blade ovate-lanceolate or broadly lanceolate, 5–10 × 1–2.5 cm, both surfaces densely hispidulous, base broadly cuneate, margin ciliate, apex acuminate or acute; ocrea tubular, 1–1.5 cm, membranous, hispid, apex truncate, stoutly long ciliate. Inflorescence terminal or axillary, spicate, pendulous, lax, 7–15 cm, interrupted below; bracts green, funnel-shaped, margin submembranous, ciliate, each 3- or 4-flowered. Pedicels longer than bracts, slender. Perianth green, red above, 5-parted, densely purplish glandular punctate; tepals elliptic, 3–4 mm. Stamens 8, included. Styles 3, connate to below middle. Achenes included in persistent perianth, black, dull, ovoid, trigonous, 2.5–3 mm, densely pitted. Fl. Aug–Sep, fr. Sep–Oct.

Along ditches, water sides, field margins; sea level to 2700 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning (Dalian), Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Sikkim].

33. *Polygonum posumbu* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 71. 1825.

丛枝蓼 cong zhi liao

Persicaria posumbu (Buchanan-Hamilton ex D. Don) H. Gross; *P. yokusaiana* (Makino) Nakai; *Polygonum caespitosum* Blume; *P. caespitosum* subsp. *yokusaianum* (Makino) Danser; *P. procumbens* Y. L. Chang & S. X. Li (1959), not Gilibert (1792), nor Bruijn (1854), nor Sessé y Lacasta & Mociño (1894); *P. pronom* C. F. Fang; *P. yokusaianum* Makino.

Herbs annual. Stems decumbent, 30–70 tall, slender, branched at base, glabrous, angulate. Petiole 5–7 mm, appressed hispid; leaf blade ovate-lanceolate or ovate, 3–6(–8) × 1–2(–3) cm, papery, both surfaces sparsely appressed hispid or glabrescent, midvein prominent abaxially, base broadly cuneate, margin ciliate, apex caudate-acuminate; ocrea tubular, 4–6 mm, thinly membranous, appressed hispid, apex truncate, cilia 7–8 mm, stout. Inflorescence terminal or axillary, spicate, lax, 5–10 cm, interrupted below; bracts greenish, funnel-shaped,

glabrous, margin ciliate, each 3- or 4-flowered. Pedicel short. Perianth pinkish, 5-parted; tepals elliptic, 2–2.5 mm. Stamens 8, exserted. Styles 3, connate at base; stigmas capitate. Achenes included in persistent perianth, blackish brown, shiny, ovoid, trigonous, 2–2.5 mm. Fl. Jun–Sep, fr. Jul–Oct.

Mixed forests on mountain slopes, moist valleys; 100–3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Myanmar, Nepal, Philippines, Thailand].

34. Polygonum longisetum Bruijn in Miquel, Pl. Jungh. 3: 307. 1854.

长鬃蓼 chang zong liao

Herbs annual. Stems erect, ascending or prostrate at base, 30–60 cm tall, branched from base, glabrous, swollen at nodes. Petiole short or nearly absent; leaf blade lanceolate or broadly lanceolate, 5–13 × 1–2 cm, abaxially appressed hispidulous along veins, adaxially glabrescent, base cuneate to rounded, margin ciliate, apex acute or acuminate; ocrea tubular, 7–8 mm, membranous, sparsely pubescent, apex truncate, cilia 6–7 mm. Inflorescence terminal or axillary, spicate, erect, 2–4 cm, interrupted; bracts funnel-shaped, glabrous, margin long ciliate, each 5- or 6-flowered. Pedicels equaling bracts, 2–2.5 mm. Perianth pink or red-purple, 5-parted; tepals elliptic, 1.5–2 mm. Stamens 6–8, included. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, black, shiny, broadly ovoid, trigonous, ca. 2 mm. Fl. May–Jun, fr. Jun–Aug.

Moist valleys, along stream banks, shaded places along ditches, water sides; sea level to 3100 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, ?Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [India, Indonesia, Japan, Kashmir, Korea, Malaysia, Mongolia, Myanmar, Nepal, Philippines, Russia (Far East)].

- 1a. Leaves basally cuneate 34a. var. *longisetum*
- 1b. Leaves basally rounded 34b. var. *rotundatum*

34a. Polygonum longisetum var. *longisetum*

长鬃蓼(原变种) chang zong liao (yuan bian zhong)

Persicaria blumei (Meisner) H. Gross; *P. buisanensis* (Ohki) Sasaki; *P. caespitosa* (Blume) Nakai var. *longiseta* (Bruijn) C. F. Reed; *P. gentiana* H. Léveillé; *P. longiseta* (Bruijn) Moldenke; *P. manshuricola* Kitagawa; *P. roseoviridis* Kitagawa; *Polygonum blumei* Meisner; *P. buisanense* Ohki; *P. caespitosum* Blume var. *longisetum* (Bruijn) Steward; *P. gentilianum* (H. Léveillé) H. Léveillé; *P. interruptum* Bunge; *P. kinashii* H. Léveillé & Vaniot; *P. posumbu* Buchanan-Hamilton ex D. Don var. *blumei* (Meisner) Herder; *P. roseoviride* (Kitagawa) S. X. Li & Y. L. Chang; *P. roseoviride* var. *manshuricola* (Kitagawa) C. F. Fang.

Leaves basally cuneate. $2n = 40$.

Moist valleys, along stream banks; sea level to 3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, ?Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Kashmir, Korea, Malaysia, Myanmar, Nepal, Philippines, Russia (Far East)].

34b. Polygonum longisetum var. *rotundatum* A. J. Li, Bull. Bot. Res., Harbin 15: 418. 1995.

圆基长鬃蓼 yuan ji chang zong liao

Persicaria sungareensis Kitagawa; *Polygonum barbatum* Linnaeus subsp. *gracile* Danser, p.p.; *P. barbatum* var. *gracile* (Danser) Steward, p.p.; *P. koreense* Nakai f. *viridiflorum* S. X. Li & Y. L. Chang; *P. sungareense* (Kitagawa) Kitagawa; *P. sungareense* f. *rubiflorum* S. X. Li & Y. L. Chang.

Leaves basally rounded. $2n = 20$.

Shaded places along ditches, water sides; sea level to 3100 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, ?Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Mongolia].

35. Polygonum taquetii H. Léveillé, Repert. Spec. Nov. Regni Veg. 8: 258. 1910.

细叶蓼 xi ye liao

Persicaria taquetii (H. Léveillé) Koidzumi; *Polygonum minutulum* Makino.

Herbs annual. Stems erect, prostrate or ascending at base, 30–50 cm tall, slender, glabrous, much branched, rooting at lower nodes. Petiole very short or nearly absent; leaf blade narrowly lanceolate, 2–4 cm × 3–6 mm, both surfaces sparsely pubescent, base narrowly cuneate, margin entire, apex acute; ocrea tubular, 5–6 mm, membranous, sparsely pubescent, apex truncate, cilia 3–5 mm. Inflorescence terminal or axillary, spicate, pendulous, to 10 cm, slender, interrupted, usually several spikes aggregated and panicle-like; bracts green, funnel-shaped, ca. 2 mm, margin long ciliate, each 3–5-flowered. Pedicels longer than bracts, slender. Perianth pinkish, 5-parted; tepals elliptic, 1.5–1.7 mm. Stamens usually 7, included. Styles 2 or 3, connate to below middle. Achenes included in persistent perianth, brown, shiny, ovoid, biconvex or trigonous, 1.2–1.5 mm. Fl. Aug–Sep, fr. Sep–Oct.

Wet valleys, along ditches, water sides; sea level to 400 m. Anhui, Fujian, Guangdong, Hubei, Hunan, Jiangsu, Jiangxi, Zhejiang [Japan, Korea].

36. Polygonum foliosum H. Lindberg, Meddeland. Soc. Fauna Fl. Fenn. 27: 3. 1900.

多叶蓼 duo ye liao

Herbs annual. Stems decumbent, rarely erect, 40–60 cm tall, slender, much branched, glabrous. Petiole very short or nearly absent; leaf blade narrowly lanceolate, 3–6 cm × 3–5 mm, sparsely pubescent, midvein prominent abaxially, lateral veins inconspicuous on both surfaces, base cuneate, broadly cuneate, or rounded, margin entire, not ciliate, apex acute; ocrea tubular, 8–10 mm, membranous, sparsely appressed hispidulous, apex truncate, cilia 0.5–3 mm. Inflorescence terminal or axillary, spicate, erect, lax, 3–5 cm, slender, interrupted below; bracts funnel-shaped, glabrous, margin ciliate, each 1- or 2-flowered. Perianth pinkish, 5-parted; tepals narrowly elliptic, 1.5–2 mm. Stamens 5. Styles 2. Achenes equaling persistent perianth, black, shiny, ovoid, biconvex, 1.2–2 mm, smooth. $2n = 20$.

Water sides, streamsides, along ditches; sea level to 700 m.

Anhui, Heilongjiang, Jiangsu, Jilin, Liaoning, ?Nei Mongol, ?Taiwan [Japan, Korea, Russia].

- 1a. Leaves basally cuneate; cilia of ocrea 0.5–1 mm 36a. var. *foliosum*
- 1b. Leaves basally broadly cuneate or rounded; cilia of ocrea 2–3 mm 36b. var. *paludicola*

36a. Polygonum foliosum var. **foliosum**

多叶蓼(原变种) duo ye liao (yuan bian zhong)

Persicaria foliosa (H. Lindberg) Kitagawa.

Leaves basally cuneate; cilia of ocrea 0.5–1 mm.

Water sides, streamsides; sea level to 700 m. Anhui, Heilongjiang, Jilin, Liaoning, ?Nei Mongol, ?Taiwan [Japan, Korea, Russia].

36b. Polygonum foliosum var. **paludicola** (Makino) Kitamura, Acta Phytotax. Geobot. 20: 207. 1962.

宽基多叶蓼 kuan ji duo ye liao

Polygonum paludicola Makino, Bot. Mag. (Tokyo) 28: 113. 1914; *Persicaria paludicola* (Makino) Nakai.

Leaves basally broadly cuneate or rounded; cilia of ocrea 2–3 mm.

Water sides, along ditches; sea level to 300 m. Anhui, Heilongjiang, Jiangsu, Jilin, Liaoning [Japan, Russia (Far East)].

37. Polygonum kawagoeanum Makino, Bot. Mag. (Tokyo) 28: 115. 1914.

柔茎蓼 rou jing liao

Persicaria kawagoeana (Makino) Nakai; *P. tenella* (Blume) H. Hara var. *kawagoeana* (Makino) H. Hara; *Polygonum micranthum* Meisner; *P. minus* Hudson subsp. *micranthum* (Meisner) Danser; *P. minus* subsp. *procerum* Danser; *P. minus* var. *procerum* (Danser) Steward; *P. tenellum* Blume var. *micranthum* (Meisner) C. Y. Wu.

Herbs annual. Stems ascending or decumbent, 20–50 cm tall, slender, usually branched from base, glabrous, rooting at lower nodes; internodes 2–3 cm. Petiole very short or nearly absent; leaf blade narrowly lanceolate, 3–6 cm × 4–8 mm, both surfaces pubescent or glabrate, appressed hispid along midvein, base usually rounded, margin shortly ciliate, apex acute; ocrea tubular, 8–10 mm, membranous, sparsely appressed hispid, apex truncate, ciliate, cilia 2–4 mm. Inflorescence terminal or axillary, spicate, erect, dense, 2–3 cm; bracts funnel-shaped, margin largely ciliate, each 2–4-flowered. Pedicel 1–1.5 mm. Perianth rose-pink, 5-parted; tepals elliptic, 1–1.5 mm. Stamens 5 or 6. Styles 2; stigmas capitate. Achenes black, shiny, ovoid, biconvex, 1–1.5 mm. Fl. May–Sep, fr. Jun–Oct.

Moist valleys, waste areas, field margins; sea level to 1700 m. Anhui, Fujian, Guangdong, Guangxi, Hainan, Jiangsu, Jiangxi, Taiwan, ?Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Malaysia, Nepal, Sikkim].

38. Polygonum jucundum Meisner, Monogr. Polyg. 71. 1826.

愉悦蓼 yu yue liao

Persicaria jucunda (Meisner) Migo; *Polygonum hang-chouense* Matsuda.

Herbs annual, 60–90 cm tall. Stems erect, usually prostrate at base, glabrous, much branched. Petiole 3–6 mm; leaf blade elliptic-lanceolate, 6–10 × 1.5–2.5 cm, both surfaces sparsely appressed-hispidulous or subglabrous, shortly ciliate at margin, base cuneate, margin entire, apex acuminate; ocrea brownish, tubular, 5–10 mm, membranous, sparsely appressed hispidulous, apex truncate, cilia 6–11 mm. Inflorescence terminal or axillary, spicate, dense, 3–6 cm; bracts green, funnel-shaped, cilia 1.5–2 mm, each bract 3–5-flowered. Pedicels longer than bracts, 7–8 mm. Perianth pinkish or white, 5-parted; tepals oblong, 2–3 mm. Stamens 7 or 8, shorter than perianth. Styles 3, connate to below middle, longer than perianth, or stamens longer than perianth and styles shorter than perianth on separate plant; stigmas capitate. Achenes included in persistent perianth, black, shiny, ovoid, trigonous, ca. 2.5 mm. Fl. Aug–Sep, fr. Sep–Nov. $2n = 20^*$.

• Grassy slopes, moist valleys, along ditches; sea level to 2000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

39. Polygonum limicola Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 178. 1929.

污泥蓼 wu ni liao

Persicaria limicola (Samuelsson) Yonekura & H. Ohashi.

Herbs annual. Stems stoloniferous, 40–80 cm, much branched at base, glabrous, rooting from nodes. Petiole 2–3 mm; leaf blade elliptic-lanceolate or ovate-lanceolate, 2–4 × 1–2 cm, both surfaces sparsely appressed hispid, densely so along midvein, base broadly cuneate, margin shortly ciliate, apex acute; ocrea tubular, 5–10 mm, membranous, apex truncate, cilia 5–8 mm. Inflorescence terminal, spicate, dense, 1.5–3 cm; bracts green, funnel-shaped, ca. 3 mm, cilia 1–1.5 mm. Pedicel 5–6 mm, slender. Perianth pinkish or white, 5-parted; tepals elliptic, 3–3.5 mm. Stamens 8, equaling or shorter than perianth. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, black-brown, shiny, ovoid, trigonous, 2.5–3 mm. Fl. Sep–Oct, fr. Oct–Nov.

• Valleys, humid places along ditches; 100–300 m. Guangdong, Guangxi, Hubei, Hunan, ?Yunnan.

3. Polygonum sect. **Bistorta** (Miller) D. Don, Prodr. Fl. Nepal. 69. 1825.

拳参组 quan shen zu

Bistorta Miller, Gard. Dict. Abr., ed. 4, [194]. 1754.

Plants without prickles. Leaves lanceolate to ovate or elliptical, margin revolute. Inflorescence a solitary terminal spike. Tepals free or only slightly fused at base. Inner nectaries confluent with inner filament bases. Styles 3, free, entire.

About 50 species: centered in the Arctic and E Asia; 22 species (six endemic) in China.

40. *Polygonum suffultoides* A. J. Li, Bull. Bot. Res., Harbin 15: 415. 1995.

珠芽支柱拳参 zhu ya zhi zhu quan shen

Herbs perennial. Rhizomes black-brown, large, ca. 1 cm in diam. Stems 1–3 from rhizome, erect, 30–60 cm tall, simple. Basal leaves: petiole 4–12 cm; leaf blade greenish abaxially, green adaxially, ovate or narrowly ovate, 3–8 × 2–5 cm, both surfaces pubescent, base cordate, margin entire, apex acuminate or acute. Cauline leaves: petiole short; leaf blade narrowly ovate, base cordate, apex acuminate; upper leaves smaller, sessile, clasping, sometimes with axillary bulbils; ocrea brown, tubular, 1.5–2.5 cm, membranous, apex oblique, not ciliate, dehiscent. Inflorescence terminal, spicate, lax, 2–5 cm, slender, lower part with bulbils; bracts brown, narrowly ovate, 2.5–3 mm, apex long acuminate, each 1- or 2-flowered. Pedicels shorter than bracts, 2–2.5 mm. Perianth white or pinkish, 5-parted; tepals oblong, ca. 2 mm. Stamens 8, equaling perianth. Ovary ovoid, trigonous; styles 3, connate at base; stigma capitate. Fl. and fr. Jul–Oct.

• Forests on mountain slopes, alpine meadows; 3200–4500 m. NW Yunnan.

41. *Polygonum viviparum* Linnaeus, Sp. Pl. 1: 360. 1753.

珠芽拳参 zhu ya quan shen

Herbs perennial. Rhizomes black-brown, contorted, large, 1–2 cm in diam. Stems usually 2 or 3 from rhizome, erect, 15–60 cm tall, simple. Basal leaves long petiolate; leaf blade linear, ovate-lanceolate, or oblong, 3–10 × 0.2–3 cm, leathery, base rounded or cuneate, margin slightly involute, apex acute. Cauline leaves shortly petiolate or sessile; leaf blade lanceolate smaller than basal ones; ocrea: lower part green, upper part brown, tubular, oblique, membranous, not ciliate. Inflorescence terminal, spicate, lower part with bulbils; bracts ovate, membranous. Perianth white or pinkish, 5-parted; tepals broadly elliptic, 2–3 mm. Stamens usually 8. Styles 3, connate at base. Achenes included in persistent perianth, dark brown, shiny, ovoid, trigonous, ca. 2 mm. Fl. May–Jul, fr. Jul–Sep. $2n = ca. 12^*$.

Forest margins, grassy slopes, alpine steppes; 1200–5100 m. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar, Nepal, Russia, Sikkim, Tajikistan, Thailand; SW Asia, Europe, North America].

- 1a. Leaf blade oblong or ovate-lanceolate, 5–30 mm wide 41a. var. *viviparum*
- 1b. Leaf blade linear, 2–3 mm wide 41b. var. *tenuifolium*

41a. *Polygonum viviparum* var. *viviparum*

珠芽拳参(原变种) zhu ya quan shen (yuan bian zhong)

Bistorta vivipara (Linnaeus) S. F. Gray; ?*B. vivipara* var. *angustifolia* Nakai; *Persicaria vivipara* (Linnaeus) Ronse Decraene; *Polygonum renii* L. C. Wang.

Leaf blade oblong or ovate-lanceolate, 3–10 × 0.5–3 cm.

Grassy slopes, alpine steppes; 1200–5100 m. Gansu, Guizhou,

Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar, Nepal, Russia, Sikkim, Tajikistan, Thailand; SW Asia, Europe, North America].

41b. *Polygonum viviparum* var. *tenuifolium* Y. L. Liu, J. NorthW. Teachers' Coll., Nat. Sci. 3: 45. 1985 or 1987.

细叶珠芽拳参 xi ye zhu ya quan shen

Polygonum tenuifolium H. W. Kung, Contr. Inst. Bot. Natl. Acad. Peiping 3: 367. 1935, not Stephan ex Ledebour (1850); *P. viviparum* var. *angustum* A. J. Li, nom. illeg. superfl.

Leaf blade linear, 2–3 mm wide.

• Forest margins, grassy slopes; 2000–4300 m. Gansu, Qinghai, Shaanxi, Sichuan, Yunnan.

42. *Polygonum pacificum* V. Petrov ex Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 29: 55. 1923.

太平洋拳参 tai ping yang quan shen

Bistorta pacifica (V. Petrov ex Komarov) Komarov ex Kitagawa; *Polygonum bistorta* Linnaeus subsp. *pacificum* (V. Petrov ex Komarov) V. N. Voroschilov.

