

12. RUMEX Linnaeus, Sp. Pl. 1: 333. 1753.

酸模属 suan mo shu

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Herbs perennial or less commonly annual, rarely shrubs, rarely dioecious. Roots usually stout (taproots), or sometimes plants rhizomatous. Stems erect, rarely ascending to prostrate, branched, not hollow or sulcate. Leaves simple, often dimorphic, fugacious or persisting, basal and cauline, alternate, margin entire or undulate; ocrea tubular, membranous, margin entire. Inflorescence usually terminal, sometimes terminal and axillary, racemose or paniculate. Pedicel articulate (the functional pedicel consists of the true pedicel and, below the joint, the narrowed united basal parts of the outer tepals (pseudopedicel)). Flowers bisexual or unisexual (unisexual in dioecious, and rarely in polygamo-monoecious plants). Perianth persistent, tepals 6, becoming enlarged and often hardened in fruit; valve (fruiting inner tepal) margin entire, erose, denticulate, or variously dentate, midvein often transformed into tubercles (tuberculate callosities). Stamens 6. Styles 3, elongate; stigmas penicillate. Achenes trigonous, elliptic to ovate.

About 200 species: widely distributed in N and S temperate zones; 27 species (one endemic) in China.

Rumex s.l. is sometimes subdivided into at least three segregate genera: *Rumex* s.str., *Acetosa* Miller, and *Acetosella* (Meisner) Fourreau, here recognized as subgenera. The generic status of these segregate genera, however, has not been generally accepted by most taxonomists. In some cases intermediate forms exist between them, especially between *Acetosa* and *Acetosella*, and they are evidently more closely related to each other than to any outside genus. This favors the retention of *Rumex* in the traditional broad sense, which is also convenient from the viewpoint of nomenclatural stability.

- 1a. Shrubs flowers polygamous 2. *R. hastatus*
- 1b. Herbs; flowers unisexual or bisexual.
 - 2a. Annual herb.
 - 3a. Only 1 valve with tubercles 25. *R. marschallianus*
 - 3b. All valves with tubercles.
 - 4a. Margin of valves entire 27. *R. microcarpus*
 - 4b. Margin of valves long dentate, dentate, or denticulate.
 - 5a. Only 1 valve with 2 pairs of teeth, others denticulate; teeth 3.5–4 mm, apex usually slightly curved 26. *R. amurensis*
 - 5b. All valves dentate or denticulate; teeth 2–4 mm, apically straight.
 - 6a. Stem branched above; valves narrowly triangular, margin long dentate.
 - 7a. Margin of valves with 1 pair of teeth 3–4 mm 22. *R. trisetifer*
 - 7b. Margin of valves with ca. 3 pairs of teeth 2.5–3 mm 23. *R. maritimus*
 - 6b. Stem branched from base; valves triangular, margin dentate or denticulate.
 - 8a. Pedicels articulate below middle; valves 4–5 mm, apex acute, margin dentate, teeth 2–3 mm, rather stout 21. *R. dentatus*
 - 8b. Pedicels articulate at base; valves 2–2.5 mm, apex narrowly acute, margin denticulate, teeth 1–1.5 mm, bristle-like 24. *R. similans*
- 2b. Perennial herb.
 - 9a. Flowers unisexual and plants dioecious; basal leaves hastate or sagittate.
 - 10a. Basal or lower stem leaves hastate; rhizomes horizontal; valves shorter than or equaling achenes, without tubercles; pedicel articulate near base of tepals 1. *R. acetosella*
 - 10b. Basal or lower stem leaves sagittate; without rhizomes or shortly rhizomatous; valves distinctly longer than achenes, with small tubercles; pedicel articulate near middle.
 - 11a. Root thin, horizontal or oblique; primary branches of inflorescence usually simple or nearly so 3. *R. acetosa*
 - 11b. Taproot thick, normally vertical or oblique; primary branches of inflorescence repeatedly branched 4. *R. thyrsiflorus*
 - 9b. Flowers bisexual; basal leaves neither hastate nor sagittate.
 - 12a. Valves without tubercles.
 - 13a. Basal leaves triangular-ovate, base deeply cordate, apex obtuse 11. *R. gmelinii*
 - 13b. Basal leaves not as above.
 - 14a. Articulation of pedicels in fruit conspicuous.
 - 15a. Basal leaves lanceolate or narrowly lanceolate 1.5–4 cm wide; valves nearly orbicular or orbicular-cordate, 3.5–4.5 mm 7. *R. pseudonatronatus*
 - 15b. Basal leaves oblong-lanceolate or broadly lanceolate, 5–10 cm wide;

- valves orbicular-reniform or orbicular-cordate, 5–6 mm 5. *R. longifolius*
- 14b. Articulation of pedicels in fruit inconspicuous.
 - 16a. Basal leaves oblong-ovate or ovate, base cordate.
 - 17a. Valves ovate, margin nearly entire, base subtruncate 8. *R. aquaticus*
 - 17b. Valves nearly orbicular or orbicular-ovate, margin erose or inconspicuously denticulate, base deeply cordate 9. *R. popovii*
 - 16b. Basal leaves oblong-lanceolate or elliptic, base cuneate.
 - 18a. Basal leaves oblong-lanceolate; valves orbicular-cordate; rachis slightly zigzagged 6. *R. angulatus*
 - 18b. Basal leaves elliptic; valves triangular-cordate; rachis erect 10. *R. yungningensis*
- 12b. All or 1 or 2 valves with tubercles.
 - 19a. Valve entire to indistinctly erose at margin.
 - 20a. Basal leaves lanceolate or nearly lanceolate, 2–5 cm wide, margin crisped or strongly undulate, base cuneate; valves broadly ovate to ovate-triangular, base nearly truncate 14. *R. crispus*
 - 20b. Basal leaves oblong, oblong-lanceolate, or broadly ovate, 5–10 cm wide, base rounded to nearly cordate, margin undulate; valves broadly cordate, base deeply cordate.
 - 21a. Basal leaves oblong or oblong-lanceolate 12. *R. patientia*
 - 21b. Basal leaves broadly ovate 13. *R. thianschanicus*
 - 19b. Valves erose, denticulate, or dentate at margin.
 - 22a. Valves 1 or 2 or all with tubercles, margin denticulate.
 - 23a. Valves narrowly triangular-ovate; teeth 0.8–1.5 mm, apex straight 18. *R. obtusifolius*
 - 23b. Valves broadly ovate; teeth 1.5–3 mm, apex hooked 20. *R. nepalensis*
 - 22b. All valves with tubercles, margin denticulate.
 - 24a. Basal leaves deeply cordate-triangular, abaxially papillate, apex rounded 15. *R. confertus*
 - 24b. Basal leaves not as above.
 - 25a. Basal leaves lanceolate or narrowly lanceolate, 1.5–4 cm wide, base cuneate; valves triangular, base truncate 17. *R. stenophyllus*
 - 25b. Basal leaves oblong or lanceolate-oblong, 3–10 cm wide, base rounded, cordate, or broadly cuneate; valves broadly cordate or triangular-cordate, base cordate or nearly cordate.
 - 26a. Valves broadly cordate, apex acuminate, base cordate, margin irregularly denticulate; denticles 0.3–0.5 mm 16. *R. japonicus*
 - 26b. Valves triangular-cordate, apex acute, base subcordate, margin denticulate; denticles 1–1.5 mm 19. *R. chalepensis*

1. *Rumex acetosella* Linnaeus, Sp. Pl. 1: 338. 1753.

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Acetosa acetosella (Linnaeus) Miller; *Acetosella vulgaris* (Koch) Fourreau; *Rumex acetosella* var. *vulgaris* Koch.

Herbs perennial, dioecious. Rhizomes horizontal, ligneous. Stems usually numerous from rhizome, erect or ascending, 15–35(–45) cm tall, slender, finely grooved, branched above middle. Basal leaves hastate, rarely without basal leaves, 2–4 cm × 3–6(–10) mm, glabrous, central lobe ovate-lanceolate, lanceolate, or linear, basal lobes spreading or curved, sometimes multifid, margin above basal lobes entire, apex acute or obtuse; cauline leaves smaller upward. Petiole short or in upper cauline leaves nearly absent; ocrea fugacious, white, membranous. Inflorescence terminal, panicate. Flowers unisexual. Pedicel 2–2.5 mm, articulate near base of tepals. Male flower: outer tepals small; inner tepals elliptic, ca. 1.5 mm. Female flower: outer tepals lanceolate, ca. 1 mm, not reflexed in fruit; inner tepals slightly enlarged in fruit; valves ovate, 1–1.6 mm, without tubercles, net veined, base rounded to broadly cuneate, margin entire, apex acute. Achenes brown, shiny, broadly ovoid, trigonous, 1–1.5 mm. Fl. Jun–Jul, fr. Jul–Aug. $2n = 14, 42$.

Hilly grasslands, forest margins, moist valleys; 400–3200 m. Fujian, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Nei Mongol, Shandong, Sichuan, Taiwan, Xinjiang, ?Yunnan, Zhejiang [India, Japan, Korea, Kazakhstan, Mongolia, Russia; Europe, North America; widely introduced elsewhere].

Rumex acetosella s.l. is a variable and taxonomically complicated, polyploid complex represented by several more or less distinct entities (subspecies and/or segregate species). Despite several painstaking efforts (see Nijs, Feddes Repert. 95: 43–66. 1984; Löve, Bot. Helv. 93: 145–168. 1986; and Akeroyd, Bot. J. Linn. Soc. 106: 97–99. 1991), their taxonomy remains rather confused. At least two of these taxa are represented in China: gymnocarpous *R. acetosella* subsp. *acetosella* and angiocarpous forms referred to subsp. *angiocarpus* (Murbeck) Murbeck (*R. angiocarpus* Murbeck) or subsp. *pyrenaicus* (Pourret ex Lapeyrouse) Akeroyd (*R. pyrenaicus* Pourret ex Lapeyrouse). The distribution and taxonomic relationships of these taxa of *R. acetosella* s.l. in China is still insufficiently known, and because of that no attempt has been made to distinguish them in the present treatment.

2. *Rumex hastatus* D. Don, Prodr. Fl. Nepal. 74. 1825.

戟叶酸模 ji ye suan mo

Rumex dissectus H. Léveillé.

Shrubs 50–90 cm tall. Branches purple-brown, finely

grooved; branchlets green, glabrous. Leaves solitary or fascicled; petiole 1.5–3.5 cm; leaf blade hastate, 1.5–3 cm × 1.5–2 mm, subleathery, central lobe linear or narrowly triangular, apex acute, basal lobes curved; ocrea fugacious, membranous. Inflorescence terminal, paniculate, lax. Pedicel slender, articulate below middle. Flowers polygamous. Male flowers: tepals nearly uniform. Female flowers: outer tepals elliptic, reflexed in fruit; inner tepals enlarged in fruit; valves pinkish, orbicular or reniform, membranous, nearly pellucid, with small tubercle at base, base deeply cordate, margin nearly entire, apex obtuse or retuse. Achenes brown, shiny, ovoid, trigonous, ca. 2 mm. Fl. Apr–May, fr. May–Jun.