Herbs perennial. Rhizome black-brown, large, curved, 1.5–3 cm in diam. Stems 1–3 from rhizome, erect, 40–90 cm tall, simple, glabrous, striate. Basal leaves long petiolate; petiole 10–20 cm; leaf blade gray-green abaxially, green adaxially, narrowly ovate, 5–15 × 3–7 cm, abaxially sparsely small papillose, adaxially glabrous, base subcordate or rounded, decurrent along petiole, forming narrow wing, apex acute. Cauline leaves ovate or lanceolate-ovate, base cordate, clasping; upper leaves linear; ocrea: lower part green, upper part brown, tubular, membranous, dehiscent, not ciliate. Inflorescence terminal, spicate, dense, 3–5 cm, 1.2–1.5 cm in diam.; bracts broadly elliptic, 3–4 mm, apex caudate, each 1–3-flowered. Pedicels longer than bracts, slender. Perianth pinkish, 5-parted; tepals elliptic, ca. 2.5 mm. Stamens 8, exerted. Styles 3; stigma capitate. Achenes exceeding persistent perianth, black-brown, shiny, ovoid, sharply trigonous, ca. 3 mm. Fl. Jul–Aug, fr. Aug–Sep.

Slopes, forest margins, meadows; 300–2100 m. Heilongjiang, Jilin, Liaoning, ?Nei Mongol [Korea, Russia (Far East)].

43. *Polygonum honanense* H. W. Kung, Chin. J. Bot. 1(1): 14. 1936.

河南拳参 he nan quan shen

Bistorta honanensis (H. W. Kung) Yonekura & H. Ohashi.

Herbs perennial. Rhizomes subglobose, large. Stems erect, ca. 30 cm tall, glabrous, simple, slenderly striate. Basal leaves: petiole large, 2–3 cm; leaf blade orbicular-ovate, 3–6 × 3–4.5 cm, subleathery, both surfaces glabrous, base subcordate, decurrent along petiole forming a wing, margin slightly revolute, apex obtuse. Cauline leaves shortly petiolate or sessile; leaf blade ovate or lanceolate; ocrea: lower part green, upper part brown, tubular, membranous, dehiscent, not ciliate. Inflorescence terminal, spicate, dense, 3–4 cm, ca. 1.5 cm in diam.;

bracts brown, ovate or ovate-lanceolate, 4–5 mm, membranous, apex acuminate, each 3-flowered. Pedicels longer than bracts, slender. Perianth pinkish, 5-parted; tepals narrowly elliptic, ca. 3 mm. Stamens 8, exserted. Styles 3; stigmas capitate. Achenes light brown, shiny, ovoid, trigonous, equaling persistent perianth, ca. 3 mm. Fl. Jul–Aug, fr. Aug–Sep.

- Rocky fissures; ca. 2500 m. Henan, ?Shaanxi.

44. *Polygonum sinomontanum* Samuelsson in Handel-Mazzetti, *Symb. Sin.* 7: 177. 1929.

翅柄拳参 chi bing quan shen

Bistorta amplexicaulis (D. Don) Greene subsp. *sinomontana* (Samuelsson) Yonekura & H. Ohashi; *B. sinomontana* (Samuelsson) F. Miyamoto.

Herbs perennial. Rhizomes horizontal, black-brown, large, ca. 12 cm, 1–3 cm in diam. Stems usually numerous from rhizome, erect, 30–50 cm tall, glabrous, simple, sometimes branched at lower part. Basal leaves long petiolate; petiole 4–14 cm; leaf blade broadly lanceolate or lanceolate, 6–16 × 1–3 cm, subleathery, abaxially sometimes puberulent along veins, adaxially glabrous, both surfaces with prominent veins, base cuneate or truncate, decurrent along petiole forming a narrow wing, margin revolute, apex acuminate. Cauline leaves shortly petiolate, lanceolate, smaller; upper leaves subsessile; ocrea brown throughout, tubular, 3–6 cm, membranous, apex oblique, not ciliate, cleft to base. Inflorescence terminal, spicate, 2–6 cm, 1–1.5 cm in diam.; bracts ovate-lanceolate, 3–4 mm, apex acuminate, each 2- or 3-flowered. Pedicel 4–5 mm, slender. Perianth red, 5-parted; tepals oblong, 3–5 mm. Stamens 8, exserted. Styles 3; stigmas capitate. Achenes included in persistent perianth, brown, shiny, broadly ellipsoid, trigonous, 3–4 mm. Fl. Jul–Aug, fr. Sep–Oct.

- Grassy slopes, mixed forests in valleys; 2500–3900 m. Sichuan, Xizang, Yunnan.

45. *Polygonum manshuriense* V. Petrov ex Komarov, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 29: 55. 1923.

耳叶拳参 er ye quan shen

Bistorta manshuriensis Komarov.

Herbs perennial. Rhizomes black, curved, short, ca. 1 cm in diam. Stems usually numerous from rhizome, erect, 60–80 cm tall, simple, glabrous. Basal leaves long petiolate; petiole 8–15 cm; leaf blade gray-green abaxially, green adaxially, oblong or lanceolate, 13–15 × 2–3 cm, papery, both surfaces glabrous, base cuneate, decurrent along petiole forming narrow wing, margin entire, apex acuminate. Cauline leaves sessile; leaf blade lanceolate; upper leaves clasping, auriculate; ocrea: lower part green, upper part brown, tubular, membranous, oblique, not ciliate, cleft to middle. Inflorescence terminal, spicate, 4–8 cm, ca. 1 cm in diam.; bracts ovate, membranous, apex cuspidate, each 2- or 3-flowered. Pedicels longer than bracts, 4–5 mm, articulate at apex. Perianth pinkish or white, 5-parted; tepals elliptic, ca. 3 mm. Stamens 8, exserted. Styles 3; stigmas capitate. Achenes included in persistent perianth, shiny, ovoid, sharply trigonous, 3–3.5 mm. Fl. Jun–Jul, fr. Aug–Sep.

Grassy slopes, forest margins, valleys; 800–1800 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Korea, Russia (Far East)].

46. *Polygonum ochotense* V. Petrov ex Komarov, *Fl. URSS* 5: 726. 1936.

倒根拳参 dao gen quan shen

Bistorta ochotensis (V. Petrov ex Komarov) Komarov; *Polygonum bistorta* Linnaeus subsp. *ochotense* (V. Petrov ex Komarov) V. N. Voroschilov.

Herbs perennial. Rhizomes black-brown, curved, large. Stems erect, 15–40 cm tall, glabrous. Basal leaves long petiolate; petiole 6–10 cm; leaf blade green, ovate-lanceolate or oblong-lanceolate, subleathery, 5–8 × 1.5–3 cm, abaxially densely gray-white pubescent, adaxially glabrous, base rounded or subcordate, slightly decurrent along petiole, margin revolute, apex acuminate. Cauline leaves smaller; petiole short; leaf blade ovate lanceolate; upper leaves clasping; ocrea: lower part green, upper part brown, tubular, pubescent, not ciliate, cleft to middle. Inflorescence spicate, short, 2–3 cm, 1–1.5 cm in diam.; bracts brown, membranous, apex long acuminate, awned. Pedicel slender, articulate at apex. Perianth pinkish, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 8, exserted; anthers purple. Styles 3, exserted, slender; stigmas capitate. Achenes included in persistent perianth, shiny, ovoid, trigonous, ca. 4 mm. Fl. Jul–Aug, fr. Aug–Sep.

Mountain slopes; 1500–2500 m. Jilin [Korea, Russia (Far East)].

47. *Polygonum milletii* (H. Léveillé) H. Léveillé, *Cat. Pl. Yun-Nan*, 207. 1916.

大海拳参 da hai quan shen

Bistorta milletii H. Léveillé, *Repert. Spec. Nov. Regni Veg.* 12: 286. 1913; *B. taipaihanensis* (H. W. Kung) Yonekura & H. Ohashi; *Polygonum taipaihanense* H. W. Kung.

Herbs perennial. Rhizomes black, curved, large, 1.5–2 cm in diam. Stems usually 2 or 3 from rhizome, erect, 30–50 cm tall, simple, glabrous. Basal leaves long petiolate; petiole 8–12 cm; leaf blade greenish abaxially, green adaxially, lanceolate or narrowly lanceolate, 10–20 × 1.5–3 cm, subleathery, abaxially glabrous or pubescent, adaxially glabrous, base cuneate, decurrent along petiole forming narrow wing, margin entire, revolute, apex acuminate. Cauline leaves shortly petiolate or subsessile; leaf blade lanceolate, smaller; ocrea: lower part green, upper part brown, tubular, membranous, apex oblique, not ciliate, cleft to middle. Inflorescence terminal, spicate, dense, 2–4 cm, 1–1.5 cm in diam.; bracts brown, ovate-lanceolate, 3–4 mm, membranous, apex acuminate. Pedicels longer than bracts, 4–6 mm, slender. Perianth purple-red, 5-parted; tepals elliptic, 4–5 mm, apex obtuse. Stamens 8, exserted; anthers black-purple. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, brown, shiny, ovoid, trigonous, 3–4 mm. Fl. Jul–Aug, fr. Sep–Oct.

Mountain slopes, meadows, wet valleys; 1700–3900 m. ?Qinghai, S Shaanxi, Sichuan, Yunnan [Bhutan, N India, Nepal].

48. *Polygonum ellipticum* Willdenow ex Sprengel, *Syst. Veg.* 2: 253. 1825.

椭圆叶拳参 tuo yuan ye quan shen

Bistorta major S. F. Gray subsp. *elliptica* (Sprengel) A. Löve & D. Löve; *Polygonum attenuatum* V. Petrov ex Komarov (1936), not R. Brown (1810); *P. bistorta* var. *ellipticum* (Willdenow ex Sprengel) Turczaninow; *P. bistorta* var. *nitens* Fischer & C. A. Meyer; *P. nitens* (Fischer & C. A. Meyer) V. Petrov ex Komarov.

Herbs perennial. Rhizomes black-brown, curved, large, ca. 2 cm in diam. Stems erect, 30–60 cm tall, simple, glabrous. Basal leaves petiolate; petiole 5–9 cm; leaf blade elliptic or nearly oblong, 8–12 × 2–3 cm, papery, abaxially sparsely pubescent or glabrous, adaxially glabrous, base broadly cuneate or subrounded, decurrent along petiole, margin entire, apex acute. Cauline leaves shortly petiolate or sessile; leaf blade lanceolate or linear; ocrea brown or greenish, tubular, membranous, not ciliate. Inflorescence terminal, spicate, 2–3 cm, 1.5–2 cm in diam.; bracts brown, broadly ovate, membranous, apex long acuminate, each 1- or 2-flowered. Pedicels longer than bracts, 4–5 mm. Perianth pinkish, 5-parted; tepals narrowly elliptic, 3–3.5 mm. Stamens 8, exserted. Styles 3, connate at base; stigmas capitate. Achenes included in persistent perianth, brown, shiny, ovoid, sharply trigonous, 3–4 mm. Fl. Jul–Aug, fr. Aug–Sep. $2n = 22$.

Mountain slopes, meadows; 1500–3200 m. Jilin, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia (Far East, E Siberia), Tajikistan].

49. *Polygonum alopecuroides* Turczaninow ex Besser, Fl. Beibl. 23. 1834.

狐尾拳参 hu wei quan shen

Bistorta alopecuroides (Turczaninow ex Besser) Komarov; *B. alopecuroides* (Turczaninow ex Besser) Komarov f. *pilosa* (C. F. Fang) Kitagawa; *Polygonum alopecuroides* Turczaninow ex Besser f. *pilosum* C. F. Fang.

Herbs perennial. Rhizomes curved, large, 1–2 cm in diam. Stems erect, 50–90 cm tall, simple, glabrous. Basal leaves long petiolate; petiole 10–20 cm; leaf blade gray-green abaxially, green adaxially, narrowly oblong or oblong-lanceolate, 10–15 × 1–2 cm, papery, both surfaces glabrous or pubescent, base cuneate, decurrent along petiole, margin entire, apex acuminate. Cauline leaves shortly petiolate or subsessile, lanceolate, base subrounded or nearly cordate, apex acuminate; ocrea: lower part green, upper part brown, tubular, membranous, dehiscent at middle, not ciliate. Inflorescence terminal, spicate, dense, 4–7 cm, ca. 1 cm in diam.; bracts broadly elliptic, apex caudate, each 2- or 3-flowered. Pedicels longer than bracts, slender. Perianth white or pinkish, 5-parted; tepals narrowly elliptic, 2.5–3 mm. Stamens 8, exserted. Styles 3, free; stigmas capitate. Achenes included in persistent perianth, brown, shiny, narrowly ovoid, sharply trigonous, ca. 3 mm. Fl. Jun–Jul, fr. Jul–Aug.

Mountain slopes, meadows; 900–2300 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Mongolia, Russia (Far East, Siberia)].

50. *Polygonum bistorta* Linnaeus, Sp. Pl. 1: 360. 1753.

拳参 quan shen

Bistorta lapidosa Kitagawa; *B. major* S. F. Gray; *B. officinalis* Rafinesque; *Persicaria bistorta* (Linnaeus) Sampaio; *Polygonum lapidosum* (Kitagawa) Kitagawa.

Herbs perennial. Rhizomes black-brown, curved, large, 1–3 cm in diam. Stems erect, usually 2 or 3 from a rhizome, 50–80 cm tall, simple, glabrous. Basal leaves long petiolate; petiole 10–20 cm; leaf blade broadly lanceolate or narrowly ovate, 4–18 × 2–5 cm, papery, both surfaces glabrous or abaxially pubescent, base truncate or subcordate, decurrent along petiole forming narrow wing, margin revolute, apex acute or acuminate. Cauline leaves sessile; leaf blade linear or lanceolate; ocrea: lower part green, upper part brown, tubular, membranous, apex oblique, cleft to middle. Inflorescence terminal, spicate, dense, 4–9 cm, 0.8–1.2 cm in diam.; bracts brownish, ovate, membranous, midvein conspicuous, apex acuminate, each 3- or 4-flowered. Pedicels longer than bracts, 5–7 mm, slender. Perianth pinkish or white, 5-parted; tepals elliptic, 2–3 mm. Stamens 8, equaling perianth. Styles 3, free; stigmas capitate. Achenes slightly exceeding persistent perianth, brown, shiny, ellipsoid, trigonous, ca. 3.5 mm. Fl. Jun–Jul, fr. Aug–Sep.

Hilly grasslands, meadows; 800–3000 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Zhejiang [Japan, Kazakhstan, Mongolia, Russia; Europe].

This species is used medicinally.

51. *Polygonum suffultum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 22: 233. 1877.

支柱拳参 zhi zhu quan shen

Herbs perennial. Rhizomes black-brown, usually torulose, large. Stems usually 3 or 4 from rhizome, erect or ascending, 10–40 cm tall, simple or branched above, slender. Basal leaves long petiolate; petiole 4–15 cm; leaf blade ovate or narrowly ovate, 5–12 × 3–6 cm, both surfaces glabrous or sparsely pubescent, shortly ciliate at margin, base cordate, margin entire, not revolute, apex acuminate or acute. Cauline leaves shortly petiolate; leaf blade ovate, uppermost sessile, clasping; ocrea brown, tubular, 2–4 cm, membranous, apex oblique, not ciliate. Inflorescence terminal or axillary, spicate, dense or lax, 1–2 cm, interrupted at base; bracts narrowly ovate, ca. 3 mm, membranous, apex acuminate, each 2–4-flowered. Pedicels shorter than bracts, 2–2.5 mm, slender. Perianth white or pinkish, 5-parted; tepals obovate or elliptic, 3–3.5 mm. Stamens 8, exserted. Styles 3, connate at base; stigmas capitate. Achenes slightly exceeding persistent perianth, yellowish brown, shiny, broadly ellipsoid, sharply trigonous, 3.5–4 mm. Fl. May–Jun, fr. Jun–Aug.

Slopes, forests, ditches, forest margins, wet valleys; 1300–4000 m. Anhui, Gansu, Guizhou, Hebei, ?Henan, Hubei, Hunan, Jiangxi, Ningxia, Qinghai, Shaanxi, ?Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Japan, Korea].

- 1a. Inflorescence dense 51a. var. *suffultum*
1b. Inflorescence lax, slender, interrupted
at base 51b. var. *pergracile*

51a. *Polygonum suffultum* var. *suffultum*

支柱拳参(原变种) zhi zhu quan shen (yuan bian zhong)

Bistorta franchetiana V. Petrov; *B. majanthemifolia* V. Petrov; *B. suffulta* (Maximowicz) H. Gross; ?*Polygonum con-*

stans Cummins; *P. limprichtii* Lingelsheim; *P. majanthemifolium* (V. Petrov) Steward; *P. marretii* H. Léveillé.

Inflorescence dense.

Slopes, forests, ditches; 1300–4000 m. Anhui, Gansu, Guizhou, Hebei, Hubei, Hunan, Jiangxi, Ningxia, Qinghai, Shaanxi, ?Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Japan, Korea].

51b. *Polygonum suffutum* var. *pergracile* (Hemsley) Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 176. 1929.

细穗支柱拳参 xi sui zhi zhu quan shen

Polygonum pergracile Hemsley, J. Linn. Soc., Bot. 26: 344. 1891; *Bistorta pergracilis* (Hemsley) H. Gross; *B. pseudo-suffulta* V. Petrov; *B. suffulta* subsp. *pergracilis* (Hemsley) Soják.

Inflorescence lax, slender, interrupted at base.

• Slopes, forests, forest margins, wet valleys; 1500–3600 m. Anhui, Gansu, Guizhou, ?Henan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang.

52. *Polygonum amplexicaule* D. Don, Prodr. Fl. Nepal. 70. 1825.

包茎拳参 bao jing quan shen

Herbs perennial. Rhizomes horizontal, purple-brown, large, ca. 1.5 cm. Stems erect, 40–100 cm tall, robust, branched. Basal leaves long petiolate; petiole 5–10 cm; leaf blade greenish abaxially, green adaxially, ovate or oblong-ovate, 4–10 × 2–5 cm, abaxially sometimes pubescent along veins, adaxially glabrous, base cordate, margin slightly revolute, apex long acuminate. Cauline leaves shortly petiolate; leaf blade narrowly ovate, smaller; uppermost leaves subsessile or clasping; ocrea brown, tubular, 2–4 cm, membranous, dehiscent at base, not ciliate. Inflorescence terminal or axillary, spicate, dense or lax, 2–4 cm, 1–1.3 cm in diam.; bracts brown, ovate, membranous, each 2- or 3-flowered. Pedicels longer than bracts, slender. Perianth red, 5-parted; tepals elliptic or narrowly elliptic, 3–5 × 1.5–2.5 mm. Stamens 8. Styles 3, free; stigmas capitate. Achenes slightly exceeding persistent perianth, black-brown, shiny, ellipsoid, trigonous, 4–5 mm, tapered at both ends.

Shaded grassy places in valleys, mixed forests on mountain slopes, grassy slopes, forest margins; 1000–3300 m. Gansu, Hubei, Hunan, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Kashmir, Nepal, Pakistan].

- 1a. Inflorescence dense; tepals ovate-elliptic to elliptic, 4–5 × 2–2.5 mm 52a. var. *amplexicaule*
1b. Inflorescence lax; tepals narrowly elliptic, 3–4 × 1.5–2 mm 52b. var. *sinense*

52a. *Polygonum amplexicaule* var. *amplexicaule*

包茎拳参(原变种) bao jing quan shen (yuan bian zhong)

Bistorta amplexicaulis (D. Don) Greene; *B. petiolata* (D. Don) V. Petrov; *B. speciosa* (Meisner) Greene; *Persicaria amplexicaulis* (D. Don) Ronse Decraene; *Polygonum ambiguum* Meisner; *P. amplexicaule* var. *speciosum* (Meisner) J. D. Hooker; *P. oxyphyllum* Wallich ex Meisner; *P. petiolatum* D. Don; *P. speciosum* Meisner.

Inflorescence dense. Tepals elliptic, 4–5 × 2–2.5 mm.

Shaded grassy places in valleys, mixed forests on mountain slopes; 1000–3300 m. Hubei, Sichuan, Xizang, Yunnan [Bhutan, India, Kashmir, Nepal, Pakistan].

One of us (Ohba) notes that *Polygonum sinomontanum* differs from this variety by its frequently branched stem in the lower part, winged and undulate petioles, and inflorescence usually flowering downward.