Dry mountain slopes, rocky fissures; 600–3200 m. ?Guizhou, Sichuan, SE Xizang, Yunnan [Afghanistan, India, Kashmir, Nepal, Pakistan].

3. *Rumex acetosa* Linnaeus, Sp. Pl. 1: 337. 1753, nom. cons.

酸模 suan mo

Acetosa pratensis Miller.

Herbs perennial, dioecious, with a short and relatively thin horizontal or slightly oblique rootstock, usually not reaching deep into substrate and with rather crowded secondary roots. Stems erect, 40–100 cm tall, grooved, glabrous, usually simple. Basal leaves ovate-lanceolate to lanceolate, base sagittate, 3–12 × 2–4 cm, margin entire, apex acute, basal lobes acute at apices; cauline leaves small; petiole short or nearly absent; ocrea fugacious, white, membranous. Inflorescence terminal, paniculate, lax; branches reddish green, slender, simple or with a few secondary branches. Flowers unisexual. Pedicel slender, articulate at middle. Male flowers: outer tepals erect, small; inner tepals elliptic, ca. 3 mm. Female flowers: outer tepals elliptic, reflexed in fruit; inner tepals enlarged in fruit; valves nearly orbicular (to broadly ovate), 3.5–4 mm in diam., with small recurved tubercles at base of valves, net veined, base cordate, margin entire, apex obtuse. Achenes blackish brown, shiny, ellipsoid, trigonous, ca. 2 mm. Fl. May–Jul, fr. Jun–Aug. $2n = 14^*$, 15^* , 22^* .

Mountain slopes, forest margins, moist valleys; 400–4100 m. ?Anhui, ?Fujian, ?Guangxi, ?Guizhou, Heilongjiang, ?Henan, Hubei, ?Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Qinghai, ?Shaanxi, ?Shandong, ?Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, ?Zhejiang [Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Russia; Europe, North America].

4. *Rumex thyrsiflorus* Fingerhuth, Linnaea 4: 380. 1829.

直根酸模 zhi gen suan mo

Acetosa thyrsiflora (Fingerhuth) A. Löve & D. Löve; *Rumex acetosa* Linnaeus subsp. *thyrsiflorus* (Fingerhuth) Čelakovský; *R. haplorhizus* Czernjaev ex Turczaninow; *R. thyrsiflorus* var. *mandshuricus* A. Baranov & B. Skvortsov.

Herbs perennial, dioecious. Taproots large, thick, with remote secondary roots. Stems erect, 40–120 cm tall, glabrous, grooved. Basal leaves oblong-lanceolate to lanceolate, base sagittate, 4–13 × 1.5–4 cm, both surfaces glabrous or veins minutely papillate, margin entire, apex acute, basal lobes acute at apex; cauline leaves small; petiole short or nearly absent; ocrea fugacious, white, membranous. Inflorescence terminal, panicu-

late, dense, much branched. Flowers unisexual. Pedicel slender, articulate below middle. Male flowers: outer tepals erect, small; inner tepals elliptic, ca. 2 mm. Female flowers: outer tepals reflexed in fruit; inner tepals enlarged in fruit; valves orbicular to broadly ovate, 3–4 mm in diam., with small recurved tubercles at base of valves, base truncate to cordate, margin nearly entire, apex obtuse. Achenes brown, shiny, ellipsoid, trigonous, ca. 2 mm. Fl. May–Jun, fr. Jun–Jul. $2n = 14$, 15 .

Mountain slopes, moist valleys, water sides; 500–2200 m. Heilongjiang, Jilin, Nei Mongol, Xinjiang [Kazakhstan, Mongolia, Russia, Uzbekistan; Europe, North America].

5. *Rumex longifolius* Candolle in Lamarck & Candolle, Fl. Franç., ed. 3, 5(Suppl. 6): 368. 1815.

长叶酸模 chang ye suan mo

Rumex domesticus C. Hartman.

Herbs perennial. Stems erect, 60–120 cm tall, robust, glabrous, grooved, branched above middle. Basal leaves: petiole 5–15 cm; leaf blade oblong-lanceolate or broadly lanceolate, 20–35 × 5–10 cm, abaxially minutely papillate along veins, adaxially glabrous, base cuneate or rounded, margin slightly undulate to weakly crisped, apex acute or subacute; cauline leaves shortly petiolate, lanceolate, small, base narrowly cuneate, apex acute; ocrea fugacious, white, membranous. Inflorescence paniculate. Flowers bisexual. Pedicels slender, articulate below middle; articulation distinctly swollen in fruit. Inner tepals enlarged in fruit; valves broadly orbicular-reniform to orbicular-cordate, 5–6 × 6–7 mm, all without tubercles, sometimes 1 valve with small indistinct tubercle, net veined, base cordate, margin entire, apex obtuse. Achenes brown, shiny, narrowly ovoid, trigonous, 2–3.5 mm. Fl. Jun–Jul, fr. Jul–Aug. $2n = 60$.

Moist valleys, forest margins, mountain slopes; 100–3000 m. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang [Japan, Russia; Europe; introduced in North America and occasionally in other regions of the world].

6. *Rumex angulatus* K. H. Rechinger, Candollea 12: 51. 1949.

紫茎酸模 zi jing suan mo

Herbs perennial. Stems erect, purple-red, 40–60 cm tall, glabrous, grooved. Basal leaves: petiole 3–5 cm; leaf blade oblong-lanceolate, 15–20 × 3–5 cm, both surfaces glabrous, base cuneate, apex acute; cauline leaves shortly petiolate, lanceolate; ocrea fugacious, membranous. Inflorescence terminal, paniculate, dense; rachis slightly zigzagged. Flowers bisexual. Pedicel filiform, slender, articulate below middle. Inner tepals enlarged in fruit; valves orbicular-cordate, ca. 5 × 4 mm, all without tubercles, net veined, base cordate, margin nearly entire or irregularly minutely crenate, apex obtuse. Achenes yellow-brown, shiny, ovoid, trigonous, ca. 3 mm. Fl. Jun–Jul, fr. Jul–Aug.