This variety is used medicinally.

52b. *Polygonum amplexicaule* var. *sinense* Forbes & Hemsley ex Steward, Contr. Gray Herb., n.s., 5: 30. 1930.

中华抱茎拳参 zhong hua bao jing quan shen

Bistorta amplexicaulis subsp. *sinensis* (Forbes & Hemsley) Soják; *B. henryi* Yonekura & H. Ohashi (2002), not *B. chinensis* H. Gross (1913).

Inflorescence lax. Tepals narrowly elliptic, 3–4 × 1.5–2 mm.

Grassy slopes, forests margins; 1200–3000 m. Gansu, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [Bhutan, India, Nepal, Pakistan].

53. *Polygonum griffithii* J. D. Hooker, Fl. Brit. India 5: 54. 1886.

长梗拳参 chang geng quan shen

Bistorta griffithii (J. D. Hooker) A. J. C. Grierson; *Polygonum calostachyum* Diels.

Herbs perennial. Rhizomes black-brown, horizontal, large, to 20 cm, 1.5–3 cm in diam. Stems 1 or 2 from rhizome, erect, 20–40 cm tall, simple, glabrous. Basal leaves long petiolate; petiole large, 6–10 cm; leaf blade slightly shiny adaxially, elliptic, 10–15 × 3–5 cm, leathery, glabrous, midvein prominent, yellow-brown pubescent, rarely glabrous abaxially, base broadly cuneate or rounded, margin with thickened vein tips, revolute, apex acuminate or acute. Cauline leaves shortly petiolate; leaf blade ovate-elliptic; uppermost leaves subsessile; ocrea tubular, 3–6 cm, membranous, glabrous, apex oblique, not ciliate. Inflorescence terminal or axillary, spicate, nutant, lax, 3–5 cm, 1.5–2 cm in diam.; bracts broadly lanceolate or narrowly ovate, 4–5 mm, each 1- or 2-flowered. Pedicel filiform, 1–1.2 cm, articulate at middle. Perianth purple-red, 5-parted; tepals narrowly elliptic, 5–6 mm. Stamens 8, included. Styles 3; stigmas capitate. Achenes included in persistent perianth, yellow-brown, shiny, narrowly ellipsoid, trigonous, 4–5 mm. Fl. Jul–Aug, fr. Sep–Oct.

Alpine meadows, rocky fissures; 3000–5000 m. Xizang, Yunnan [Bhutan, N Myanmar].

54. *Polygonum macrophyllum* D. Don, Prodr. Fl. Nepal. 70. 1825.

圆穗拳参 yuan sui quan shen

Herbs perennial. Rhizomes curved, large, 1–2 cm in diam. Stems 2 or 3 from rhizome, erect, 8–30 cm tall, simple. Basal leaves petiolate; petiole 3–8 cm; leaf blade gray-green abaxially, green adaxially, oblong, lanceolate, or linear-lanceolate 3–

11 × 0.2–3 cm, abaxially sometimes sparsely pubescent, adaxially glabrous, base subcordate or cuneate, margin with thickened vein tips, revolute, apex acute. Cauline leaves shortly petiolate or subsessile; leaf blade narrowly lanceolate or linear; ocrea: lower part green, upper part brown, tubular, membranous, apex oblique, dehiscent, not ciliate. Inflorescence terminal, shortly spicate, 1.5–2.5 cm, 1–1.5 cm in diam.; bracts ovate, 3–4 mm, membranous, apex acuminate, each 2- or 3-flowered. Pedicel 4–5 mm, slender. Perianth pinkish or white, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 8, exserted; anthers black-purple. Styles 3, connate at base; stigmas capitate. Achenes included in persistent perianth, yellow-brown, shiny, ovoid, trigonous, 2.5–3 mm.

Grassy slopes, alpine meadows; 2000–5000 m. Gansu, Guizhou, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Nepal, Sikkim].

- 1a. Basal leaves oblong or lanceolate, 10–30 mm wide 54a. var. *macrophyllum*
- 1b. Basal leaves linear-lanceolate, 2–5 mm wide 54b. var. *stenophyllum*

54a. Polygonum macrophyllum var. macrophyllum

圆穗拳参(原变种) yuan sui quan shen (yuan bian zhong)

Bistorta macrophylla (D. Don) Soják; *B. sphaerostachya* (Meisner) Greene; *B. yunnanensis* H. Gross; *Polygonum macrophyllum* f. *tomentosum* Kitamura; *P. sphaerostachyum* Meisner.

Basal leaves oblong or lanceolate, 1–3 cm wide.

Grassy slopes, alpine meadows; 2300–5000 m. Guizhou, Henan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Nepal, Sikkim].

54b. Polygonum macrophyllum var. stenophyllum (Meisner) A. J. Li in C. Y. Wu, Fl. Xizang. 1: 613. 1983.

狭叶圆穗拳参 xia ye yuan sui quan shen

Polygonum stenophyllum Meisner, Monogr. Polyg. 52. 1826; *Bistorta macrophylla* var. *stenophylla* (Meisner) F. Miyamoto.

Basal leaves linear-lanceolate, 2–5 mm wide.

Grassy slopes, alpine meadows; 2000–4800 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [N India, Nepal].

55. Polygonum paleaceum Wallich ex J. D. Hooker, Fl. Brit. India 5: 32. 1886.

草血竭 cao xue jie

Herbs perennial. Rhizomes black-brown, curved, large, 2–3 cm in diam. Stems 1–3 from rhizome, erect, 40–60 cm tall, simple, glabrous, slenderly angulate. Basal leaves long petiolate; petiole 5–15 cm; leaf blade gray-green abaxially, green adaxially, narrowly oblong or lanceolate, 6–18 × 2–3 cm, leathery, both surfaces glabrous or abaxially sparsely curved pubescent, base cuneate, rarely subcordate, margin with thickened vein tips, slightly revolute, apex acute or slightly acumi-

nate. Cauline leaves shortly petiolate, lanceolate; uppermost leaves linear, subsessile; orchreae: lower part green, upper part brown, membranous, not ciliate, dehiscent. Inflorescence spicate, dense, 4–6 cm, 0.8–1.2 cm in diam.; bracts ovate lanceolate, membranous, apex long acuminate. Pedicels spreading, longer than bracts, 5–6 mm, slender. Perianth pinkish or white, 5-parted; tepals elliptic, 2–2.5 mm. Stamens 8; anthers red-brown. Styles 3; stigmas capitate. Achenes included in persistent perianth, shiny, ovoid, sharply trigonous, ca. 2.5 mm.

Grassy slopes, forest margins; 1500–4000 m. Guangxi, Guizhou, Sichuan, Yunnan [NE India, N Thailand].

- 1a. Basal leaves glabrous on both surfaces 55a. var. *paleaceum*
- 1b. Basal leaves sparsely curved pubescent abaxially 55b. var. *pubifolium*

55a. Polygonum paleaceum var. paleaceum

草血竭(原变种) cao xue jie (yuan bian zhong)

Bistorta chinensis H. Gross; *B. paleacea* (Wallich ex J. D. Hooker) Yonekura & H. Ohashi; *B. yunnanensis* H. Gross; *Polygonum yunnanense* (H. Gross) H. Léveillé.

Basal leaves glabrous on both surfaces.

Grassy slopes, forest margins; 1500–3500 m. Guangxi, Guizhou, Sichuan, Yunnan [NE India, N Thailand].

This variety is used medicinally.

55b. Polygonum paleaceum var. pubifolium Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 174. 1929.

毛叶草血竭 mao ye cao xue jie

Basal leaves sparsely curved pubescent abaxially.

• Grassy slopes, forest margins; 2000–4000 m. Sichuan, Yunnan.

56. Polygonum subscaposum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 261. 1912.

大理拳参 da li quan shen

Bistorta subscaposa (Diels) V. Petrov; *Polygonum taliense* Lingelsheim.

Herbs perennial. Rhizomes black-brown, large, 2–3 cm in diam. Stems usually 2 or 3 from rhizome, erect, 15–30 cm tall, glabrous. Basal leaves petiolate; petiole 4–6 cm, glabrous; leaf blade elliptic or elliptic-ovate, 8–13 × 4–6 cm, abaxially yellow-brown tomentose, adaxially glabrous, midvein large, glabrous, base subrounded, margin with thickened vein tips, revolute, apex acuminate. Cauline leaves shortly petiolate or subsessile; leaf blade linear; ocrea: lower part green, upper part brown, tubular, 5–8 mm, membranous, dehiscent, not ciliate. Inflorescence spicate, dense, 2–3 cm, 1.2–1.5 in diam.; bracts brown, ovate, 3–4 mm, membranous, apex acuminate. Pedicel 5–6 mm, articulate at apex. Perianth red, 5-parted; tepals narrowly elliptic, 3–3.5 × 1.5–2 mm. Stamens 8, exserted. Styles 3, connate at base; stigmas capitate. Achenes included in persistent perianth, brown, shiny, narrowly ovoid, sharply trigonous, 2.5–3 mm. Fl. Jul–Aug, fr. Aug–Sep.

- Grassy slopes; 3500–4000 m. Yunnan.

57. *Polygonum purpureonervosum* A. J. Li, Bull. Bot. Res., Harbin 15: 416. 1995.

紫脉拳参 *zi mai quan shen*

Bistorta purpureonervosa (A. J. Li) Yonekura & H. Ohashi.

Herbs perennial. Rhizomes black-brown, curved, large, 1.5–2 cm in diam. Stems erect, purple-red, 15–20 cm tall, simple. Basal leaves petiolate; petiole purple, 3–4 cm, glabrous; leaf blade gray-green abaxially, green and slightly shiny adaxially, elliptic, 3–5 × 2.5–3 cm, leathery, margin with thickened vein tips, revolute, veins purple-red and slightly prominent, base cuneate, apex subobtusate. Cauline leaves shortly petiolate or sessile; leaf blades smaller than basal ones, ovate-elliptic; ocrea: lower part purple-red, upper part brown, tubular, 2.5–4 mm, membranous, apex oblique, not ciliate, dehiscent at middle. Inflorescence shortly spicate, 2–2.5 cm, 1.5–2 cm in diam.; bracts brown, ovate, membranous, apex acuminate. Pedicel 3–4 mm. Perianth purple-red, 5-parted; tepals elliptic, 3–3.5 mm. Stamens 8, exserted. Styles 3, connate to below middle, exserted; stigmas capitate. Achenes included in persistent perianth, black-brown, shiny, ovoid, trigonous, ca. 3.5 mm. Fl. Jul–Aug, fr. Aug–Sep.

- Mixed thickets on mountain slopes, grassy slopes; 4000–4800 m. Sichuan (Daocheng, Xiangcheng).

58. *Polygonum coriaceum* Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 174. 1929.

革叶拳参 *ge ye quan shen*

Bistorta coriacea (Samuelsson) Yonekura & H. Ohashi.

Herbs perennial. Rhizomes black-brown, curved, large. Stems 1 or 2 from rhizome, erect, 15–30 cm tall, glabrous, simple. Basal leaves petiolate; petiole 3–8 cm; leaf blade ovate-elliptic or ovate-lanceolate, 4–14 × 2–4.5 cm, leathery, abaxially sometimes sparsely pubescent, adaxially glabrous, base truncate or subcordate, veins conspicuous, green, margin with thickened vein tips, revolute, apex acute or slightly obtuse. Cauline leaves shortly petiolate; leaf blade ovate-lanceolate, smaller; ocrea tubular, 4–5 cm, membranous, apex oblique, dehiscent, not ciliate. Inflorescence terminal, spicate, dense, 4–5 cm, 1.5–2 cm in diam.; bracts ovate, 3–4 mm, membranous, apex acuminate. Pedicels longer than bracts, 4–5 mm, slender. Perianth purple-red, 5-parted; tepals oblong, 4–5 mm. Stamens 8; anthers blue-black. Styles 3, free; stigmas capitate. Achenes included in persistent perianth, yellow-brown, shiny, ovoid, trigonous, 3–4 mm. Fl. Jul–Aug, fr. Sep–Oct.

- Grassy slopes, thickets, forest margins; 2800–5000 m. Guizhou, Sichuan, Xizang, Yunnan.

59. *Polygonum affine* D. Don, Prodr. Fl. Nepal. 70. 1825.

密穗拳参 *mi sui quan shen*

Bistorta affinis (D. Don) Greene; *Persicaria affinis* (D. Don) Ronse Decraene; *Polygonum donianum* Sprengel.

Subshrubs 10–15 cm tall. Rhizomes horizontal, ligneous.

Branches densely tufted, terete, herbaceous, glabrous. Basal leaves shortly petiolate; leaf blade gray-green abaxially, green adaxially, oblanceolate or lanceolate, 5–10 × 1–1.8 cm, subleathery, both surfaces glabrous, midvein large, base narrowly cuneate, margin revolute, apex acute. Cauline leaves sessile, smaller; ocrea brown, tubular, ca. 1 cm, membranous, veins numerous, glabrous, apex oblique, not ciliate, usually lacerate. Inflorescence terminal, spicate, erect, dense, large, 3–6 cm, 1–1.5 cm in diam.; bracts ovate, membranous. Pedicels longer than perianth. Perianth purple-red, 5-parted; tepals obovate, ca. 4 mm. Stamens 8; anthers purple. Styles 3, connate at base; stigmas capitate. Achenes included in persistent perianth, dark brown, shiny, ellipsoid, trigonous, ca. 3 mm, base narrowly cuneate, apex acute. Fl. Jul–Aug, fr. Aug–Sep.

- Grassy slopes, rocky fissures; 4000–4900 m. Xizang [NW India, Kashmir, Nepal, Pakistan, Sikkim].

60. *Polygonum vacciniifolium* Wallich ex Meisner in Wallich, Pl. Asiat. Rar. 3: 54. 1832.

乌饭树叶蓼 *wu fan shu ye liao*

Bistorta vacciniifolia (Wallich ex Meisner) Greene; *Persicaria vacciniifolia* (Wallich ex Meisner) Ronse Decraene.

Subshrubs densely tufted, 10–20 cm tall, much branched. Bark black-brown, longitudinally exfoliating; branches nearly prostrate; branchlets suberect, dense. Petiole short; leaf blade elliptic, 1–2 × 0.6–1 cm, thinly leathery, midvein prominent abaxially, base narrowly cuneate, margin entire, slightly revolute; ocrea brown, tubular, ca. 1 cm, membranous, veins numerous, large, apex oblique, not ciliate, usually lacerate. Inflorescence terminal, spicate, lax, 4–8 cm, 6–8 mm in diam.; bracts narrowly ovate, membranous, apex acute, each 1- or 2-flowered. Pedicels longer than bracts. Perianth purple-red, 5-parted; tepals narrowly elliptic, 3.5–4.5 mm. Stamens 8, exserted; anthers purple. Styles 3; stigmas capitate. Achenes included in persistent perianth, dull, narrowly ellipsoid, trigonous, 3–4 mm. Fl. Aug–Sep, fr. Sep–Oct.

- Thickets on mountain slopes, mountainous rocky crevices; 3000–4200 m. Xizang [Bhutan, India, Kashmir, Nepal, Pakistan, Sikkim].

61. *Polygonum emodi* Meisner in Wallich, Pl. Asiat. Rar. 3: 51. 1832.

竹叶舒筋 *zhu ye shu jin*

Subshrubs tufted, 10–25 cm tall, much branched. Branches creeping, rooting from nodes; bark black-brown; branchlets erect, simple. Petiole short; leaf blade gray-green abaxially, green adaxially, narrowly lanceolate or broadly lanceolate, 3–15 × 0.3–3.5 cm, longer than internodes, abaxially midvein prominent, adaxially midvein large, slightly immersed, lateral veins conspicuous, base narrowly cuneate, margin conspicuously revolute, apex acute; ocrea tubular, 2–5 cm, membranous, apex acute, dehiscent, not ciliate. Inflorescence terminal, spicate, lax, 2–6 cm, 7–8 mm in diam.; bracts brown, ovate, membranous, apex acuminate, each 1- or 2-flowered. Pedicels longer than bracts, slender. Perianth purple-red, 5-parted; tepals broadly elliptic, 3–3.5 mm. Stamens 8, included. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, brown, dull, ovoid, trigonous, ca. 3 mm.

Rocky fissures on mountain slopes, thickets, forests; 1300–3000 m. Sichuan, Xizang, Yunnan [Bhutan, NW India, Kashmir, Nepal, Sikkim].

- 1a. Plants 10–15 cm tall; leaf blade narrowly lanceolate, 3–7 × 0.3–0.6 cm; inflorescence 2–4 cm 61a. var. *emodi*
- 1b. Plants 15–25 cm tall; leaf blade broadly lanceolate, 4–15 × 1–3.5 cm; inflorescence 4–6 cm 61b. var. *dependens*

61a. Polygonum emodi var. emodi

竹叶舒筋(原变种) zhu ye shu jin (yuan bian zhong)

Bistorta emodi (Meisner) V. Petrov.

Plants 10–15 cm tall. Leaf blade narrowly lanceolate, 3–7 × 3–6 mm. Inflorescence 2–4 cm.

Rocky fissures on mountain slopes; 1300–2800 m. Xizang, Yunnan [Bhutan, NW India, Kashmir, Nepal, Sikkim].

61b. Polygonum emodi var. dependens Diels, Notes Roy. Bot. Gard. Edinburgh 5: 256. 1912.

宽竹叶舒筋 kuan zhu ye shu jin

Bistorta emodi (Meisner) V. Petrov subsp. *dependens* (Diels) Soják; *B. emodi* var. *dependens* (Diels) V. Petrov; *B. zigzag* (H. Léveillé & Vaniot) H. Gross; *Polygonum zigzag* H. Léveillé & Vaniot.

Plants 15–25 cm tall. Leaf blade broadly lanceolate, 4–15 × 1–3.5 cm. Inflorescence 4–6 cm.

- Thickets, forests; 2500–3000 m. Sichuan, SE Xizang (Zayü), Yunnan.

4. Polygonum sect. Cephalophilon Meisner in Wallich, Pl. Asiat. Rar. 3: 59. 1832.

头状蓼组 tou zhuang liao zu

Plants ± prostrate, without prickles. Leaves ovate, oblong, or lyrate. Inflorescence capitate. Tepals fused for about 1/3 their length. Nectaries free, globular. Styles 1, bifid or trifid.

Between 20 and 30 species: mainly in E Asia; 17 species (six endemic) in China.

62. Polygonum palmatum Dunn, Bull. Misc. Inform. Kew 1912: 341. 1912.

掌叶蓼 zhang ye liao

Cephalophilon palmatum (Dunn) Borodina; *Persicaria palmata* (Dunn) Yonekura & H. Ohashi; *Polygonum meeboldii* W. W. Smith; *P. pseudopalmatum* G. Hoo.

Herbs perennial. Stems erect, 60–100 cm tall, stout, angulate, much branched upward, strigose, shortly stellate hairy. Petiole 5–12 cm; leaf blade greenish abaxially, green adaxially, orbicular or broadly ovate, 7–15 × 6–14 cm, both surfaces shortly stellate hairy, sparsely strigose, margin sparsely ciliate, sometimes decurrent along petiole forming narrow wing, palmatipartite; lobes 5–7, ovate, base constricted, apex acuminate; ocrea lax, tubular, 1.5–2.5 cm, membranous, shortly stellate hairy, strigose, oblique, margin sparsely ciliate. Inflorescence terminal or axillary, capitate, ca. 1 cm in diam., several capitula aggregated and panicle-like; peduncle densely shortly stellate hairy, sparsely strigose; bracts lanceolate, each 2- or 3-flowered. Pedicels shorter than bracts, glabrous. Perianth pinkish, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 8. Styles 3, connate to below middle. Achenes included in persistent perianth, brown, opaque, ovoid, trigonous, 3–3.5 mm, minutely punctate. Fl. Jul–Aug, fr. Sep–Oct.

Valleys along stream banks, moist forests; 400–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan [India].

63. Polygonum chinense Linnaeus, Sp. Pl. 1: 363. 1753.

火炭母 huo tan mu

Herbs perennial. Rhizomes stout. Stems erect, 70–100 cm tall, ligneous at base, much branched, striate, glabrous or retrorsely hispid. Petiole 1–2 cm, usually auriculate at base,

upper leaves sessile; leaf blade ovate, elliptic, or lanceolate, 4–16 × 1.5–8 cm, both surfaces glabrous or hispid, abaxially sometimes pubescent along veins, base truncate or broadly cordate, margin entire, apex shortly acuminate; ocrea tubular, 1.5–2.5 cm, membranous, glabrous, much veined, apex oblique, not ciliate. Inflorescence terminal or axillary, capitate, 3–5 mm, usually several capitula aggregated and panicle-like; peduncle densely glandular hairy; bracts broadly ovate, each 1–3-flowered. Perianth white or pinkish, 5-parted; tepals ovate, accrescent in fruit, becoming blue-black, fleshy. Stamens 8, included. Styles 3, connate to below middle. Achenes included in persistent perianth, black, opaque, broadly ovoid, trigonous, 3–4 mm. Fl. Jul–Nov, fr. Jul–Dec. 2n = 22*.

Wet valleys, grassy slopes, mixed forests, thickets in valleys, mountain slopes; sea level to 3000 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam].

- 1a. Leaf blade lanceolate to broadly lanceolate, 7–12 × 1.5–2.5 cm 63c. var. *paradoxum*
- 1b. Leaf blade ovate to elliptic, 4–16 × 2–8 cm.
 - 2a. Stems and branches retrorsely hispid; leaf blade hispid on both surfaces 63d. var. *hispidum*
 - 2b. Stems and branches usually glabrous; leaf blade glabrous on both surfaces, sometimes adaxially along veins sparsely pubescent.
 - 3a. Leaf blade broadly ovate or elliptic, 10–16 × 2–4 cm ... 63b. var. *ovalifolium*
 - 3b. Leaf blade ovate or narrowly ovate, 4–10 × 2–4 cm 63a. var. *chinense*

63a. *Polygonum chinense* var. *chinense*

火炭母(原变种) huó tan mu (yuan bian zhong)

Ampelgongonum chinense (Linnaeus) Lindley; *Persicaria chinensis* (Linnaeus) H. Gross; *P. chinensis* var. *siamensis* H. Léveillé; *Polygonum adenopodium* Samuelsson; *P. brachiatum* Poiret; *P. sinense* J. F. Gmelin.

Stems and branches usually glabrous. Leaf blade ovate or narrowly ovate, 4–10 × 2–4 cm. Fl. Jul–Sep, fr. Aug–Oct.

Wet valleys, grassy slopes; sea level to 2400 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam].

63b. *Polygonum chinense* var. *ovalifolium* Meisner in Wallich, Pl. Asiat. Rar. 3: 60. 1832.

宽叶火炭母 kuan ye huó tan mu

Ampelgongonum malaicum (Danser) M. A. Hassan; *Cephalophilon malaicum* (Danser) Borodina; *Persicaria chinensis* (Linnaeus) H. Gross var. *ovalifolia* (Meisner) H. Hara; *Polygonum chinense* var. *malaicum* (Danser) Steward; *P. malaicum* Danser.

Stems and branches glabrous. Leaf blade broadly ovate or broadly elliptic, 10–16 × 6–8 cm. Fl. Jul–Sep, fr. Jul–Nov.

Mixed forests; 1200–3000 m. ?Guizhou, Xizang, Yunnan [India, S Japan, Malaysia, Myanmar, Nepal, Thailand].

63c. *Polygonum chinense* var. *paradoxum* (H. Léveillé) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 57. 1998.

窄叶火炭母 zhai ye huó tan mu

Polygonum paradoxum H. Léveillé, Repert. Spec. Nov. Regni Veg. 7: 339. 1909; *P. dielsii* H. Léveillé; *P. jucundum* Diels (1912), not Meisner (1826).

Leaf blade broadly lanceolate, 7–12 × 1.5–2.5 cm. Fl. Jul–Nov, fr. Jul–Dec.

• Grassy slopes, thickets in valleys; 900–2600 m. Guizhou, Sichuan, Yunnan.

63d. *Polygonum chinense* var. *hispidum* J. D. Hooker, Fl. Brit. India 5: 45. 1886.

硬毛火炭母 ying mao huó tan mu

Polygonum chinense f. *hispidum* (J. D. Hooker) Samuelsson.

Stems and branches retrorsely hispid. Leaf blade ovate to elliptic, both surfaces hispid. Fl. Jul–Oct, fr. Jul–Nov.

Mountain slopes, thickets in valleys; 600–2800 m. Guangxi, Guizhou, Hunan, Sichuan, Yunnan [India, Myanmar, Thailand].

64. *Polygonum capitatum* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 73. 1825.

头花蓼 tou hua liao

Cephalophilon capitatum (Buchanan-Hamilton ex D.

Don) Tzvelev; *Persicaria capitata* (Buchanan-Hamilton ex D. Don) H. Gross.

Herbs perennial. Stems creeping, tufted, ligneous at base, sparsely glandular hairy or nearly glabrous, much branched, rooting from nodes, internodes shorter than leaf blades; branchlet suberect, angulate, sparsely glandular hairy. Petiole 2–3 mm, sometimes auriculate at base; leaf blade sometimes with a large blackish spot adaxially, ovate or elliptic, 1.5–3 × 1–2.5 cm, both surfaces glandular hairy, base cuneate, margin entire and glandular hairy, apex acute; ocrea tubular, 5–8 mm, membranous, sparsely glandular hairy, apex truncate, ciliate. Inflorescence terminal, capitate, solitary or geminate, 6–10 mm in diam.; peduncle glandular hairy; bracts narrowly ovate, membranous. Pedicel very short. Perianth pinkish, 5-parted; tepals elliptic, 2–3 mm. Stamens 8, included. Styles 3, connate to below middle, equaling perianth; stigmas capitate. Achenes included in persistent perianth, black-brown, slightly shiny, narrowly ovoid, trigonous, 1.5–2 mm, densely punctate. Fl. Jun–Sep, fr. Aug–Oct.

Mountain slopes, shaded places in valleys; 600–3500 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Malaysia, Myanmar, Nepal, Sikkim, Sri Lanka, Thailand, Vietnam].

This species is used medicinally, and is cultivated as an ornamental in other parts of the world (e.g., in Australia).

65. *Polygonum strindbergii* J. Schuster, Bull. Herb. Boiss., sér. 2, 8: 712. 1908.

平卧蓼 ping wo liao

Herbs perennial. Stems creeping or prostrate, rooting from nodes, not tufted, not ligneous at base, branched, angulate, sparsely pilose; branches suberect, 10–15 cm tall. Petiole 1–2 cm, sparsely pilose, sometimes aculeolate at base; leaf blade cordate or ovate-cordate, 2.5–4 × 2–3 cm, both surfaces sparsely pilose, base cordate, margin entire, ciliate, apex acuminate; ocrea tubular, 5–10 mm, membranous, sparsely pilose, apex truncate, ciliate. Inflorescence terminal or axillary, usually geminate, rarely solitary, 8–10 mm in diam.; peduncle densely glandular hairy; bracts narrowly ovate, ca. 3 mm, membranous, each 2- or 3-flowered. Perianth white or pinkish, 5-parted; tepals elliptic, 3–4 mm. Stamens 6–8. Styles 3, connate to below middle. Achenes included in persistent perianth, opaque, ovoid, trigonous, 2.5–3 mm, glandular. Fl. Apr–May, fr. May–Jun.

• Forests on mountain slopes, wet places in valleys; 2000–3000 m. Xizang, Yunnan.

66. *Polygonum runcinatum* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 73. 1825.

羽叶蓼 yu ye liao

Herbs perennial. Rhizomes stout. Stems suberect or ascending, 30–60 cm tall, angulate, pilose or subglabrous, usually nodes retrorsely appressed hispid. Petiole 1–1.5 cm, narrowly winged, base auriculate, upper ones often shortly petiole-late or sessile; leaf blade 4–8 × 2–4 cm, pinnatifid; terminal lobe triangular, large, apex acuminate; lateral lobes 1–3 pairs, smaller, margin shortly ciliate, both surfaces sparsely strigose

or glabrous; ocrea tubular, lax, ca. 1 cm, membranous, pubescent, apex truncate, ciliate. Inflorescence terminal, corymbose or paniculate, capitate, dense, 0.5–1.5 cm in diam.; peduncle glandular hairy; bracts narrowly ovate, margin membranous. Pedicels shorter than bracts, slender. Perianth pinkish or white, 5-parted; tepals narrowly ovate, 3–3.5 mm. Stamens usually 8, included; anthers purple. Styles 3, connate to below middle. Achenes included in persistent perianth, black-brown, opaque, ovoid, trigonous, 2–3 mm. $2n = 22^*$.

Grassy slopes, mountain slopes, wet valleys, thickets in valleys; 800–3900 m. Anhui, ?Fujian, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, ?Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, N India, Indonesia (Sumatra), ?Kashmir, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand].

- 1a. Capitulum 1–1.5 cm in diam., usually corymbose; leaf blade sparsely strigose on both surfaces, lateral lobes 1–3 pairs 66a. var. *runcinatum*
- 1b. Capitulum 0.5–0.7 cm in diam., several capitula paniculate; leaf blade glabrous or sparsely shortly strigose on both surfaces, lateral lobes in 1 pair 66b. var. *sinense*

66a. Polygonum runcinatum var. **runcinatum**

羽叶蓼(原变种) yu ye liao (yuan bian zhong)

Cephalophylon runcinatum (Buchanan-Hamilton ex D. Don) Tzvelev; *Persicaria morrisonensis* (Hayata) Nakai; *P. runcinata* (Buchanan-Hamilton ex D. Don) H. Gross; *Polygonum morrisonense* Hayata; *P. panduriforme* H. Léveillé & Vaniot.

Leaf blade sparsely strigose on both surfaces; lateral lobes 1–3 pairs. Capitulum usually geminate, 1–1.5 cm in diam.

Grassy slopes, wet valleys; 1200–3900 m. ?Fujian, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, N India, Indonesia (Sumatra), ?Kashmir, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand].

66b. Polygonum runcinatum var. **sinense** Hemsley, J. Linn. Soc., Bot. 26: 347. 1891.

赤胫散 chi jing san

Polygonum runcinatum var. *exauriculatum* Lingelsheim.

Leaf blade glabrous or sparsely shortly strigose on both surfaces; lateral lobes in 1 pair. Capitulum 5–7 mm in diam., with several capitula paniculate.

• Mountain slopes, thickets in valleys; 800–3900 m. Anhui, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, ?Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang.

This variety is used medicinally.

67. Polygonum umbrosum Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 182. 1929.

阴地蓼 yin di liao

Herbs perennial. Stems decumbent, 70–90 cm tall, angulate, glabrous or sparsely shortly bristly; branches slender. Peti-

ole 5–10 mm, winged; leaf blade ovate-oblong, 7–10 × 2–3 cm, papery, both surfaces glabrous, base broadly cuneate, decurrent along petiole forming a wing, margin sparsely shortly setose, apex ?long acuminate; ocrea brown, tubular, 1–1.5 cm, membranous, pilose, apex truncate, ciliate. Inflorescence terminal or axillary, capitate, several capitula aggregated and panicle-like; peduncle glabrous or sparsely shortly glandular hairy; bracts broadly ovate, 1.5–2 mm. Pedicels shorter than bracts. Perianth pinkish, 5-parted; tepals elliptic, 2–2.5 mm. Stamens 6–8, included; anthers purple, elliptic. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, yellow-brown, opaque, broadly ovoid, trigonous, ca. 2 mm, densely pitted. Fl. Jul–Aug, fr. Aug–Sep.

• Shaded places in valleys; ca. 2200 m. Yunnan.

68. Polygonum microcephalum D. Don, Prodr. Fl. Nepal. 72. 1825.

小头蓼 xiao tou liao

Herbs perennial. Rhizomes stout. Stems erect or decumbent, 40–60 cm tall, angulate, branched. Petiole 1–1.2 cm, winged; leaf blade broadly ovate or triangular-ovate, 6–10 × 2–4 cm, both surfaces glabrous or pilose, base subrounded, decurrent along petiole forming a wing, margin entire, ciliate, apex acuminate; ocrea tubular, lax, 7–10 mm, pubescent, apex truncate, ciliate. Inflorescence terminal, usually geminate, capitate, 5–7 mm in diam.; peduncle glabrous or glandular hairy; bracts ovate, apex acute. Perianth white or pinkish, 5-parted; tepals elliptic, 2–3 mm. Stamens 8, included. Styles 3, connate to below middle; stigmas capitate. Achenes black-brown, opaque, broadly ovoid, trigonous, 2–2.5 mm, punctate.

Forests, grassy places; 500–3200 m. S Gansu, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Nepal, Sikkim].

- 1a. Peduncle glabrous; perianth white 68a. var. *microcephalum*
- 1b. Peduncle glandular hairy; perianth pinkish 68b. var. *sphaerocephalum*

68a. Polygonum microcephalum var. **microcephalum**

小头蓼(原变种) xiao tou liao (yuan bian zhong)

Persicaria microcephala (D. Don) H. Gross.

Peduncle glabrous. Perianth white.

Mixed forests on mountain slopes, grassy places in valleys; 1000–2000 m. S Gansu, Guizhou, Hubei, Hunan, SW Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, NE India, Nepal, Sikkim].

68b. Polygonum microcephalum var. **sphaerocephalum** (Wallich ex Meisner) H. Hara, Bull. Univ. Mus. Univ. Tokyo 2: 23. 1971.

腺梗小头蓼 xian geng xiao tou liao

Polygonum sphaerocephalum Wallich ex Meisner in Wallich, Pl. Asiat. Rar. 3: 60. 1832; *Persicaria sphaerocephala* (Wallich ex Meisner) H. Gross.

Peduncle glabrous. Perianth pinkish.

Forests, grassy slopes; 500–3200 m. Hubei, S Shaanxi, Sichuan, Xizang, Yunnan [India, Nepal].

69. *Polygonum wallichii* Meisner, Monogr. Polyg. 83. 1826.

球序蓼 qiu xu liao

Persicaria microcephala (D. Don) H. Gross var. *wallichii* (Meisner) H. Hara.

Herbs annual. Stems suberect or ascending, 20–30 cm tall, angulate, glabrous. Petiole 1–2 cm, not winged, usually auriculate at base; leaf blade broadly cordate or ovate-cordate, 3–5 × 2–3.5 cm, abaxially sparsely strigose, adaxially subglabrous, base subcordate, margin entire, shortly ciliate, apex acuminate; ocrea tubular, 6–8 mm, membranous, pilose, apex truncate, shortly ciliate. Inflorescence usually geminate, capitate, 5–8 mm in diam.; peduncle glabrous; bracts ovate, apex obtuse, glabrous. Perianth white, 5-parted; tepals broadly elliptic, 2–3 mm. Stamens usually 8. Styles 3, connate to below middle; stigmas capitate. Achenes black, opaque, ovoid, trigonous, 2–2.5 mm, densely punctate. Fl. Jul–Aug, fr. Aug–Oct.

Mixed forests on mountain slopes, wet valleys; 2500–3400 m. Xizang, Yunnan [NE India, Nepal, Sikkim].

70. *Polygonum criopolitanum* Hance, Ann. Sci. Nat., Bot., sér. 5, 5: 238. 1866.

蓼子草 liao zi cao

Persicaria criopolitana (Hance) Migo.

Herbs annual. Stems tufted, prostrate, 10–15 cm tall, rooting from nodes, diffusely branched from base, long strigose, sparsely glandular hairy. Petiole very short or nearly absent; leaf blade narrowly lanceolate or lanceolate, 1–3 cm × 3–8 mm, both surfaces strigose, base narrowly cuneate, margin ciliate with glandular hairs, apex acute; ocrea tubular, membranous, densely strigose, apex truncate, long ciliate. Inflorescence terminal, capitate; peduncle densely glandular hairy; bracts ovate, 2–2.5 mm, densely strigose, margin long ciliate, each 1-flowered. Pedicels longer than bracts, densely glandular hairy, articulate at apex. Perianth purplish red, 5-parted; tepals ovate, 3–4 mm. Stamens 5; anthers purple. Styles 2, connate at middle. Achenes included in persistent perianth, shiny, ellipsoid, biconvex, ca. 2.5 mm. Fl. Jul–Nov, fr. Aug–Dec.

• In sand by riversides, wet ditches; sea level to 900 m. Anhui, Fujian, Guangdong, Guangxi, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Zhejiang.

71. *Polygonum humile* Meisner in Wallich, Pl. Asiat. Rar. 3: 59. 1832.

矮蓼 ai liao

Persicaria humilis (Meisner) H. Hara.

Herbs annual. Stems decumbent, 5–15 cm tall, slender, branched, sparsely long glandular hairy. Petiole 2–3 mm, winged; leaf blade ovate, 5–12 × 3–6 mm, both surfaces sparsely long glandular hairy, base cuneate, decurrent along petiole forming narrow wing, margin long ciliate and sparsely glandular hairy; ocrea tubular, membranous, oblique, sparsely long glandular hairy, not ciliate. Inflorescence terminal, capitate, small, 3–5 mm in diam.; peduncle long, slender, sparsely long glandular hairy; bracts broadly lanceolate, 2.5–3 mm, glabrous, margin membranous, not ciliate, apex acute, each 1-flowered.

Perianth pinkish, 5-parted; tepals elliptic, ca. 1 mm, apex acute. Stamens 5 or 6. Styles 2, connate to below middle; stigmas capitate. Achenes black, opaque, nearly orbicular, biconvex, ca. 1 mm in diam., densely pitted. Fl. Aug–Sep, fr. Sep–Oct.

Grassy slopes, shaded places in valleys; 2400–2800 m. Yunnan [Bhutan, India, Nepal, Sikkim].

72. *Polygonum nepalense* Meisner, Monogr. Polyg. 84. 1826.

尼泊尔蓼 ni bo er liao

Cephalophilon nepalense (Meisner) Tzvelev; *Persicaria alata* (Buchanan-Hamilton ex D. Don) Nakai; *P. nepalensis* (Meisner) H. Gross; *Polygonum alatum* (Buchanan-Hamilton ex D. Don) Sprengel; *P. alatum* var. *nepalense* (Meisner) J. D. Hooker; ?*P. nepalense* var. *adenothrix* Nakai; *P. punctatum* Buchanan-Hamilton ex D. Don (1825), not Elliott (1817), nor Rafinesque (1820); *P. punctatum* Buchanan-Hamilton ex D. Don var. *alatum* Buchanan-Hamilton ex D. Don; *P. quadrifidum* Hayata (1911), not Meisner (1840).

Herbs annual. Stems decumbent or ascending, 20–40 cm tall, much branched at base, rooting at lower nodes. Lower leaves petiolate; petiole 2–3 cm, winged; leaf blade ovate or triangular-ovate, 3–5 × 2–4 cm, both surfaces sparsely setose or glabrous, sparsely yellow pellucid glandular punctate, base broadly cuneate, decurrent along petiole forming wing, margin entire, upper leaves smaller, sessile or clasping; ocrea brownish, tubular, 5–10 mm, membranous, apex obliquely truncate, not ciliate, with recurved seta at base. Inflorescence capitate, included by an involucre leaf; peduncle long, glandular hairy; bracts ovate-elliptic, usually glabrous, margin membranous. Pedicels shorter than bracts. Perianth purplish red or white, usually 4-parted; tepals oblong, 2–3 mm, apex obtuse. Stamens 5 or 6, equaling perianth; anthers black-purple. Styles 2, connate at base; stigmas capitate. Achenes included in persistent perianth, black, opaque, broadly ovoid, biconvex, 2–2.5 mm, densely pitted. Fl. May–Aug, fr. Jun–Oct.

Mountain slopes, moist valleys; 200–4000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Afghanistan, Bhutan, India, Indonesia, Japan, Korea, Malaysia, Nepal, New Guinea, Pakistan, Philippines, Russia (Far East), Sikkim, Thailand; tropical Africa].