Watersides, moist valleys; 3000–4200 m. Xizang [Afghanistan, Kashmir, Pakistan].

7. *Rumex pseudonatronatus* (Borbás) Borbás ex Murbeck, Bot. Not. 1899: 16. 1899.

披针叶酸模 pi zhen ye suan mo

Rumex domesticus C. Hartman var. *pseudonatronatus* Borbás, Ertek. Term. Koreb. Mag. Tud. Acad. 11(18): 21. 1880.

Herbs perennial. Roots vertical, large, 1–2 cm in diam. Stems erect, 80–120 cm tall, simple or branched above, grooved, glabrous. Basal leaves lanceolate or narrowly lanceolate, sometimes lanceolate-linear, 15–30 × 1.5–4 cm, abaxially minutely papillate along veins, adaxially glabrous, base cuneate to narrowly cuneate, margin crisped or undulate, apex acute; cauline leaves shortly petiolate, narrowly lanceolate, small; ocrea fugacious, white, thinly membranous. Inflorescence paniculate, dense in distal part, sometimes interrupted at base, 20–40 cm, narrow. Flowers bisexual. Pedicels slender, articulate below middle, articulation swollen in fruit. Inner tepals enlarged in fruit; valves nearly orbicular or orbicular-cordate, 3.5–4.5 mm, all without tubercles, sometimes 1 valve with 1 indistinct tubercle less than 1–1.3 mm, conspicuously net veined, base slightly cordate, margin entire or weakly erose, apex obtuse. Achenes brown, shiny, narrowly ovoid, trigonous, 2–2.5 mm. Fl. Jun–Jul, fr. Jul–Aug. $2n = 40$.

Forest margins on mountain slopes, moist valleys; 300–3200 m. Gansu, Hebei, Heilongjiang, Jilin, Qinghai, Shaanxi, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia; Europe; locally naturalized in North America].

8. *Rumex aquaticus* Linnaeus, Sp. Pl. 1: 336. 1753.

水生酸模 shui sheng suan mo

Rumex aquaticus subsp. *protractus* (K. H. Rechinger) K. H. Rechinger; *R. protractus* K. H. Rechinger.

Herbs perennial. Stems erect, 30–120 cm tall, usually branched above (in inflorescence), glabrous, grooved. Basal leaves: petiole 9–28 cm, glabrous or minutely papillate; leaf blade oblong-ovate to ovate-lanceolate, 10–30 × 4–13 cm, both surfaces glabrous or abaxially minutely papillate along veins, base cordate to nearly truncate, margin undulate, apex acute to nearly obtuse; cauline leaves shortly petiolate, oblong or broadly lanceolate, small; ocrea fugacious, membranous. Inflorescence terminal, paniculate, narrow; branches suberect. Flowers bisexual. Pedicel filiform, articulation indistinct, not swollen in fruit. Inner tepals enlarged in fruit; valves ovate, 5–8 × 4–6 mm, all without tubercles, base subtruncate, margin nearly entire, apex acute. Achenes brown, shiny, ellipsoid, trigonous, 3–4.5 mm, base narrow, apex acute. Fl. May–Jun, fr. Jun–Jul. $2n = 140$.

Watersides in valleys, riverbanks; 200–3600 m. Gansu, Heilongjiang, Hubei, Jilin, Ningxia, Qinghai, Shaanxi, Shanxi, NW Sichuan, Xinjiang [Japan, Kazakhstan, Kyrgyzstan, Mongolia, Russia; Europe, North America].

9. *Rumex popovii* Pachomova, Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. SSR 18: 61. 1967.

中亚酸模 zhong ya suan mo

Rumex aquaticus Linnaeus subsp. *lipschitzii* K. H. Rechinger.

Herbs perennial. Roots large, 0.8–1.5 cm in diam. Stems erect, reddish, 60–100 cm tall, usually branched above, gla-

brous, grooved. Basal leaves: petiole 7–13 cm, stout; leaf blade oblong-ovate or narrowly ovate, 15–20 × 4–6 cm, both surfaces glabrous, base cordate, margin slightly undulate, apex acute; cauline leaves lanceolate; ocrea fugacious, membranous. Inflorescence paniculate; branches spreading. Flowers bisexual. Pedicel filiform, articulate below middle, articulation indistinct. Inner tepals enlarged in fruit; valves pinkish, nearly orbicular or orbicular-ovate, 4–5 mm in diam., all without tubercles, conspicuously net veined, base deeply cordate, margin inconspicuously denticulate. Achenes brown, shiny, ellipsoid, trigonous, ca. 2 mm. Fl. Jun–Jul, fr. Jul–Aug.

Water sides in valleys, stream banks; 700–3100 m. Xinjiang [Kazakhstan, Mongolia, Tajikistan].

10. *Rumex yungningensis* Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 168. 1929.

永宁酸模 yong ning suan mo

Herbs perennial. Stems erect, 70–120 cm tall, branched, glabrous, grooved. Basal leaves elliptic, 7–15 × 3–5 cm, abaxially minutely papillate along veins, adaxially glabrous, base cuneate, margin entire, apex acute; cauline leaves small; petiole short or nearly absent; ocrea fugacious, brown, thinly membranous. Inflorescence terminal, paniculate; rachis erect. Flowers bisexual. Pedicel filiform, 6–8 mm, articulate at base. Inner tepals enlarged in fruit; valves triangular-cordate, ca. 5 × 4 mm, all without tubercles, net veined, base deeply cordate, margin nearly entire, apex obtuse. Achenes brown, shiny, narrowly ovoid, ca. 2.5 mm, apex acute. Fl. Jun–Jul, fr. Jul–Aug.

• Mountain slopes, valleys; 2500–3000 m. NW Yunnan (Yongning).

One of us (Grabovskaya-Borodina) believes that this is better placed near *Rumex aquaticus*, after *R. popovii*.

11. *Rumex gmelinii* Turczaninow ex Ledebour, Fl. Ross. 3: 508. 1850.

毛脉酸模 mao mai suan mo

Herbs perennial. Stems 40–100 cm tall, robust, glabrous, grooved. Basal leaves: petiole to 30 cm; leaf blade broadly triangular-ovate, 8–25 × 5–20 cm, abaxially densely papillate along veins, adaxially glabrous, base deeply cordate, margin entire or slightly undulate, apex obtuse; cauline leaves shortly petiolate, oblong-ovate, small, base cordate, apex obtuse; ocrea fugacious, membranous. Inflorescence paniculate. Flowers bisexual. Pedicels slender, articulate at base. Outer tepals ca. 2 mm; inner tepals enlarged in fruit; valves elliptic, 5–6 mm, all with tubercles, net veined, base rounded, apex obtuse. Achenes dark brown, shiny, ovoid, trigonous, 2.5–3 mm. Fl. May–Jun, fr. Jun–Jul.

Moist valleys, stream banks; 400–2800 m. Gansu, Hebei, Heilongjiang, Liaoning, Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi, N Xinjiang (Altay) [Japan, Korea, Mongolia, Russia (Far East, E Siberia)].

12. *Rumex patientia* Linnaeus, Sp. Pl. 1: 333. 1753.

巴天酸模 ba tian suan mo

Rumex callosus (F. Schmidt ex Maximowicz) K. H. Rechinger; *R. interruptus* K. H. Rechinger; *R. patientia* subsp.

callosus (F. Schmidt ex Maximowicz) K. H. Rechinger; *R. patientia* var. *callosus* F. Schmidt ex Maximowicz; *R. patientia* subsp. *interruptus* K. H. Rechinger; *R. patientia* subsp. *pamiricus* (K. H. Rechinger) K. H. Rechinger; *R. patientia* subsp. *tibeticus* (K. H. Rechinger) K. H. Rechinger; *R. patientia* var. *tibeticus* K. H. Rechinger.

Herbs perennial. Roots vertical, large, to 3 cm in diam. Stems erect, 80–150(–200) cm tall, robust, branched above, grooved. Basal leaves: petiole 5–15 cm, stout; leaf blade oblong or oblong-lanceolate, 15–30 × 5–10 cm, base rounded, broadly cuneate, or subcordate, margin undulate, apex acute to subacute; cauline leaves shortly petiolate or nearly sessile, lanceolate, small; ocrea fugacious, 2–4 cm, membranous. Inflorescence paniculate, large. Flowers bisexual. Pedicel slender, articulate below middle, articulation swollen and slightly inflexed in fruit. Outer tepals oblong, ca. 1.5 mm; inner tepals enlarged in fruit; valves broadly cordate, 6–7 mm, all or 1 or 2 valves with narrowly ovate tubercles (in *R. patientia* s.str. normally 1 valve has a large tubercle, and two other valves have smaller tubercles), net veined, base deeply cordate, margin entire or indistinctly erose, apex obtuse. Achenes brown, shiny, ovoid, trigonous, 2.5–3 mm, apex acuminate. Fl. May–Jun, fr. Jun–Jul. $2n = 40$.

Along ditches, water sides, moist valleys; sea level to 4000 m. Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan; Europe; introduced and naturalized in North America and some other parts of the world].

Two of us (Grabovskaya-Borodina and Mosyakin) prefer to accept the subspecific taxa of K. H. Rechinger.

13. *Rumex thianschanicus* Losinskaja in Komarov, Fl. URSS 5: 716. 1936 [*"thjanschanicus"*].

天山酸模 tian shan suan mo

Herbs perennial. Stems erect, 70–130 cm tall, robust, branched, glabrous, grooved. Basal leaves shortly petiolate, broadly ovate, 14–28 × 7–17 cm, thin, both surfaces glabrous, abaxially with prominent veins, base cordate, margin slightly undulate, apex subacute; cauline leaves shortly petiolate, small; ocrea fugacious, membranous. Inflorescence paniculate, lax. Flowers bisexual. Pedicel filiform, 8–16 mm, slender, dilated upward, articulate near base. Inner tepals enlarged in fruit; valves broadly cordate, 5–7 × 6–8 mm, only 1 valve with a tubercle, net veined, base cordate, margin nearly entire, apex acuminate; tubercle elliptic, 2–3 mm. Achenes brownish, ovoid, trigonous, 2–3 mm, apex acuminate. Fl. May–Jun, fr. Jun–Jul.

Moist valleys, forest margins on mountain slopes; 1100–1900 m. Xinjiang (Tian Shan) [Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan; SW Asia].

One of us (Grabovskaya-Borodina) treats this as a synonym of *Rumex paulsenianus* K. H. Rechinger.

14. *Rumex crispus* Linnaeus, Sp. Pl. 1: 335. 1753.

皱叶酸模 zhou ye suan mo

Lapathum crispum (Linnaeus) Scopoli.