73. *Polygonum glaciale* (Meisner) J. D. Hooker, Fl. Brit. India 5: 41. 1886.

冰川蓼 bing chuan liao

Herbs annual. Stems 10–25 cm tall, slender, glabrous, much branched at base. Petiole 1–2 cm, sometimes narrowly winged; leaf blade ovate or broadly ovate, 0.8–2 × 0.6–1 cm, both surfaces glabrous, base nearly truncate, broadly cuneate, sometimes along petiole decurrent forming narrow wing, margin entire or 2-lobed at base, apex acute or obtuse; ocrea tubular, lax, membranous, glabrous, apex truncate or 2-cleft. Inflorescence terminal or axillary, capitate, small, 5–6 mm in diam.; peduncle glandular hairy in upper portion; bracts green, ovate or broadly ovate, herbaceous, sparsely glandular hairy or glabrous, margin membranous, apex acute. Perianth white or pinkish, 5-parted; tepals elliptic, 0.5–1 mm. Stamens usually 5.

Styles 3, connate at middle; stigmas capitate. Achenes included in persistent perianth, black, opaque, ovoid, trigonous or biconvex, 1–2 mm, finely glandular or pitted.

Grassy slopes, wet valleys; 1300–4300 m. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan [Afghanistan, India, Nepal, Sikkim].

- 1a. Leaf blade entire; achenes trigonous, 1–1.5 mm, finely granular 73a. var. *glaciale*
1b. Leaf blade 2-lobed at base, rarely entire; achenes biconvex or trigonous, 1.8–2 mm, finely pitted 73b. var. *przewalskii*

73a. *Polygonum glaciale* var. *glaciale*

冰川蓼(原变种) bing chuan liao (yuan bian zhong)

Polygonum perforatum Meisner var. *glaciale* Meisner in Candolle, Prodr. 14(1): 128. 1856; *Persicaria glacialis* (Meisner) H. Hara.

Leaf blade entire. Achenes trigonous, 1–1.5 mm, finely glandular. Fl. Jun–Jul, fr. Jul–Aug.

Grassy slopes, wet valleys; 2100–4300 m. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan [Afghanistan, India, Nepal, Sikkim].

73b. *Polygonum glaciale* var. *przewalskii* (A. K. Skvortsov & Borodina) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 62. 1998.

洼点蓼 wa dian liao

Polygonum przewalskii A. K. Skvortsov & Borodina, Rast. Tsentral. Azii 9: 106. 1989.

Leaf blade 2-lobed at base, rarely entire. Achenes biconvex or trigonous, 1.8–2 mm, finely pitted. Fl. Jun–Jul, fr. Jul–Aug.

Grassy slopes, wet valleys; 1300–3600 m. Gansu, Hebei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan [Afghanistan, India, Nepal].

74. *Polygonum delicatulum* Meisner in Candolle, Prodr. 14(1): 127. 1857.

小叶蓼 xiao ye liao

Koenigia delicatula (Meisner) H. Hara.

Herbs annual. Stems tufted, erect, 8–15 cm tall, slender, glabrous. Petiole short or nearly absent; leaf blade ovate, 4–8 × 3–5 cm, both surfaces glabrous, base cordate, margin entire, not ciliate, apex acute; ocrea yellow-brown, tubular, membranous, glabrous, 1.5–2 mm, apex 2-cleft. Inflorescence axillary, capitate, small; peduncle very short; bracts ovate, membranous. Pedicel short, articulate at apex. Perianth white, 5-parted; outer tepals 2, smaller, apex obtuse; inner tepals 3, broadly ovate, large, ca. 1.5 mm, apex acute. Stamens 3. Styles 3, ca. 0.3 mm; stigmas capitate. Achenes exceeding persistent perianth, yellow-brown, shiny, narrowly ovoid, trigonous, 2–2.5 mm. Fl. Jul–Aug, fr. Aug–Sep. $2n = 28$.

Alpine meadows, mountain slopes; 2600–4300 m. Sichuan, Xizang, Yunnan [Bhutan, N India, Nepal, Pakistan, Sikkim].

75. *Polygonum filicaule* Wallich ex Meisner in Wallich, Pl. Asiat. Rar. 3: 59. 1832.

细茎蓼 xi jing liao

Koenigia nepalensis D. Don; *Persicaria minuta* (Hayata) Nakai; *Polygonum minutum* Hayata; *P. radicans* Hemsley.

Herbs annual. Stems decumbent, tufted, 10–30 cm tall, slender, much branched, sparsely strigose, with reflexed hairs below nodes. Petiole 3–5 mm, strigose; leaf blade ovate or lanceolate-ovate, 1–3 × 0.5–1 cm, both surfaces densely or sparsely strigose, base cuneate, margin ciliate, apex acute; ocrea tubular, membranous, strigose, ciliate. Inflorescence axillary or terminal, capitate; peduncle strigose; bracts narrowly ovate, membranous, each 1- or 2-flowered. Pedicel ca. 1 mm, articulate at apex. Perianth white or pinkish, 5-parted; tepals elliptic; outer tepals 2, smaller; inner tepals 3, ca. 1.5 mm. Stamens 3 or 4; anthers purple. Styles 3, short; stigmas capitate. Achenes slightly exceeding persistent perianth, yellow-brown, ± shiny, ellipsoid, trigonous, ca. 2 mm, apex acute. Fl. Jul–Aug, fr. Aug–Oct.

Mountain slopes, thickets in valleys; 2000–4000 m. ?Qinghai, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, NW India, Myanmar, Nepal, Pakistan, Sikkim].

76. *Polygonum cyanandrum* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 257. 1912.

蓝药蓼 lan yao liao

Koenigia cyanandra (Diels) Mesicek & Soják.

Herbs annual. Stems erect or decumbent, 10–25 cm tall, slender, slightly angulate, branched at base. Petiole 5–10 mm; leaf blade ovate or narrowly ovate, 1–2 × 0.5–1 cm, papery, both surfaces pilose or nearly glabrous, base subtruncate, margin entire, sparsely ciliate, apex acute; ocrea brown, tubular, membranous, lax, pilose, dehiscent at apex, not ciliate. Inflorescence terminal or axillary, capitate, 5–6 mm in diam.; bracts narrowly ovate, membranous. Perianth white or greenish, 5-parted; tepals obovate or elliptic, ca. 1.5 mm. Stamens 8, included; anthers blue. Styles 3, very short; stigmas capitate. Achenes slightly exceeding persistent perianth, brown, dull, ovoid, trigonous, ca. 2 mm. Fl. Jul–Sep, fr. Aug–Oct.

• Grassy slopes, forests; 2200–4600 m. S Gansu, W Hubei, Qinghai, S Shaanxi, Sichuan, ?Xizang, Yunnan.

77. *Polygonum fertile* (Maximowicz) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 67. 1998.

青藏蓼 qing zang liao

Koenigia fertilis Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 19: 481. 1874.

Herbs annual, dwarf. Stems erect or ascending, 5–10 cm tall, slender, branched, glabrous. Petiole 2–3 mm, slender; leaf blade obovate or elliptic, 3–6 × 2–4 mm, both surfaces glabrous or abaxially sparsely pilose, base subtruncate or broadly cuneate, margin sparsely ciliate, apex obtuse or subacute; ocrea brown, tubular, membranous, 2-cleft, base pilose, apex acute. Inflorescence axillary or terminal, fascicled. Perianth white, 4-parted; tepals elliptic or obovate, 1–1.5 mm. Stamens 3 or 4. Styles 2 or 3, very short; stigmas capitate. Achenes slightly

exceeding persistent perianth, brown, dull, narrowly ovoid, bi-convex, rarely trigonous, 2–2.5 mm. Fl. Jul–Aug, fr. Aug–Sep.

- Mountain slopes, moist valleys; 2700–4900 m. Gansu, Qinghai, Sichuan, Xizang.

78. *Polygonum sparsipilosum* A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 65. 1998.

柔毛蓼 rou mao liao

Herbs annual. Stems ascending or decumbent, 10–30 cm tall, slender, angulate, branched, pilose or glabrous. Petiole 4–8 mm; leaf blade broadly ovate, 1–1.5 × 0.8–1 cm, papery, both surfaces pilose, base broadly cuneate or subtruncate, margin ciliate, apex obtuse; ocrea tubular, dehiscent, base densely pubescent. Inflorescence terminal or axillary, capitate; bracts ovate, membranous, each 1-flowered. Pedicel short. Perianth white or greenish, 4-parted, with glandular dots or not; tepals broadly elliptic, ca. 2 mm, unequal. Fertile stamens 2–8; anthers yellow. Styles 3, very short; stigmas capitate. Achenes included in persistent perianth, yellow-brown, slightly shiny, ovoid, trigonous, ca. 2 mm. Fl. Jun–Jul, fr. Aug–Sep.

- Grassy slopes, wet valleys; 2300–4300 m. Gansu, ?Nei Mongol, Qinghai, Shaanxi, Sichuan, Xizang.

- 1a. Perianth without glandular dots; fertile stamens 2–5 78a. var. *sparsipilosum*
- 1b. Perianth with glandular dots; fertile stamens 8 78b. var. *hubertii*

78a. *Polygonum sparsipilosum* var. *sparsipilosum*

柔毛蓼(原变种) rou mao liao (yuan bian zhong)

Koenigia pilosa Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 531. 1881; *Polygonum pilosum* (Maximowicz) Hemsley (1891), not Roxburgh (1824).

Perianth without glandular dots. Fertile stamens 2–5.

- Grassy slopes, wet valleys; 2300–4300 m. Gansu, ?Nei Mongol, Qinghai, Shaanxi, Sichuan, Xizang.

78b. *Polygonum sparsipilosum* var. *hubertii* (Lingelsheim) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 65. 1998.

腺点柔毛蓼 xian dian rou mao liao

Polygonum hubertii Lingelsheim, Repert. Spec. Nov. Regni Veg. Beih. 12: 360. 1922.

Perianth with glandular dots. Fertile stamens 8.

- Grassy slopes; 2500–4100 m. Gansu, Qinghai, Shaanxi, Sichuan.

5. *Polygonum* sect. *Aconogonon* Meisner, Monogr. Polyg. 43, 55. 1826.

神血宁组 shen xue ning zu

Aconogonon (Meisner) Reichenbach.

Plants without prickles. Leaves variable, not hastate or sagittate. Inflorescence diffusely paniculate. Perianth 5-parted, sometimes enlarging in fruit. Nectaries broad and confluent at base. Style 1, trifid, or appearing capitate.

Between 20 and 30 species: mainly in the mountains of E Asia; 21 species (five endemic) in China.

For further information, the reader may wish to refer to Hong (Symb. Bot. Upsal. 30(2): 1–118. 1992).

79. *Polygonum molle* D. Don, Prodr. Fl. Nepal. 72. 1825.

绢毛神血宁 juan mao shen xue ning

Subshrubs. Stems erect, sometimes slightly ascending, 0.9–1.5[–3] m tall, much branched, hirsute, retrorsely hirsute or glabrous. Petiole 1–1.5 cm, densely pubescent or glabrous; leaf blade abaxially light green, adaxially green, elliptic or elliptic-lanceolate, 10–20 × 3–6 cm, abaxially sericeous, adaxially sparsely sericeous, densely so along veins or both surfaces glabrous throughout, base cuneate, margin entire, apex acuminate; ocrea dark brown, tubular, 2–3 cm, membranous, oblique, pubescent or glabrous. Inflorescence spreading, paniculate, large; rachis and branches densely pubescent or glabrous; bracts ovate. Pedicel articulate at apex. Perianth white, 5-parted; tepals elliptic, 1.5–2 mm, accrescent and fleshy in fruit, darkened. Stamens 8, included. Styles 3, free; stigmas capitate. Achenes slightly exceeding perianth, black, shiny, ovoid, trigonous, 2–2.5 mm. Fl. Aug–Sep, fr. Sep–Nov.

Slopes, forests, grassy places and thickets in valleys; 1200–3500 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, India, Indonesia, N Myanmar, Nepal, Sikkim, Thailand].

- 1a. Stems and leaves glabrous 79c. var. *frondosum*
- 1b. Stems hirsute; leaves sericeous.
 - 2a. Stems long hirsute with appressed,

- ascending hairs 79a. var. *molle*
- 2b. Stems long hirsute with appressed, deflexed hairs 79b. var. *rude*

79a. *Polygonum molle* var. *molle*

绢毛神血宁(原变种) juan mao shen xue ning (yuan bian zhong)

Aconogonon molle (D. Don) H. Hara; *Ampelgynon molle* (D. Don) Roberty & Vautier; *Persicaria mollis* (D. Don) H. Gross.

Stems long hirsute with appressed, ascending hairs. Leaves sericeous. Fl. Aug–Sep, fr. Sep–Nov.

Slopes, forests, grassy places in valleys; 1300–3200 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, Indonesia (Sumatra), Nepal, Sikkim, Thailand].

79b. *Polygonum molle* var. *rude* (Meisner) A. J. Li in C. Y. Wu, Fl. Xizang. 1: 622. 1983.

倒毛神血宁 dao mao shen xue ning

Polygonum rude Meisner in Candolle, Prodr. 14(1): 137. 1856; *Aconogonon molle* (D. Don) H. Hara var. *rude* (Meisner) H. Hara; *Persicaria rudis* (Meisner) H. Gross; *Polygonum deflexipilosum* Kitamura; *P. esquirolii* H. Léveillé; *P. panicula-*

tum Blume var. *rude* (Meisner) Steward; *P. tsangschangicum* Lingelsheim & Borza.

Stems long hirsute with appressed, deflexed hairs. Leaves sericeous.

Slopes, forests, thickets in valleys; 1400–3500 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, India (Assam), N Myanmar, Nepal, Thailand].

79c. *Polygonum molle* var. *frondosum* (Meisner) A. J. Li in C. Y. Wu, Fl. Xizang. 1: 622. 1983.

光叶神血宁 *guang ye shen xue ning*

Polygonum frondosum Meisner in Candolle, Prodr. 14(1): 137. 1856; *Aconogonon molle* (D. Don) H. Hara var. *frondosum* (Meisner) H. Hara; *A. molle* var. *paniculatum* (Blume) Yonekura & H. Ohashi; *A. paniculatum* (Blume) Haraldson; *Polygonum paniculatum* Blume; *P. paniculatum* var. *frondosum* (Meisner) Steward.

Stems and leaves glabrous.

Thickets in valleys, grassy slopes; 1200–1500 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, Indonesia, Nepal, Sikkim].

80. *Polygonum tortuosum* D. Don, Prodr. Fl. Nepal. 71. 1825.

叉枝神血宁 *cha zhi shen xue ning*

Aconogonon tortuosum (D. Don) H. Hara; *A. tortuosum* var. *tibetanum* (Meisner) S. P. Hong; *Pleuropterypyrum tortuosum* (D. Don) Munshi & Javeid; *Polygonum peregrinatoris* Paulsen; *P. tortuosum* var. *tibetanum* Meisner.

Subshrubs. Roots robust. Stems erect, red-brown, 30–50 cm tall, glabrous or pubescent; branches forked. Petiole very short or nearly absent; leaf blade ovate or narrowly ovate, 1.5–4 × 1–2 cm, subleathery, both surfaces pubescent or glabrous, midvein prominent abaxially, impressed adaxially, base rounded or subcordate, margin entire, ciliate, slightly revolute, nearly undulate, apex acute; ocrea lax, brown, tubular, 1–2 cm, membranous, slightly oblique, densely pubescent. Inflorescence terminal, paniculate, dense; bracts membranous, pubescent. Pedicel articulate. Perianth white, campanulate, 5-parted; tepals obovate, 2.5–3 mm, unequal. Stamens 8, included; anthers purple. Styles 3, very short; stigmas capitate. Achenes included in persistent perianth, brown, ovoid, sharply trigonous, ca. 3 mm. Fl. Jul–Aug, fr. Sep–Oct.

Grassy slopes, thickets, valleys; 3600–4900 m. Xizang [Afghanistan, N India, Nepal, Pakistan; SW Asia].

81. *Polygonum polystachyum* Wallich ex Meisner in Wallich, Pl. Asiat. Rar. 3: 61. 1832.

多穗神血宁 *duo sui shen xue ning*

Subshrubs. Stems 80–100 cm, much branched, angulate, pubescent, sometimes glabrous. Petiole large, ca. 1 cm; leaf blade gray-green abaxially, green adaxially, broadly lanceolate, oblong-lanceolate, or lanceolate, 6–17 × 3–7 cm, abaxially densely pubescent, adaxially sparsely pubescent, base hastate-cordate or subtruncate, apex acuminate; ocrea lax, dark brown, tubular, oblique, 3–4 cm, membranous, densely pubescent, not ciliate. Inflorescence terminal, paniculate, spreading; rachis and

branches pubescent. Perianth white or pinkish, 5-parted, ca. 4 mm in diam.; tepals unequal; outer 2 tepals small; inner 3 tepals broadly obovate, large, ca. 3 mm; bracts ovate, membranous, pubescent, apex acute. Pedicels longer than bracts, slender, glabrous or sparsely pubescent, apex articulate. Stamens 8, included; anthers purple. Styles 3, free; stigmas capitate. Achenes included in persistent perianth, brown, ovoid, trigonous, ca. 2.5 mm, smooth. Fl. Aug–Sep, fr. Sep–Oct.

Forests, valleys; 2200–4500 m. Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Kashmir, Myanmar, Nepal, Pakistan, Sikkim].

- 1a. Leaf blade broadly lanceolate or oblong-lanceolate 81a. var. *polystachyum*
- 1b. Leaf blade narrowly lanceolate or linear-oblong 81b. var. *longifolium*

81a. *Polygonum polystachyum* var. *polystachyum*

多穗神血宁(原变种) *duo sui shen xue ning* (yuan bian zhong)

Aconogonon polystachyum (Wallich ex Meisner) M. Král; *Persicaria polystachya* (Wallich ex Meisner) H. Gross (1913), not Opiz (1852); *P. wallichii* Greuter & Burdet; *Pleuropterypyrum polystachyum* (Wallich ex Meisner) Munshi & Javeid; *Reynoutria polystachya* (Wallich ex Meisner) Moldenke; *Rubrivena polystachya* (Wallich ex Meisner) M. Král.

Leaf blade broadly lanceolate or oblong-lanceolate, 6–17 × 3–7 cm. Fl. Aug–Sep, fr. Sep–Oct.

Mixed forests on mountain slopes, valleys; 2700–4500 m. Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Kashmir, Myanmar, Nepal, Pakistan, Sikkim].

81b. *Polygonum polystachyum* var. *longifolium* J. D. Hooker, Fl. Brit. India 5: 51. 1886.

长叶多穗神血宁 *chang ye duo sui shen xue ning*

Leaf blade narrowly lanceolate or linear-oblong, 8–15 × 1.5–3 cm.

Forests, valleys; 2200–3800 m. Xizang, W Yunnan [India, Sikkim].

One of us (Hong; see Pl. Syst. Evol. 186: 95–122. 1993) considers this to be a synonym of *Persicaria wallichii* (here treated as a synonym of *Polygonum polystachyum* var. *polystachyum*).

82. *Polygonum tibeticum* Hemsley, Hooker's Icon. Pl. 25: t. 2471. 1896.

西藏神血宁 *xi zang shen xue ning*

Aconogonon tibeticum (Hemsley) Soják; *A. tortuosum* (D. Don) H. Hara var. *glabrifolium* S. P. Hong.

Subshrubs. Stems erect, purplish, 30–50 cm tall, glabrous, slightly striate, few branched. Petiole 3–4 mm, glabrous; leaf blade elliptic or ovate-oblong, 3–5 × 1.5–2 cm, subleathery, midvein prominent abaxially, impressed adaxially, both surfaces glabrous, base cuneate, margin entire, slightly revolute, ciliate, apex acute or obtuse; ocrea brown, tubular, 1–1.5 cm, membranous, veined, sparsely pubescent, oblique. Inflorescence terminal, paniculate, dense; bracts narrowly ovate, pu-

bescent, each 2- or 3-flowered. Pedicels shorter than bracts, articulate. Perianth pinkish, 5-parted; tepals obovate, ca. 3.5 mm, unequal. Stamens 8, included; anthers yellow. Styles 3, very short; stigmas capitate. Achenes exceeding persistent perianth, yellow-brown, slightly shiny, narrowly ovoid, trigonous, 3–4 mm. Fl. Aug–Sep, fr. Sep–Oct.