Herbs perennial. Roots large. Stems erect, 50–120(–150) cm tall, simple or branched above, glabrous, grooved. Basal leaves shortly petiolate, lanceolate or narrowly lanceolate, 10–25 × 2–5 cm, glabrous or indistinctly papillose along veins below, base usually cuneate to truncate, margin strongly crisped and undulate, apex acute; cauline leaves shortly petiolate, narrowly lanceolate, small; ocrea fugacious, membranous. Inflorescence terminal, paniculate, narrow; branches erect or ascending. Flowers bisexual. Pedicel slender, articulate in proximal third, articulation distinctly swollen. Inner tepals enlarged in fruit; valves broadly ovate, 3.5–6 × 3–5 mm, all with tubercles, rarely only 1 valve bearing a tubercle, conspicuously net veined, base nearly truncate, margin entire, rarely weakly erose, apex obtuse to subacute; tubercle ovate, 1.5–2 mm. Achenes dark brown, shiny, ovoid, trigonous, ca. 2 mm, apex acute. Fl. May–Jun, fr. Jun–Jul. $2n = 60$.

Field margins, streamsides, waste areas; sea level to 2500 m. Gansu, Guizhou, ?Hainan, Heilongjiang, Hebei, Henan, Hubei, Hunan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan, ?Zhejiang [Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Myanmar, Russia, Thailand; Europe, North America; widely naturalized elsewhere].

The typical variety, *Rumex crispus* var. *crispus*, has valves with 3 tubercles; the less common variety with 1 tubercle, *R. crispus* var. *unicollosus* Petermann, also sporadically occurs in China. Forms currently recognized as *R. crispus* subsp. *fauriei* (K. H. Rechinger) Mosyakin & W. L. Wagner (*R. fauriei* K. H. Rechinger) probably also occur in China (see Mosyakin & Wagner, Bishop Mus. Occas. Pap. 55: 39–44. 1998), but their distribution is insufficiently known.

15. *Rumex confertus* Willdenow, Enum. Hort. Berol. 397. 1809.

密生酸模 mi sheng suan mo

Herbs perennial. Stems erect, 40–50 cm tall, branched above, grooved, papillose-pubescent. Basal leaves with petiole longer than leaf blade; leaf blade deeply cordate-triangular, 8–10 × 15–20 cm, slightly longer than wide, abaxially papillate, adaxially glabrous, margin undulate, basal lobes and apex rounded. Inflorescence paniculate, 5–6 × 18–20 cm; rachis flexuous; branches arcuate at base. Flowers bisexual. Pedicel slender, articulate below middle. Inner tepals enlarged in fruit; valves broadly cordate, acutely reniform, 5–6 × 7–8 mm, one valve with a small tubercle, conspicuously net veined, margin with indistinct teeth near base. Fl. May–Jun.

Meadows in river valleys. N Xinjiang [Kazakhstan, Russia; Europe, North America]

16. *Rumex japonicus* Houttuyn, Nat. Hist. 2(8): 394. 1777.

羊蹄 yang ti

Rumex cardiocarpus Pampanini; *R. crispus* Linnaeus subsp. *japonicus* (Houttuyn) Kitamura; *R. crispus* var. *japonicus* (Houttuyn) Makino; *R. hadroocarpus* K. H. Rechinger; *R. regelii* F. Schmidt.

Herbs perennial. Stems erect, 50–100 cm tall, branched above, grooved, glabrous. Basal leaves: petiole 6–15 cm; leaf blade oblong or lanceolate-oblong, 8–25 × 3–8 cm, abaxially minutely papillate along veins, adaxially glabrous, base round-

ed, cordate, or broadly cuneate, margin slightly undulate, apex acute or obtuse; cauline leaves shortly petiolate, narrowly oblong, small; ocrea fugacious, white, membranous. Inflorescence paniculate. Flowers bisexual. Pedicel slender, articulate below middle, articulation distinct. Inner tepals enlarged in fruit; valves broadly cordate, 4–5 × 5–6 mm, all valves with narrowly ovate tubercles, conspicuously net veined, base cordate, margin irregularly denticulate, apex acute; denticles 0.3–0.5 mm. Achenes dark brown, shiny, broadly ovoid, sharply trigonous, ca. 2.5 mm, base narrow, apex acute. Fl. May–Jun, fr. Jun–Jul.

Field margins, stream banks, wet valleys; sea level to 3400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Zhejiang [Japan, Korea, Russia (Far East)].

This species is used medicinally.

17. *Rumex stenophyllus* Ledebour, Fl. Altaic. 2: 58. 1830.

狭叶酸模 xia ye suan mo

Rumex odontocarpus Sandor ex Borbás; *R. stenophyllus* var. *ussuriensis* (Losinskaja) Kitagawa; *R. ussuriensis* Losinskaja.

Herbs perennial. Roots vertical, large, to 1 cm in diam. Stems erect, 40–80(–120) cm tall, usually branched above, glabrous, grooved. Basal leaves shortly petiolate, lanceolate or narrowly lanceolate, 10–18 × 1.5–4 cm, glabrous or indistinctly papillose along veins below, base cuneate, margin crisped, occasionally nearly flat and entire, apex acute; cauline leaves shortly petiolate or nearly sessile, narrowly lanceolate, small; ocrea fugacious, membranous. Inflorescence paniculate, narrow. Flowers bisexual, dense. Pedicel slender, articulate below middle (in proximal third). Inner tepals enlarged in fruit; valves triangular, 3–4(–5) mm × ca. 3.5 mm, all valves with narrowly ovate tubercles, base truncate to indistinctly cordate, margin denticulate, apex acute; denticles 0.5–1.5 mm, 4–10 at each side. Achenes brown, shiny, ellipsoid, 2.5–3 mm, sharply trigonous, base narrow, apex acute. Fl. May–Jun, fr. Jun–Aug. *2n* = 20, 22, 60.

Water sides, field margins, moist valleys; 200–1200 m. Heilongjiang, Jilin, Nei Mongol, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia; Europe].

18. *Rumex obtusifolius* Linnaeus, Sp. Pl. 1: 335. 1753.

钝叶酸模 dun ye suan mo

Rumex obtusifolius subsp. *agrestis* (Fries) Danser; *R. obtusifolius* var. *agrestis* Fries.

Herbs perennial. Roots vertical, large, to 1.5 cm in diam. Stems erect, 60–120(–150) cm tall, grooved, branched above middle or in upper 2/3, glabrous. Basal leaves: petiole 6–12 cm, minutely papillate; leaf blade broadly ovate to oblong-ovate or narrowly ovate, 15–30 × 6–15 cm, base cordate, abaxially sparsely minutely papillate, adaxially glabrous; cauline leaves shortly petiolate, narrowly ovate, small; ocrea fugacious, membranous. Inflorescence broadly paniculate, large; branches

ascending. Flowers bisexual, dense. Pedicel filiform, slender, articulate below middle (in proximal third, rarely near middle). Inner tepals enlarged in fruit; valves narrowly triangular-ovate, 4–6 × 2–3 mm, usually 1 valve with tubercles, sometimes 3 valves with tubercles, but then 1 tubercle distinctly larger than other 2, base truncate, each margin with 2 or 5 teeth, apex obtuse to subacute; teeth 0.8–1.5 mm, apex straight. Achenes dark brown, shiny, ovoid, sharply trigonous, ca. 2.5 mm. Fl. May–Jun, fr. Jun–Jul. *2n* = 40.

Field margins, moist valleys; sea level to 100 m. Anhui, Gansu, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Zhejiang [Japan, Russia; N Africa, Europe; introduced and naturalized in North America and other regions of the world].

One of us (Grabovskaya-Borodina) suggests that these plants may, in fact, be *Rumex chalepensis*.

19. *Rumex chalepensis* Miller, Gard. Dict., ed. 8, *Rumex* no. 11. 1768.

网果酸模 wang guo suan mo

Rumex dictyocarpus Boissier & Buhse; *R. drobovii* Korovin.

Herbs perennial. Roots black-brown, large, to 2.5 cm in diam. Stems erect, 30–60 cm, grooved, branched. Basal leaves: petiole 3–4 cm; leaf blade oblong, 5–20 × 3–8 cm, both surfaces glabrous, midvein prominent abaxially, base rounded or subcordate, margin slightly undulate, apex obtuse or acute; cauline leaves shortly petiolate, small; ocrea fugacious, membranous. Inflorescence paniculate, large, lax. Flowers bisexual. Pedicel articulate below middle. Outer tepals elliptic; inner tepals enlarged in fruit; valves triangular-cordate, 5–6 mm, all valves with tubercles, conspicuously net veined, base subcordate, margin denticulate, apex acute; denticles 1–1.5 mm; tubercles oblong, ca. 2 mm. Achenes brown, shiny, ellipsoid, sharply trigonous, 2.5–3 mm, base narrow, apex acute. Fl. Apr–May, fr. May–Jun.

Along ditches, moist valleys; 100–1500 m, Anhui, Gansu, Hebei, Henan, Hubei, Jiangsu, Shaanxi, Shandong, Shanxi, Xinjiang, Zhejiang [Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, Kashmir, Turkmenistan; SW Asia, Europe].

20. *Rumex nepalensis* Sprengel, Syst. Veg. 2: 159. 1825.

尼泊尔酸模 ni bo er suan mo

Herbs perennial. Roots large. Stems erect, 50–100 cm tall, branched above, glabrous, grooved. Basal leaves: petiole 4–10 cm; leaf blade broadly ovate, 10–15 × 4–8 cm, both surfaces glabrous or abaxially minutely papillate along veins, base cordate, margin entire, apex acute; cauline leaves shortly petiolate, ovate-lanceolate; ocrea fugacious, membranous. Inflorescence paniculate. Flowers bisexual. Pedicel articulate below middle. Outer tepals elliptic, ca. 1.5 mm; inner tepals enlarged in fruit; valves broadly ovate, 5–6 mm, valves all or 1 or 2 with tubercles, base truncate, each margin with 7 or 8 teeth, apex acute; teeth 1.5–3 mm, apex hooked or straight. Achenes brown, shiny, ovoid, sharply trigonous, ca. 3 mm, base truncate, apex acute. Fl. Apr–May, fr. Jun–Jul.

Grassy slopes, moist valleys, along ditches; 1000–4300 m. S Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, SW Qinghai, S Shaanxi,

Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Indonesia, Japan (introduced), Myanmar, Nepal, Pakistan, Sikkim, Tajikistan, Vietnam; SW Asia].

- 1a. Valves with long denticles; denticles
2.5–3 mm, apex hooked 20a. var. *nepalensis*
1b. Valves with short denticles; denticles
1.5–2 mm, apex straight, sometimes
hooked 20b. var. *remotiflorus*

20a. *Rumex nepalensis* var. *nepalensis*

尼泊尔酸模(原变种) ni bo er suan mo (yuan bian zhong)

Rumex esquirolii H. Léveillé; *R. ramulosus* Meisner.

Valves with long denticles 2.5–3 mm and hooked apex.

Grassy slopes, moist valleys; 1000–4300 m. S Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, SW Qinghai, S Shaanxi, Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, India, Indonesia, Japan (introduced), Myanmar, Nepal, Pakistan, Sikkim, Tajikistan, Vietnam; SW Asia].