• Grassy slopes, wet grasslands near rivers; 4500–5000 m. Xizang.

83. *Polygonum nummulariifolium* Meisner in Candolle, Prodr. 14(1): 127. 1857.

铜钱叶神血宁 tong qian ye shen xue ning

Koenigia nummulariifolia (Meisner) Mesicek & Soják; ?*Polygonum forrestii* Diels var. *pumilio* Lingelsheim.

Herbs perennial, dwarf. Stems creeping, forming matted tufts; branches 1.5–3 cm, internodes short, rooting at nodes. Petiole 2–5 mm, glabrous or pilose; leaf blade orbicular or reniform-orbicular, 3–5 mm in diam., abaxially pilose, adaxially glabrous, midvein conspicuous abaxially, base rounded, margin nearly entire, ciliate, apex obtuse; ocrea tubular, membranous, pilose, oblique. Inflorescence terminal, corymbose, dense. Perianth white, 5-parted; tepals elliptic, equal, ca. 1 mm. Stamens usually 5, included; anthers purple-red. Styles 2, very short; stigmas capitate. Achenes yellow-brown, slightly shiny, broadly ovoid, biconvex, ca. 1.5 mm. Fl. Aug–Sep, fr. Sep–Oct.

Grassy slopes; 3300–4800 m. Xizang, Yunnan [Bhutan, India, Kashmir, Myanmar, Nepal, Sikkim].

One of us (Hong) believes that this taxon would be better treated in the genus *Koenigia*.

84. *Polygonum forrestii* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 258. 1912.

六铜钱叶神血宁 liu tong qian ye shen xue ning

Koenigia forrestii (Diels) Mesicek & Soják.

Herbs perennial. Stems creeping, tufted; branches erect, 5–20 cm tall, villous. Petiole 3–5 cm, long pilose; leaf blade nearly orbicular or reniform, 1–4 cm in diam., both surfaces long pilose or nearly glabrous, base cordate, margin densely ciliate, apex obtuse; ocrea laxly tubular, membranous, pilose, oblique. Inflorescence terminal, corymbose-cymose; bracts oblong, thinly membranous. Pedicels longer than bracts, 4–5 mm, glabrous, apex articulate. Perianth white or yellowish, 5(or 4)-parted; tepals obovate, 4–5 mm, unequal. Stamens 6–8; anthers purple. Styles 3, very short; stigmas capitate. Achenes included in persistent perianth, yellow-brown, dull, narrowly ellipsoid, trigonous, narrow at base, 2–3 mm. Fl. Jul–Aug, fr. Aug–Sep. $2n = 14$.

Grassy slopes, alpine meadows; 3500–4800 m. Guizhou, Sichuan, Xizang, Yunnan [Bhutan, ?Kashmir, Myanmar, Nepal, Sikkim].

One of us (Hong) believes that this taxon would be better treated in the genus *Koenigia*.

85. *Polygonum hookeri* Meisner, Ann. Sci. Nat., Bot., sér. 5, 5: 352. 1866.

硬毛神血宁 ying mao shen xue ning

Aconogonon hookeri (Meisner) H. Hara; *Persicaria acaulis* Gross; *P. hookeri* (Meisner) Ronse Decraene; *Polygonum acaule* J. D. Hooker (1885), not Boissier (1879); *Rheum hirsutifolium* Losinskaja; *R. hirsutum* Maximowicz ex Franchet; *R. nanum* Lingelsheim ex Limpricht (1922), not Sievers ex Pallas (1796).

Herbs perennial, dioecious. Rhizomes robust, ligneous. Stems numerous from rhizome, erect, 10–20(–30) cm tall, sparsely hirsute, simple. Petiole 5–10 mm; leaf blade of basal leaves narrowly elliptic or spatulate, 5–10 × 1.5–3 cm, both surfaces hirsute, abaxially densely hirsute along midvein, base narrowly cuneate, margin entire, densely ciliate, apex rounded; stem leaves smaller; ocrea tubular, membranous, densely hirsute, oblique at apex. Inflorescence terminal, paniculate, sparsely branched; rachis and branches hirsute; bracts narrowly lanceolate, each 1-flowered. Pedicel articulate. Flowers unisexual. Female flower: perianth purple-red, 5-parted, margin yellow-green; tepals oblong, 2–3 mm, veined, apex rounded, unequal. Styles 3; stigmas capitate. Male flower: stamens 8, included; anthers red-purple. Achenes slightly exceeding persistent perianth, brown, shiny, broadly ovoid, trigonous, 2.5–3 mm, constricted at base, apex acute. Fl. Jun–Aug, fr. Aug–Sep.

Grassy slopes, thickets in valleys, alpine meadows; 3500–5000 m. Gansu, Qinghai, Sichuan, Xizang, Yunnan [Bhutan, Sikkim].

The closely related *Aconogonon rhombitepalum* S. P. Hong (Notes Roy. Bot. Gard. Edinburgh 46: 361. 1990) differs in hermaphroditic flowers with slightly longer pedicels and rhomboid, longer, acute tepals.

86. *Polygonum songaricum* Schrenk in Fischer & C. A. Meyer, Enum. Pl. Nov. 1: 8. 1841.

准噶尔神血宁 zhun ga er shen xue ning

Polygonum angustifolium Pallas var. *songaricum* (Schrenk) Steward.

Herbs perennial. Stems erect, 20–60 cm tall, branched above, pilose, striate. Petiole 2–4 cm, pilose; leaf blade greenish abaxially, green adaxially, ovate or broadly ovate, 5–10 × 3–5 cm, abaxially pilose, adaxially glabrous or pilose, base rounded or cordate, slightly decurrent, margin entire or slightly undulate, densely ciliate, apex long acuminate; ocrea brown, tubular, 2–3 cm, membranous, dehiscent above, sparsely villous along veins. Inflorescence terminal or axillary, paniculate, sparsely branched, slightly spreading, nutant in fruit; bracts ovate, membranous, each 1- or 2-flowered. Pedicel 2–3 mm, slender, articulate at middle. Perianth red, margin white or greenish, 5-parted; tepals elliptic, unequal, 2.5–3 mm, enlarged in fruit, ca. 4 mm. Stamens 7 or 8, included. Styles 3; stigmas capitate. Achenes equaling persistent perianth, brown, shiny, ovoid, sharply trigonous, 3.5–4 mm. Fl. Jun–Aug, fr. Jul–Sep.

Grassy slopes, forest margins; 1800–3500 m. Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan].

87. *Polygonum coriarium* Grigorjev, Trudy Bot. Inst. Acad. Nauk SSSR, Ser. 1, Fl. Sist. Vyssh. Rast. 1: 101. 1933.

白花神血宁 bai hua shen xue ning

Aconogonon bucharicum (Grigorjev) Holub; *A. coriarium* (Grigorjev) Soják; *A. coriarium* subsp. *bucharicum* (Grigorjev) Soják; *Pleuropteryrum bucharicum* (Grigorjev) Nevski; *Polygonum bucharicum* Grigorjev.

Herbs perennial. Roots robust. Stems erect, 100–150 cm tall, branched, striate, glabrous. Petiole 3–4 mm; leaf blade greenish abaxially, green adaxially, ovate or ovate-lanceolate, 5–10 × 2–4 cm, abaxially pubescent, adaxially nearly glabrous, base broadly cuneate, margin bristly ciliate, apex acuminate or acute; ocrea caducous, brown, tubular, 1.5–2.5 cm, membranous, sparsely long villous. Inflorescence terminal, paniculate; branches spreading, rachis and branches glabrous; bracts lanceolate, each 1- or 2-flowered. Pedicel 3–4 mm, not articulate, dilated above. Perianth white, 5-parted; tepals obovate, 3–3.5 mm. Stamens 8, included. Styles 3; stigmas capitate. Achenes equaling persistent perianth, shiny, broadly ovoid, trigonous, 3–4 mm, smooth. Fl. Jun–Jul, fr. Aug–Sep.

Mountain slopes, valleys; 1500–2900 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan].

88. *Polygonum platyphyllum* S. X. Li & Y. L. Chang, Fl. Pl. Herb. Chin. Bor.-Orient. 2: 108. 1959.

宽叶神血宁 kuan ye shen xue ning

Aconogonon platyphyllum (S. X. Li & Y. L. Chang) Holub; *Pleuroteropyrum platyphyllum* (S. X. Li & Y. L. Chang) Kitagawa.

Herbs perennial. Stems erect, large, to ca. 100 cm tall, glabrous; branches spreading. Petiole short or nearly absent; leaf blade ovate or ovate-lanceolate, 6–10 × 2.5–5 cm, both surfaces pilose, base cuneate or broadly cuneate, margin entire or slightly undulate, densely ciliate; ocrea tubular, membranous, pilose, dehiscent. Inflorescence paniculate, spreading; rachis and branches glabrous; bracts ovate-triangular, apex acuminate, each 2- or 3-flowered. Pedicels erect, equaling bracts, ca. 2 mm, glabrous, apex articulate. Perianth white, 5-parted; tepals elliptic, ca. 2 mm. Stamens 8, included. Styles 3; stigmas capitate. Achenes distinctly exceeding persistent perianth, usually erect, brown, shiny, oblong, trigonous, 4–5 mm. Fl. Jun–Jul, fr. Aug–Sep.

• Mountain slopes; 200–500 m. Liaoning.

89. *Polygonum limosum* Komarov, Izv. Imp. Bot. Sada Petra Velikago 16: 165. 1916.

谷地神血宁 gu di shen xue ning

Polygonum divaricatum Linnaeus var. *limosum* Komarov, Fl. Mansh. 2: 140. 1903; *Aconogonon limosum* (Komarov) H. Hara; *Pleuroteropyrum limosum* (Komarov) Kitagawa.

Herbs perennial. Stems large, 90–150 cm tall, branched above, glabrous or pubescent on nodes. Petiole 2–4 cm; leaf blade greenish abaxially, green adaxially, ovate or lanceolate-ovate, 6–15 × 3–9 cm, papery, both surfaces glabrous or pilose, base rounded, margin ciliate, apex acuminate; ocrea tubular, membranous, dehiscent, pilose. Inflorescence paniculate, spreading, lax; bracts narrowly ovate, apex acute, each 2- or 3-flowered. Pedicels longer than bracts, slender, apex articulate. Perianth white, 5-parted; tepals elliptic, 1.5–2 mm. Stamens 8, included. Styles 3; stigmas capitate. Achenes distinctly exceeding persistent perianth, pendulous, gray-brown, slightly shiny, narrowly ovoid, trigonous, 3–4 mm. Fl. Jul–Aug, fr. Aug–Sep.

Mountain slopes, forest margins, thickets in valleys; 400–1800 m. Jilin [Korea, Russia (Far East)].

90. *Polygonum sibiricum* Laxmann, Nov. Com. Acad. Sci. Petrop. 18: 531. 1773.

西伯利亚神血宁 xi bo li ya shen xue ning

Herbs perennial. Rhizomes slender. Stems decumbent or suberect, 2–25(–43) cm tall, branched from base, glabrous. Petiole 0.8–1.5 cm; leaf blade narrowly elliptic or lanceolate to linear, 3–10 cm × 1.5–15 mm, base hastate or cuneate, margin entire, apex acute or obtuse; ocrea tubular, membranous, apex oblique, not ciliate. Inflorescence terminal, paniculate, lax, interrupted; bracts funnel-shaped, glabrous, each 4–6-flowered. Pedicel short, articulate above middle. Perianth yellow-green, 5-parted; tepals oblong, ca. 3 mm. Stamens 7 or 8, included; filaments dilated at base. Styles 3, short; stigmas capitate. Achenes slightly exceeding persistent perianth, black, shiny, ovoid, trigonous. Fl. and fr. Jun–Sep.

Roadsides, saline deserts, sands, riverbanks, wet places near saline lakes, saline areas by rivers; sea level to 5100 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan].

- 1a. Stems 10–25(–43) cm tall; leaf blade narrowly elliptic or lanceolate, 5–15 mm wide 90a. var. *sibiricum*
1b. Stems 2–5(–8) cm tall; leaf blade linear, 1.5–2.5 mm wide 90b. var. *thomsonii*

90a. *Polygonum sibiricum* var. *sibiricum*

西伯利亚神血宁(原变种) xi bo li ya shen xue ning (yuan bian zhong)

Aconogonon sibiricum (Laxmann) H. Hara; *Knorringia sibirica* (Laxmann) Tzvelev; *Persicaria sibirica* (Laxmann) H. Gross; *Pleuroteropyrum sibiricum* (Laxmann) Kitagawa; *Polygonum arcticum* Pallas ex Sprengel.

Stems 10–25(–43) cm tall. Leaf blade narrowly elliptic or lanceolate, 5–15 mm wide. Inflorescence large. Fl. and fr. Jul–Sep.

Roadsides, saline deserts, sands, riverbanks; sea level to 5000 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Kashmir, Kazakhstan, Mongolia, Russia (Far East, Siberia), Sikkim].

90b. *Polygonum sibiricum* var. *thomsonii* Meisner, Ann. Sci. Nat., Bot., sér. 6: 351. 1866.

细叶西伯利亚神血宁 xi ye xi bo li ya shen xue ning

Aconogonon pamiricum (Korshinsky) H. Hara; *A. sibiricum* (Laxmann) H. Hara subsp. *thomsonii* (Meisner) Soják; *Knorringia pamirica* (Korshinsky) Tzvelev; *K. sibirica* subsp. *thomsonii* (Meisner) S. P. Hong; *Polygonum pamiricum* Korshinsky; *P. sibiricum* subsp. *thomsonii* (Meisner) Rechinger & Schiman-Czeika; *P. sibiricum* var. *nanum* Meisner.

Stems short, 2–5(–8) cm tall. Leaf blade linear, narrow, 1.5–2.5 mm wide. Inflorescence small. Fl. and fr. Jun–Sep.

Wet places near saline lakes, saline areas by rivers; 3200–5100 m. Qinghai, Xizang [Afghanistan, Kashmir, Kyrgyzstan, Nepal, Pakistan, Russia, Tajikistan].

91. *Polygonum angustifolium* Pallas, Reise Russ. Reich. 3: 230. 1776.

狭叶神血宁 xia ye shen xue ning

Aconogonon angustifolium (Pallas) H. Hara; *Persicaria angustifolia* (Pallas) Ronse Decraene; *Pleuropterypyrum angustifolium* (Pallas) Kitagawa; *Polygonum acidulum* Willdenow; *P. alpinum* var. *angustissimum* Turczaninow; ?*P. divaricatum* var. *angustissimum* f. *glabrum* Meisner; *P. polymorphum* Ledebour var. *angustissimum* Korshinsky.

Herbs perennial. Stems erect, 20–50 cm tall, branched; branches spreading, striate, glabrous. Petiole very short or nearly absent; leaf blade narrowly linear, 3–6 cm × 2–4 mm, both surfaces glabrous, midvein prominent, lateral veins inconspicuous abaxially, base narrow, margin conspicuously revolute, apex slightly obtuse; ocrea caducous, tubular, membranous, veined, dehiscent. Inflorescence paniculate, lax; rachis and branches glabrous; bracts brown, ovate, membranous, apex acute, each 1–3-flowered. Pedicel 1.5–2 mm, apex articulate. Perianth white or milky white, 5-parted; tepals elliptic, unequal, 2–2.5 mm. Stamens 8, included. Styles 3, short; stigmas capitate. Achenes included in persistent perianth, brown, shiny, ovoid-rhomboid, trigonous, 2–2.5 mm. Fl. Jul–Aug, fr. Aug–Sep.

Grassy slopes, hills; 600–1600 m. Hebei, Heilongjiang, Nei Mongol [Mongolia, Russia (Far East, E Siberia)].

92. *Polygonum ocreatum* Linnaeus, Sp. Pl. 1: 361. 1753.

白山神血宁 bai shan shen xue ning

Aconogonon laxmannii (Lepechin) A. Löve & D. Löve; *A. ocreatum* (Linnaeus) H. Hara; *A. ocreatum* var. *laxmannii* (Lepechin) Tzvelev; *Persicaria laxmannii* (Lepechin) H. Gross; *Pleuropterypyrum laxmannii* (Lepechin) Kitagawa; *Polygonum laxmannii* Lepechin.

Herbs perennial. Stems erect, 30–40(–50) cm tall, branched from base, sparsely pubescent or glabrous, slenderly striate; branches spreading. Petiole 3–5 mm; leaf blade lanceolate or linear-lanceolate, 4–7 cm × 5–8 mm, both surfaces hirsute or abaxially hirsute, base narrowly cuneate, margin entire, shortly ciliate; ocrea tubular, membranous, sparsely hirsute, veined. Inflorescence paniculate, densely flowered; branches spreading; bracts narrowly ovate, pubescent or glabrous, each 1- or 2-flowered. Pedicel 2–2.5 mm, apex articulate. Perianth white, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 8. Styles 3, short; stigmas capitate. Achenes included in persistent perianth, shiny, ovoid, trigonous, 3–3.5 mm. Fl. Jul–Aug, fr. Aug–Sep.

Grassy slopes, wet valleys; 1400–2500 m. Jilin, Nei Mongol [Mongolia, Russia].

93. *Polygonum ajanense* (Regel & Tiling) Grigorjev in Komarov, Fl. URSS 5: 666. 1936.

阿扬神血宁 a yang shen xue ning

Polygonum polymorphum Ledebour var. *ajanense* Regel

& Tiling, Fl. Ajan. 116. 1858; *Aconogonon ajanense* (Regel & Tiling) H. Hara; *Pleuropterypyrum ajanense* (Regel & Tiling) Nakai.

Herbs perennial. Stems erect, 30–40 cm tall, branched from base. Petiole very short; leaf blade lanceolate or broadly lanceolate, 3–5(–7) × 0.7–1.5 cm, on both surfaces or abaxially strigose, base broadly cuneate, margin entire, ciliate, apex acute; ocrea tubular, membranous, pilose or glabrous. Inflorescence paniculate, spreading, lax; bracts ovate, pubescent or glabrous, each 1- or 2-flowered. Pedicel 2–2.5 mm, apex articulate. Perianth white or pinkish, 5-parted; tepals elliptic, 2.5–3 mm. Stamens 8, included; anthers yellow. Styles 3; stigmas capitate. Achenes included in persistent perianth, brown, slightly shiny, ovoid, trigonous. Fl. Jul–Aug, fr. Aug–Sep.

Grassy slopes; ca. 600 m. NE Nei Mongol [Japan, Korea, Russia (Far East, E Siberia)].

94. *Polygonum alpinum* Allioni, Auct. Syn. 42. 1773.

高山神血宁 gao shan shen xue ning

Aconogonon alpinum (Allioni) Schur; *Persicaria alpina* (Allioni) H. Gross; *Pleuropterypyrum alpinum* (Allioni) Kitagawa (1937), not Koidzumi (1916); ?*P. jeholense* Kitagawa; ?*Polygonum jeholense* (Kitagawa) Baranov & Skvortsov ex S. X. Li & Y. L. Chang; *P. undulatum* Murray (1775), not P. J. Bergius (1767).

Herbs perennial. Stems erect, 50–100 cm tall, branched from above middle; branches striate, not divaricate, sparsely hirsute, rarely glabrous. Petiole 5–10 mm; leaf blade greenish abaxially, green adaxially, ovate-lanceolate or lanceolate, 3–9 × 1–3 cm, both surfaces pilose, base broadly cuneate, margin entire, densely shortly ciliate, apex acute, rarely acuminate; ocrea brown, tubular, membranous, sparsely pilose, dehiscent. Inflorescence terminal, paniculate; branches spreading, glabrous; bracts ovate-lanceolate, membranous, each 1- or 2-flowered. Pedicels longer than bracts, 2–2.5 mm, slender, glabrous, apex articulate. Perianth white, 5-parted; tepals elliptic, equal, 2–3 mm. Stamens 8. Styles very short; stigmas capitate. Achenes exceeding persistent perianth, yellow-brown, shiny, ovoid, trigonous, 4–5 mm. Fl. Jun–Jul, fr. Jul–Aug.

Forest margins, grassy slopes; 800–2400 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, ?Shandong, Shanxi, Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russia; SW Asia, Europe].

95. *Polygonum divaricatum* Linnaeus, Sp. Pl. 1: 363. 1753.

叉分神血宁 cha fen shen xue ning

Aconogonon divaricatum (Linnaeus) Nakai ex T. Mori; *Persicaria divaricata* (Linnaeus) H. Gross; *Pleuropterypyrum divaricatum* (Linnaeus) Nakai.

Herbs perennial. Stems erect, 70–120 cm tall, glabrous, branched from base; branches spreading, divaricate. Petiole ca. 5 mm; leaf blade lanceolate or oblong, 5–12 × 0.5–2 cm, both surfaces glabrous or pilose, base cuneate or narrowly cuneate, margin entire, shortly ciliate, apex acute; ocrea tubular, 1–2 cm, membranous, pilose or glabrous, oblique, dehiscent. Inflorescence paniculate; branches spreading; bracts ovate, veined, each

2- or 3-flowered. Pedicels equaling bracts, 2.5–3 mm, apex articulate. Perianth white, 5-parted; tepals elliptic, 2.5–3 mm, unequal. Stamens 7 or 8, included. Styles 3, very short; stigmas capitate. Achenes distinctly exceeding persistent perianth, yellow-brown, shiny, broadly ellipsoid, trigonous, 5–6 mm. Fl. Jul–Aug. fr. Aug–Sep.

Thickets in valleys, grassy slopes; 300–2100 m. Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Qinghai, Shandong, Shanxi [Korea, Mongolia, Russia (Far East, E Siberia)].

96. *Polygonum pinetorum* Hemsley, J. Linn. Soc., Bot. 26: 345. 1891.

松林神血宁 song lin shen xue ning

Persicaria pinetorum (Hemsley) H. Gross; *Polygonum gloriosum* H. Léveillé.

Herbs perennial. Stems erect, 50–120 cm tall, distinctly striate, branched from above middle, pubescent but glabrous basally. Petiole 1–1.5 cm, pubescent; leaf blade abaxially greenish, adaxially green, elliptic or elliptic-lanceolate, 7–12 × 2–5 cm, papery, both surfaces sparsely pubescent, constricted below, base truncate or cuneate, margin entire, densely shortly ciliate, apex long acuminate; ocrea brown, 1–2 cm, membranous, pilose along veins, lacerate, apex oblique. Inflorescence terminal or axillary, paniculate, to 10 cm; rachis and branches pilose; bracts ovate, small, 1–1.5 mm, each 1-flowered. Pedicel 3–4 mm, slender, pubescent, apex articulate. Perianth white or pinkish, 5-parted; tepals caducous, obovate, 3–4 mm, unequal. Stamens 8, included. Styles 3, filiform, 1.5–2 mm; stigmas capitate. Achenes equaling persistent perianth, dark brown, slightly shiny, broadly ovoid, trigonous, 3–4 mm. Fl. May–Jul, fr. Jul–Sep.

• Forests, coniferous forests at mountain summits, thickets in valleys; 1900–3300 m. N Gansu, Hubei, N Shaanxi, Sichuan, Yunnan.

97. *Polygonum campanulatum* J. D. Hooker, Fl. Brit. India 5: 51. 1886.

钟花神血宁 zhong hua shen xue ning

Herbs perennial. Stems suberect, prostrate at base, 60–90 cm tall, branched, striate, pilose, tomentose upward. Petiole 7–10 mm, densely pubescent; leaf blade narrowly ovate or broadly so, 8–15 × 3–5 cm, both surfaces pilose, densely so along veins or abaxially densely brown tomentose, base broadly cuneate or subrounded, margin densely shortly ciliate, apex acuminate or caudate; ocrea tubular, 7–15 mm, membranous, pilose, apex oblique. Inflorescence paniculate; rachis and branches tomentose; bracts ovate, ca. 3 mm, membranous, glabrous, apex acute, sparsely ciliate, each 2- or 3-flowered. Pedicel 1.5–2 mm, apex articulate. Perianth pinkish or white, 5-parted; tepals obovate, ca. 3 mm, unequal. Stamens 8, included; anthers purple. Styles 3, filiform, ca. 2 mm; stigmas capitate. Achenes included in persistent perianth, yellow-brown, slightly shiny, broadly ellipsoid, trigonous, ca. 3.5 mm. Fl. Jul–Aug, fr. Sep–Oct.

Slopes, valleys; 1400–4100 m. Guizhou, W Hubei, Sichuan, Xizang, Yunnan [Bhutan, N Myanmar, Nepal, Sikkim].

1a. Leaves abaxially pilose 97a. var. *campanulatum*

1b. Leaves abaxially densely brown tomentose 97b. var. *fulvidum*

97a. *Polygonum campanulatum* var. *campanulatum*

钟花神血宁(原变种) zhong hua shen xue ning (yuan bian zhong)

Aconogonon campanulatum (J. D. Hooker) H. Hara; *A. campanulatum* var. *oblongum* (Meisner) H. Hara; *Persicaria campanulata* (J. D. Hooker) Ronse Decraene; *Polygonum rumicifolium* Royle ex Babington var. *oblongum* Meisner; *Reynoutria campanulata* (J. D. Hooker) Moldenke.

Leaves abaxially pilose.

Slopes, wet places in valleys; 2100–4000 m. Guizhou, Sichuan, Xizang, Yunnan [Bhutan, N Myanmar, Nepal, Sikkim].

97b. *Polygonum campanulatum* var. *fulvidum* J. D. Hooker, Fl. Brit. India 5: 52. 1886.

绒毛钟花神血宁 rong mao zhong hua shen xue ning

Aconogonon campanulatum (J. D. Hooker) H. Hara var. *fulvidum* (J. D. Hooker) H. Hara; *Persicaria alpina* (Allioni) H. Gross var. *sinica* (Dammer) H. Gross; *P. duclouxii* (H. Léveillé & Vaniot) H. Gross; ?*P. duclouxii* var. *hypoleuca* H. Léveillé; *Polygonum alpinum* Allioni var. *sinicum* Dammer; *P. duclouxii* H. Léveillé & Vaniot; *Reynoutria campanulata* (J. D. Hooker) Moldenke.

Leaves abaxially densely brown tomentose.

Slopes, valleys; 1400–4100 m. Guizhou, W Hubei, Sichuan, Xizang, Yunnan [Nepal, Sikkim].

98. *Polygonum lichiangense* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 197. 1914.

丽江神血宁 li jiang shen xue ning

Aconogonon lichiangense (W. W. Smith) Soják; *Polygonum campanulatum* J. D. Hooker var. *lichiangense* (W. W. Smith) Steward; *Reynoutria lichiangensis* (W. W. Smith) Moldenke.

Herbs perennial. Stems erect, 60–100 cm tall, stout, much branched, striate, densely setose, setae deciduous. Petiole 3–4 mm, densely setose; leaf blade green adaxially, broadly lanceolate or oblong-lanceolate, 6–12 × 2–4 cm, abaxially densely grayish tomentose, adaxially sparsely appressed setose, midvein conspicuous abaxially; ocrea tubular, 2–3 cm, membranous, veined, sparsely long setose, oblique. Inflorescence paniculate, large; rachis and branches densely white pubescent; bracts brown, lanceolate, 2–2.5 mm, each 1- or 2-flowered. Pedicel 3–3.5 mm, slender, articulate. Perianth white, 5-parted; tepals obovate, unequal, 4–5 mm. Stamens 8, included; anthers yellow. Styles 3, ca. 0.5 mm; stigmas capitate. Achenes included in persistent perianth, brown, dull, ellipsoid, trigonous, 3–3.5 mm, smooth. Fl. Jul–Sep, fr. Sep–Oct.

• Grassy slopes, forest margins; 2800–4100 m. Yunnan.

99. *Polygonum cathayanum* A. J. Li, Bull. Bot. Res., Harbin 15: 417. 1995.

华神血宁 hua shen xue ning

Herbs perennial. Stems erect, 50–80 cm tall, branched, striate, glabrous. Petiole 2–3 mm, pilose; leaf blade greenish abaxially, green adaxially, elliptic-lanceolate, 10–15 × 2–3 cm, both surfaces pilose, base broadly cuneate, margin shortly ciliate, apex acuminate; ocrea tubular, 2–3 cm, membranous, pilose along veins, oblique, dehiscent. Inflorescence terminal, paniculate, spreading, 10–15 cm; rachis and branches pilose; bracts ovate, 2–2.5 mm, pilose, each 2- or 3-flowered. Pedicels

shorter than bracts, articulate. Perianth white, 5-parted; tepals obovate, unequal, 3–3.5 mm. Stamens 8, included; anthers yellow. Styles 3, ca. 0.5 mm; stigmas capitate. Achenes equaling persistent perianth, slightly shiny, ovoid, trigonous, ca. 3.5 mm. Fl. Jul–Aug, fr. Aug–Sep.

• Grassy slopes, thickets in valleys, meadows; 3000–4600 m. S Qinghai, Sichuan, Xizang, Yunnan.

6. Polygonum sect. Echinocaulon Meisner in Wallich, Pl. Asiat. Rar. 3: 58. 1832.

刺蓼组 ci liao zu

Plants prostrate or climbing, with retrorse prickles on stems and petioles. Leaves hastate to sagittate. Inflorescence capitate to shortly paniculate. Tepals fused for ca. 1/3 their length. Nectaries free, globular. Style 1, bifid or trifid.

Between 20 and 30 species: mainly in E Asia; 14 species (one endemic) in China.

For further information, the reader may wish to refer to Park (Syst. Bot. 12: 167–179. 1987; and Mem. New York Bot. Gard. 47: 1–82. 1988).

100. Polygonum perfoliatum Linnaeus, Syst. Nat., ed. 10, 2: 1006. 1759.

杠板归 gang ban gui

Ampelgoum perfoliatum (Linnaeus) Roberty & Vautier; *Chylocalyx perfoliatum* (Linnaeus) Hasskarl ex Miquel; *Echinocaulon perfoliatum* (Linnaeus) Meisner ex Hasskarl; *Fagopyrum perfoliatum* (Linnaeus) Rafinesque; *Persicaria perfoliata* (Linnaeus) H. Gross; *Tracaulon perfoliatum* (Linnaeus) Greene; *Truellum perfoliatum* (Linnaeus) Soják.

Herbs annual. Stems trailing, red-brown, 0.8–2 m, branched, angulate, with retrorse prickles along angles. Petiole 3–8 cm, sparsely retrorsely prickly; leaf blade triangular-peltate, 4–6 × 5–8 cm, abaxially usually sparsely retrorsely prickly along veins, adaxially glabrous, base truncate or subcordate, apex subacute; ocrea tubular, with green herbaceous orbicular wing at apex, 1.5–3 cm in diam. Inflorescence terminal or axillary, spicate, 1–3 cm; bracts ovate-orbicular, each 2–4-flowered. Perianth white or pinkish, 5-parted; tepals elliptic, ca. 3 mm, in fruit dark blue, accrescent, fleshy. Stamens 8, in 2 whorls, included. Styles 3, connate at middle. Achenes included in persistent perianth, black, shiny, globose, 3–4 mm in diam. Fl. Jun–Aug, fr. Jul–Oct.

Near fields and roads, wet valleys; 100–2300 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, ?Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Indonesia, Japan, Korea, Malaysia, Nepal, New Guinea, Philippines, Russia (Far East), Sikkim, Thailand, Vietnam; SW Asia; introduced in North America].

101. Polygonum maackianum Regel, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 4(4): 127. 1861.

长戟叶蓼 chang ji ye liao

Persicaria maackiana (Regel) Nakai ex T. Mori; *Polygonum thunbergii* Siebold & Zuccarini var. *maackianum* (Regel) Maximowicz ex Franchet & Savatier; *Tracaulon maackianum* (Regel) Greene; *Truellum maackianum* (Regel) Soják.

Herbs annual. Stems erect or ascending, 30–80 cm tall,

angulate, much branched, retrorsely prickly and densely stellate hairy. Petiole 1–5 cm, retrorsely prickly and densely stellate hairy; leaf blade narrowly hastate, 3–8 × 2–4 cm, both surfaces densely stellate hairy and sparsely prickly, base cordate, apex acute; ocrea tubular, apex with herbaceous wing; wing orbicular, margin dentate. Inflorescence terminal or axillary, capitate; peduncle branched, densely stellate hairy and sparsely glandular hairy; bracts lanceolate, usually densely stellate hairy, each 2-flowered. Pedicels shorter than bracts. Perianth pinkish, 5-parted; tepals broadly elliptic, ca. 4 mm. Stamens 8, in 2 whorls, included. Styles 3, connate to below middle. Achenes included in persistent perianth, deep brown, shiny, ovoid, trigonous, ca. 3.5 mm. Fl. Jun–Sep, fr. Jul–Oct.

Shaded grassy places in valleys; 100–1600 m. Anhui, Guangdong, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, ?Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

102. Polygonum thunbergii Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 208. 1846.

戟叶蓼 ji ye liao

Polygonum arifolium Thunberg, Fl. Jap. 168. 1784, not Linnaeus (1753); *Helxine arifolia* Rafinesque; *Persicaria sinica* Migo; *P. thunbergii* (Siebold & Zuccarini) H. Gross; *P. thunbergii* var. *stolonifera* (F. Schmidt) H. Gross ex Nakai; *Polygonum hastatotrilobum* Meisner; *P. pteropus* Hance; *P. sinicum* (Migo) Fang & Zheng; *P. stellatotomentosum* W. W. Smith & Ramas.; *P. stoloniferum* F. Schmidt; *P. thunbergii* var. *stoloniferum* (F. Schmidt) Makino; *Tracaulon thunbergii* (Siebold & Zuccarini) Greene; *Truellum thunbergii* (Siebold & Zuccarini) Soják.

Herbs annual. Stems erect or ascending, 30–90 cm tall, angulate, with recurved prickles, rooting at nodes in lower part. Petiole 2–5 cm, retrorsely prickly; leaf blade hastate, both surfaces sparsely bristly, rarely stellate hairy, base subcordate or truncate, margin shortly ciliate, middle lobe ovate to broadly ovate, apex acuminate, basal lobes smaller, apex acute or obtuse; ocrea tubular, short, membranous, usually apex with green herbaceous wing, margin entire or crenate, shortly ciliate. Inflorescence capitate; peduncle branched, pubescent below, glandular hairy in upper part; bracts lanceolate, margin ciliate,

each 3- or 4-flowered. Pedicels shorter than bracts, glabrous. Perianth pinkish or white, 5-parted; tepals elliptic, 3–4 mm, apex obtuse. Stamens 8, in 2 whorls, included. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, yellow-brown, opaque, broadly ovoid, trigonous, 3–3.5 mm. Fl. Jul–Sep, fr. Aug–Oct. $2n = 40^*$.

Wet valleys, grassy slopes; 100–2400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, ?Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, ?Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, ?Xizang, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

103. *Polygonum biconvexum* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25: 184. 1908.

双凸戟叶蓼 shuang tu ji ye liao

Persicaria biconvexa (Hayata) Nemoto; *Polygonum hastatotrilobum* Meisner var. *lenticulare* Danser; *P. thunbergii* Siebold & Zuccarini f. *biconvexum* (Hayata) Liu et al.; *Truellum biconvexum* (Hayata) Soják.

Herbs annual. Stems ascending, prostrate at base, 30–80 cm tall, branched, retrorse prickly along angles. Petiole 2–4 cm, often narrowly winged, retrorsely prickly; leaf blade hastate, both surfaces bristly, sparsely shortly stellate hairy, base nearly truncate to cordate, margin ciliate; middle lobe broadly elliptic or ovate, usually contracted near base, margin ciliate, apex acuminate; basal lobes ovate, small, apex acute to obtuse; ocrea tubular, 5–10 mm, apex truncate, sometimes apex with herbaceous wing, ciliate. Inflorescence terminal or axillary, capitate; peduncle glandular hairy; bracts lanceolate, 3.5–4 mm, apex acuminate, ciliate, each 2-flowered. Pedicels shorter than bracts, 2–3 mm. Perianth pinkish, 4-parted; tepals elliptic, 2.5–3.5 mm, apex obtuse. Stamens 5 or 6, in 2 whorls. Styles 2, connate to below middle; stigmas 2, capitate. Achenes included in persistent perianth, brown, opaque, broadly ovoid, biconvex, ca. 3 mm. Fl. Jul–Aug, fr. Sep–Oct.

Slopes, forest margins, wet ditches; 1500–2500 m. Taiwan [Indonesia (Sumatra)].

104. *Polygonum senticosum* (Meisner) Franchet & Savatier, Enum. Pl. Jap. 1: 401. 1875.

刺蓼 ci liao

Chylcalyx senticosus Meisner, Ann. Mus. Bot. Lugduno-Batavi 2: 65. 1865; *Persicaria senticosus* (Meisner) H. Gross ex Nakai; *Polygonum babingtonii* Hance; ?*P. senticosum* var. *formosanum* Ohwi; *P. typhonifolium* Hance; *Truellum japonicum* Houlttuyn.

Herbs perennial. Stems trailing or ascending, 1–2 cm tall, much branched, angulate, with retrorse prickles along angles; petiole 2–7 cm, retrorsely prickly; leaf blade triangular or narrowly triangular, 4–8 × 2–7 cm, both surfaces pubescent, abaxially with sparse retrorse prickles along veins, base hastate or broadly cordate, margin retrorsely prickly, apex acuminate; ocrea tubular, 5–10 mm, membranous, apex with green herbaceous reniform-orbicular wing, margin ciliate. Inflorescence terminal or axillary, capitate; peduncles branched, shortly glandular hairy; bracts narrowly ovate, ciliate. Pedicels shorter than bracts, 1.5–2.5 mm, glabrous. Perianth pinkish, 5-parted;

tepals oblong, 3–4 mm. Stamens 8, in 2 whorls. Styles 3, connate to below middle; stigmas capitate. Achenes black, dull, subglobose, 2.5–3 mm. Fl. Jun–Jul, fr. Jul–Sep.

Mountain slopes, moist valleys, mixed forests; 100–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Taiwan, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

105. *Polygonum darrisii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 11: 297. 1912.

大箭叶蓼 da jian ye liao

Persicaria sagittifolia H. Gross; *P. senticosus* (Meisner) H. Gross ex Nakai var. *sagittifolia* Yonekura & H. Ohashi; *Polygonum sagittifolium* H. Léveillé & Vaniot (1902), not Kuntze (1891); *P. senticosum* (Meisner) Franchet & Savatier var. *sagittifolium* C. W. Park; *Truellum darrisii* (H. Léveillé) Soják.

Herbs annual. Stems climbing or scandent, reddish purple, 1–2 cm tall, angulate, with sparse recurved prickles along angles. Petiole 3–6 cm, retrorsely prickly; leaf blade narrowly triangular or triangular-sagittate, 4–10 × 3–5 cm, abaxially sparsely prickly along midvein, adaxially glabrous, base sagittate, margin retrorsely prickly, apex acuminate; ocrea tubular, apex with green herbaceous lanceolate-auriculate wing, margin not ciliate. Inflorescence terminal or axillary, capitate; peduncle usually simple, sparsely prickly; bracts narrowly ovate, apex acuminate, usually each 2-flowered. Pedicels shorter than bracts. Perianth white or pinkish, 5-parted; tepals elliptic. Stamens 8, in 2 whorls, included. Styles 3, connate to middle; stigmas capitate. Achenes included in persistent perianth, black-brown, dull, subglobose, weakly trigonous, ca. 3 mm. Fl. Jun–Aug, fr. Sep–Oct.

• Wet valleys, along ditches; 300–1700 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

One of us (Park) believes that this taxon should be recognized as a variety of *Polygonum senticosum*.

106. *Polygonum praetermissum* J. D. Hooker, Fl. Brit. India 5: 47. 1886.

疏蓼 shu liao

Persicaria auriculata S. K. Dixit et al.; *P. hastatoauriculata* (Makino ex Nakai) H. Gross ex Nakai; *P. praetermissa* (J. D. Hooker) H. Hara; *Polygonum auriculatum* Makino (1903), not Meisner (1826), nor J. D. Hooker & Thomson (1886); *P. birmanicum* Gage; *P. hastatoauriculatum* Makino ex Nakai; *P. thunbergii* var. *hastatotrilobum* subvar. *eciliolatum* H. Léveillé; *Tracaulon praetermissum* (J. D. Hooker) Greene; *Truellum hastatoauriculatum* (Makino ex Nakai) Soják; *T. praetermissum* (J. D. Hooker) Soják.

Herbs annual. Stems decumbent or erect, 30–90 cm tall, branched, angulate, with sparse retrorse prickles along angles. Petiole 5–10 mm, prickly; leaf blade lanceolate or narrowly oblong, 4–8 × 0.5–1.5 cm, both surfaces glabrous or sparsely pubescent, abaxially sparsely prickly along midvein, base sagittate, margin ciliate, apex acute; ocrea tubular, 1–1.5 mm, membranous, base with retrorse prickles, apex oblique, usually

shortly ciliate. Inflorescence terminal or in axils of upper leaves, spicate, lax, interrupted at base; peduncle dichotomously branching, glandular hairy in upper part; bracts funnel-shaped, usually each 2-4-flowered. Pedicels longer than bracts, 3-4 mm, glabrous. Perianth pinkish, 4-parted; tepals broadly elliptic, 3-4 mm. Stamens 4 or 5, included. Styles 3, connate to below middle. Achenes included in persistent perianth, dark brown, dull, subglobose, weakly trigonous at apex, ca. 3 mm. Fl. Jun-Aug, fr. Jul-Sep.

Marshy areas, streamsides; 1400-1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, ?Hunan, Jiangsu, Jiangxi, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Nepal, Philippines, Sri Lanka; Australia].

107. *Polygonum dissitiflorum* Hemsley, J. Linn. Soc., Bot. 26: 338. 1891.

稀花蓼 xi hua liao

Persicaria dissitiflora (Hemsley) H. Gross ex T. Mori; *P. fauriei* (H. Léveillé & Vaniot) Nakai ex T. Mori; *Polygonum fauriei* H. Léveillé & Vaniot; *P. glanduliferum* Nakai; *Truellum dissitiflorum* (Hemsley) Tzvelev.

Herbs annual. Stems erect or prostrate at base, 70-100 cm tall, branched, sparsely retrorsely prickly, usually with few stellate hairs. Petiole 2-5 cm, stellate hairy, often retrorsely prickly; leaf blade light green abaxially, green adaxially, ovate-elliptic, 4-15 × 3-7 cm, abaxially sparsely stellate hairy and retrorsely prickly along midvein, adaxially sparsely stellate hairy and bristly, base cordate or hastate, margin shortly ciliate, apex acuminate; ocrea tubular, 0.6-1.5 cm, membranous, shortly ciliate, oblique. Inflorescence terminal or axillary, paniculate; peduncles slender, reddish purple glandular hairy; bracts green, funnel-shaped, 2.5-3 mm, margin strongly ciliate, each 1- or 2-flowered. Pedicel 2-3 mm. Perianth pink, 5-parted; tepals elliptic, ca. 3 mm. Stamens 7 or 8, in 2 whorls, included. Styles 3, connate to below middle. Achenes included in persistent perianth, dark brown, somewhat dull, globose, weakly trigonous at apex, ca. 3 mm. Fl. Jun-Aug, fr. Jul-Sep.

Valleys, hilly grasslands, stream banks; 100-1500 m. Anhui, Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Korea, Russia (Far East)].

108. *Polygonum sagittatum* Linnaeus, Sp. Pl. 1: 363. 1753, s.l.

箭头蓼 jian tou liao

Helxine sagittata (Linnaeus) Rafinesque; *Persicaria sagittata* (Linnaeus) H. Gross ex Nakai; *P. sagittata* var. *sieboldii* (Meisner) Nakai; *P. sieboldii* (Meisner) K. Ohki; ?*P. sieboldii* var. *brevifolia* Kitagawa; ?*Polygonum belophyllum* Litvinov; ?*P. paludosum* (Komarov) Komarov; *P. sagittatum* var. *boreale* Meisner; *P. sagittatum* Linnaeus subsp. *sieboldii* (Meisner) V. N. Voroschilov; ?*P. sagittatum* var. *paludosum* Komarov; ?*P. sieboldii* var. *pratense* Y. L. Chang & S. X. Li; *P. sagittatum* var. *sibiricum* Meisner; *P. sagittatum* var. *sieboldii* (Meisner) Maximowicz ex Komarov; *P. sieboldii* Meisner; *Tracaulon sagittatum* (Linnaeus) Small; *T. sibiricum* (Meisner) Greene; *T. sieboldii* (Meisner) Greene; *Truellum sagittatum* (Linnaeus) Soják; *T. sibiricum* (Meisner) Soják.

Herbs annual, scandent, 0.3-2 m tall. Stem light green to green, often becoming reddish purple at maturity, simple to extensively branched, glabrous, angulate, with recurved prickles along angles, often decumbent at base, usually producing fibrous roots at lower nodes. Leaves petiolate, upper ones often shortly petiolate or sessile; petiole 0.5-4 cm, glabrous, retrorsely prickly along angles; leaf blade green adaxially, light green abaxially, broadly lanceolate to oblong, 2-8.5 × 1-3 cm, thin, abaxially glabrous, abaxially usually retrorsely prickly near base of midvein, adaxially glabrous to densely pubescent with appressed simple multiserial hairs, base sagittate to deeply cordate with small rounded or triangular lobes, margin ciliate or eciliate, apex acute to subacute or obtuse; ocrea oblique, 0.5-1.3 cm, scarious, glabrous, often weakly ciliate at tip, lower ones often lacerate. Inflorescence terminal or in axils of upper leaves, elongate, 3-15 cm, often slender, usually branched, usually glabrous but sometimes with a few recurved prickles in lower portion; inflorescence bracts resembling ocrea but much reduced, 1.5-3 mm; each inflorescence branch terminated by a dense headlike cluster of many flower fascicles. Flower fascicles usually 2- or 3-flowered, closely spaced; bracts lanceolate to narrowly elliptic, 3-5 mm, glabrous, apex strongly acuminate; bracteoles narrowly elliptic to elliptic, 3-4 mm, glabrous, often ciliate at tip; pedicel short, 1-1.5 mm, glabrous, included in bracteoles. Perianth white to greenish white, often reddish, 3-5 mm, 5-parted; tepals broadly elliptic, not becoming fleshy, apex obtuse. Stamens 8, inserted at base of perianth in 2 whorls; inner stamens 3, ca. 2 mm; outer stamens 5, 1-1.5 mm. Style 1, 3-cleft to middle, ca. 0.5 mm, included; stigmas 3. Achenes dark brown to black, dull to shiny, 3-4 mm, usually ovoid, sharply trigonous, punctate to smooth, apex acute.

In moist grassy situations, often in partial shade, occurring naturally in meadows, pastures, margins of swamps, ponds, and along stream banks, common as a weed along roadsides and other disturbed sites; 100-2200 m. Anhui, Fujian, Gansu, ?Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [N India, Japan, Korea, Mongolia, Russia (Far East) (var. *sieboldii*); E North America: (var. *sagittatum*)].

- 1a. Leaves strongly ciliate at margin; achenes smooth and shiny (in E North America) var. *sagittatum*
- 1b. Leaves eciliate at margin; achenes usually punctate and dull (in E Asia) var. *sieboldii*

Polygonum sagittatum s.l. is an extremely variable species and known from both Asia and North America. Some authors have pointed out, on the basis of differences in achene surface and leaf margin, that North American populations are separable from Asian ones, and have treated them as two distinct varieties of *P. sagittatum*, or as two distinct species: *P. sagittatum* in North America and *P. sieboldii* in eastern Asia. In Park's previous taxonomic monograph of *P. sect. Echinocaulon* (Syst. Bot. 12: 167-179. 1987; and Mem. New York Bot. Gard. 47: 1-82. 1988), *P. sagittatum* and *P. sieboldii* are recognized as conspecific mainly based on flavonoid chemistry and also the observation that North American plants are well within the range of variability of eastern Asian ones. However, the recent molecular analyses of North American and eastern Asian populations of *P. sagittatum* (Park, in prep.) show that these disjunct populations are genetically somewhat divergent from each other. The degree of genetic divergence, however, strongly

suggests that they can be recognized either as a single polymorphic species (*P. sagittatum* s.l.) or two distinct varieties of *P. sagittatum*, but they can hardly be treated as two distinct species.

109. *Polygonum dichotomum* Blume, Bijdr. Fl. Ned. Ind. 529. 1826.

二歧蓼 er qi liao

Persicaria dichotoma (Blume) Masamune; *P. peduncularis* (Wallich ex Meisner) Nemoto; *Polygonum pedunculare* Wallich ex Meisner; *P. strigosum* R. Brown var. *pedunculare* (Wallich ex Meisner) Steward; *P. tetragonum* Blume; *Tracaulon pedunculare* (Wallich ex Meisner) Greene; *T. tetragonum* (Blume) Greene; *Truellum dichotomum* (Blume) Soják.

Herbs annual (?perennial). Stems ascending or erect, 40–100 cm tall, often branched, with sparse retrorse prickles. Petiole 5–10 mm; leaf blade lanceolate or narrowly elliptic, 5–10 × 1–3 mm, both surfaces glabrous, abaxially with retrorse prickly midvein, base cuneate, truncate, or subhastate, margin entire, not ciliate or very shortly ciliate, apex acute; ocrea tubular, 1.5–2 cm, membranous, usually glabrous, apex oblique, not ciliate. Inflorescence terminal or axillary, densely shortly spicate, usually 1 or 2 × dichotomously branched; peduncle glandular hairy; bracts broadly elliptic, 2–3 mm, ciliate, each 2- or 3-flowered. Pedicels shorter than bracts. Perianth pinkish, 5-parted; tepals broadly elliptic, 2–3 mm. Stamens 5, included. Styles 2, free; stigmas capitate. Achenes included in persistent perianth, brown, dull, nearly orbicular, biconvex, 2–2.5 mm. Fl. Jun–Jul, fr. Aug–Oct.

Ditches, marshy areas; 100–1000 m. Fujian, Guangdong, ?Guangxi, Hainan, ?Hubei, Taiwan [India (Assam), Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Philippines, Thailand, Vietnam; Australia].

One of us (Park) notes that this is an extremely variable species, and consists of two varieties, *Polygonum dichotomum* var. *dichotomum* and var. *angustissimum* (J. D. Hooker) C. W. Park (see Park, Mem. New York Bot. Gard. 47: 75. 1988), but only the typical variety occurs in China.

110. *Polygonum bungeanum* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 13: 77. 1840.

柳叶刺蓼 liu ye ci liao

Polygonum pensylvanicum Bunge, Enum. Pl. China Bor. 57. 1833, not Linnaeus (1753); *Persicaria bungeana* (Turczaninow) Nakai ex T. Mori; *Polygonum chanetii* H. Léveillé.

Herbs annual. Stems erect or ascending, 30–80 cm tall, branched, retrorsely prickly. Petiole 5–10 mm; leaf blade green adaxially, lanceolate or narrowly elliptic, 4–13 × 1–3 cm, abaxially hispidulous, adaxially glabrous, usually hispidulous along midvein, base cuneate, margin ciliate, apex acute or subacuminate; ocrea tubular, 1–1.5 cm, membranous, apex truncate, long ciliate. Inflorescence terminal or axillary, spicate, 5–10 mm, usually branched, interrupted at base; peduncle densely glandular hairy; bracts green, funnel-shaped, not ciliate, glabrous, often with few glandular hairs. Pedicels shorter than bracts. Perianth white or pinkish, 5-parted; tepals elliptic, 3–4 mm. Stamens 8, in 2 whorls, included. Styles 2, connate to below middle; stigmas capitate. Achenes included in persistent

perianth, black, dull, orbicular, biconvex, ca. 3 mm. Fl. Jul–Aug, fr. Aug–Sep. $2n = 20$.

Grassy valleys, near fields, roadsides; sea level to 1700 m. Gansu, Hebei, Heilongjiang, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Shandong, Shanxi [Japan, Korea, Russia (Far East)].

111. *Polygonum muricatum* Meisner, Monogr. Polyg. 74. 1826.

小蓼花 xiao liao hua

Persicaria muricata (Meisner) Nemoto; *P. nipponensis* (Makino) H. Gross ex Nakai; *Polygonum hastatosagittatum* Makino var. *latifolium* Makino; *P. kirinense* S. X. Li & Y. L. Chang; *P. nipponense* Makino; *P. oliganthum* Diels; *P. strigosum* R. Brown var. *muricatum* (Meisner) Steward; *P. thunbergii* Siebold & Zuccarini var. *spicatum* H. Léveillé; *P. uniflorum* Y. X. Ma & Y. T. Zhao; *Tracaulon muricatum* (Meisner) Greene; *Truellum muricatum* (Meisner) Soják; *T. nipponense* (Makino) Soják.

Herbs annual. Stems ascending, nearly prostrate at base, 80–100 cm tall, branched, angulate, with retrorse prickles 0.5–1 mm along angles; petiole 0.7–2 cm, sparsely retrorsely prickly; leaf blade ovate or oblong-ovate, 2.5–6 × 1.5–3 cm, abaxially sparsely stellate pubescent, shortly pubescent, with retrorse prickles along midvein, adaxially usually glabrous or sparsely pubescent, rarely stellate pubescent, base broadly truncate, orbicular, or subcordate, margin ciliate, apex acuminate or acute; ocrea tubular, 1–2 cm, membranous, glabrous, apex truncate, long ciliate. Inflorescence spicate, several spikes aggregated and panicle-like; peduncles densely pubescent, sparsely glandular hairy; bracts broadly elliptic or ovate, 2.5–3 mm, apex acuminate, margin ciliate, usually each 2-flowered. Pedicels shorter than bracts, ca. 2 mm. Perianth white or pinkish, 5-parted; tepals broadly elliptic, 2–3 mm. Stamens 6–8, in 2 whorls, included. Styles 3, free; stigmas capitate. Achenes included in persistent perianth, brown, shiny, ovoid, trigonous, 2–2.5 mm, smooth. Fl. Jul–Aug, fr. Sep–Oct.

Wet valleys, ditches; sea level to 3300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Sichuan, ?Taiwan, ?Xizang, Yunnan, Zhejiang [India, Japan, Korea, Nepal, Russia (Far East), Thailand].

112. *Polygonum strigosum* R. Brown, Prodr. 420. 1810.

糙毛蓼 cao mao liao

Persicaria strigosa (R. Brown) Nakai; *Polygonum bodinieri* H. Léveillé & Vaniot; *Tracaulon strigosum* (R. Brown) Greene; *Truellum strigosum* (R. Brown) Soják.

Herbs annual. Stems erect or decumbent, 50–100 cm tall, branched, angulate, with retrorse prickles along angles. Petiole 0.5–2 cm, with recurved prickles; leaf blade elliptic or lanceolate, 6–10 × 1–3.5 cm, abaxially usually glabrous, with retrorse prickles along midvein, adaxially glabrous or sparsely shortly strigose, base weakly cordate, truncate, or subsagittate, margin ciliate, apex acuminate or acute; ocrea tubular, 1.5–3 mm, membranous, with dense retrorse prickles at base, apex truncate, long ciliate. Inflorescence spicate; peduncle branched, densely pubescent, sparsely glandular hairy; bracts elliptic or ovate, 2–3 mm, usually strigose, each 2- or 3-flowered. Pedicels

shorter than bracts, 1–2 mm, glabrous. Perianth white or pinkish, 5-parted; tepals elliptic, 2–4 mm. Stamens 5–7, included. Styles 2 or 3; stigmas capitate. Achenes included in persistent perianth, dark brown, dull, nearly orbicular, biconvex or trigonous, ca. 3 mm. Fl. Aug–Sep, fr. Sep–Oct.

Wet valleys, forests; 100–2000 m. Fujian, Guangdong, Guangxi, Guizhou, ?Jiangsu, ?Xizang, Yunnan [Bangladesh, Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Thailand, Vietnam; Australia].

113. *Polygonum hastatosagittatum* Makino, Bot. Mag. (Tokyo) 17: 119. 1903.

长箭叶蓼 chang jian ye liao

Persicaria hastatosagittata (Makino) Nakai ex T. Mori; *P. ussuriensis* (Regel) Nakai ex T. Mori; *Polygonum cavaleriei* H. Léveillé; *P. korshinskianum* Nakai; *P. sagittatum* Linnaeus var. *ussuriense* Regel; *P. strigosum* var. *hastatosagittatum* (Makino) Steward; *P. ussuriense* (Regel) Nakai; *Truellum hastatosagittatum* (Makino) Soják; *T. korshinskianum* (Nakai) Soják.

Herbs annual. Stems erect or prostrate at base, 40–90 cm

The following taxa have been described or reported from China, but we have seen no specimens and are therefore unable to treat them in this account. Further revisionary study is necessary.

Polygonum minutissimum Z. Wei & Y. B. Chang (Bull. Bot. Res., Harbin 12: 271. 1992, not L. O. Williams, 1934), described from Zhejiang.

tall, branched, angulate, with retrorse prickles 0.3–1 mm along angles. Petiole 1–2.5 cm, retrorsely prickly; leaf blade lanceolate or elliptic, 3–7(–10) × 1–2(–3) cm, glabrous or pubescent, abaxially with retrorse prickles along midvein, adaxially sometimes stellate pubescent, base sagittate or subhastate, margin shortly ciliate, apex acute or subacuminate; ocrea tubular, 1.5–2 cm, membranous, apex truncate, long ciliate. Inflorescence terminal or in axil of upper leaves, spicate; peduncle dichotomous, densely pubescent, sparsely glandular hairy; bracts broadly elliptic or ovate, 2.5–3 mm, margin ciliate, usually each 2-flowered. Pedicels longer than bracts, 4–6 mm, with glandular hairs. Perianth pinkish, 5-parted; tepals broadly elliptic, 3–4 mm. Stamens 7 or 8, included. Styles 3, connate to below middle; stigmas capitate. Achenes included in persistent perianth, dark brown, shiny, ovoid, trigonous, 3–4 mm. Fl. Aug–Sep, fr. Sep–Oct.

Streamsides, wet areas; sea level to 3200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Taiwan, Xizang, Yunnan, Zhejiang [Russia (Far East)].

Polygonum pilushanense Y. C. Liu & C. H. Ou (Quart. J. Chinese Forest. 8: 123. 1976), described from Taiwan.

One of us (Ohba) adds the following species described under *Bistorta*; however, one of us (Li) has been unable to examine material because of health reasons. We list them here pending further revisionary work on the family.

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Bistorta albiflora Miyamoto & H. Ohba (Bull. Nat. Sci. Mus. Tokyo, ser. B, 28: 141. 2002), described from Sichuan.

Bistorta longispicata Yonekura & H. Ohashi (J. Jap. Bot. 76: 346. 2001), described from Xizang.

Bistorta ludlowii Yonekura & H. Ohashi (J. Jap. Bot. 76: 348. 2001), described from SE Xizang.

Flora of China 5: 278-315. 2003.

Bistorta sherei H. Ohba & S. Akiyama (Alp. Fl. Jaljale Himal. 11. 1992), reported from Xizang (see Bull. Nat. Sci. Mus. Tokyo, ser. B, 28: 145. 2002).

Bistorta tubistipulis Miyamoto & H. Ohba (Bull. Nat. Sci. Mus. Tokyo, ser. B, 28: 143. 2002), described from Sichuan.