20b. *Rumex nepalensis* var. *remotiflorus* (Samuelsson) A. J. Li, Fl. Reipubl. Popularis Sin. 25(1): 161. 1998.

疏花酸模 shu hua suan mo

Rumex remotiflorus Samuelsson in Handel-Mazzetti, Symb. Sin. 7: 167. 1929.

Valves with short denticles 1.5–2 mm, apex straight, sometimes hooked.

- Along ditches; 2700–2800 m. Yunnan.

21. *Rumex dentatus* Linnaeus, Mant. Pl. 2: 226. 1771.

齿果酸模 chi guo suan mo

Rumex dentatus subsp. *halacsyi* (K. Rechinger) K. H. Rechinger; *R. dentatus* subsp. *klotzschianus* (Meisner) K. H. Rechinger; *R. ×halacsyi* K. Rechinger; *R. klotzschianus* Meisner; *R. nipponicus* Franchet & Savatier.

Herbs annual, rarely biennial. Stems erect, 30–70 cm tall, branched from base, grooved; branches ascending to nearly divaricate, glabrous. Lower leaves: petiole 3–5 cm; leaf blade oblong to narrowly elliptic, 4–12 × 1.5–3 cm, both surfaces glabrous, or papillose along veins below, base rounded, truncate, or subcordate, margin slightly undulate, apex obtuse or acute; cauline leaves smaller; ocrea fugacious, membranous. Inflorescence racemose, several racemes aggregated and panicle-like. Flowers bisexual. Pedicel articulate below middle (in proximal third). Outer tepals elliptic, ca. 2 mm; inner tepals enlarged in fruit; valves triangular-ovate, 4–5 × 2.5–3 mm, all valves with tubercles 1.5–2 mm (in some infraspecific taxa of *R. dentatus* only 1 or 2 valves with tubercles), conspicuously net veined, base rounded, each margin with 2–4 teeth, apex acute to subacute; teeth 1.5–2 mm. Achenes yellow-brown, shiny, ovoid, sharply trigonous, 2–2.5 mm, base narrow, apex acute. Fl. May–Jun, fr. Jun–Jul. $2n = 40$.

Moist valleys, mountain slopes; sea level to 2500 m. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Taiwan, Yunnan, Zhejiang [Afghanistan, India, Kazakhstan,

Kyrgyzstan, Nepal, Russia; N Africa, SE Europe].

Rumex dentatus is an extremely variable species represented in N Africa, Asia, and Europe by several quite distinct races, recognized taxonomically mostly as subspecies. A taxon native mostly to E and S Asia (China, India, Japan, and Korea) is usually recognized as *R. dentatus* subsp. *klotzschianus*. *Rumex dentatus* subsp. *halacsyi* (*R. ×halacsyi*) is native to the E Mediterranean region, the Caucasus, SE Europe, and parts of C and SW Asia, and probably also occurs in China. This subspecies differs from subsp. *klotzschianus* in having broader, triangular (not rounded) valves, and longer teeth (to 3 mm). However, subspecies of *R. dentatus* are still insufficiently understood taxonomically and insufficiently delimited geographically.

22. *Rumex trisetifer* Stokes, Bot. Mat. Med. 2: 305. 1812.

长刺酸模 chang ci suan mo

?*Rumex chinensis* Campdera.

Herbs annual. Roots large. Stems erect, 30–80 cm tall, grooved, glabrous; branches spreading. Lower leaves: petiole 3–5 cm; leaf blade oblong or lanceolate-oblong, 8–20 × 2–5 cm, both surfaces glabrous, base cuneate, margin undulate, apex acute; cauline leaves shortly petiolate, narrowly lanceolate, smaller than basal ones; ocrea fugacious, membranous. Inflorescence terminal or axillary, racemose, several racemes aggregated and large panicle-like. Flowers bisexual. Pedicel slender, articulate near base. Outer tepals lanceolate, small; inner tepals enlarged in fruit; valves narrowly trigonous-ovate, 3–4 × 1.5–2 mm, all valves with tubercles, base truncate, margin with 1 pair of narrow teeth, apex narrowly acute; teeth 3–4 mm, straight. Achenes yellow-brown, shiny, ellipsoid, sharply trigonous, 1.5–2 mm, base narrow, apex acute. Fl. May–Jun, fr. Jun–Jul.

Field margins, moist valleys, water sides; sea level to 1300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Laos, Myanmar, Thailand, Vietnam].

23. *Rumex maritimus* Linnaeus, Sp. Pl. 1: 335. 1753.

刺酸模 ci suan mo

Rumex longisetus A. Baranov & B. Skvortzov.

Herbs annual, rarely biennial, especially in S regions. Stems erect, 15–60 cm tall, branched below middle, grooved, glabrous or weakly shortly papillose. Lower leaves: petiole 1–2.5 cm; leaf blade lanceolate or lanceolate-oblong, 4–15(–20) × 1–3(–4) cm, both surfaces glabrous or shortly papillose below, base narrowly cuneate, margin entire and smooth, or occasionally slightly undulate, apex acute, cauline leaves shortly petiolate or nearly sessile, smaller than basal ones; ocrea fugacious, membranous. Inflorescence paniculate. Flowers bisexual. Pedicel filiform, articulate at base or slightly above base, articulation indistinctly swollen. Outer tepals elliptic, ca. 2 mm; inner tepals enlarged in fruit; valves narrowly triangular-ovate, 2.5–3.5 × 0.8–1.5 mm wide, all valves with tubercles, base truncate, each margin with 2 or 3(or 4) teeth, apex acute; teeth 2.5–3 mm, narrow; tubercles oblong, ca. 1.5 mm. Achenes yellow-brown, shiny, ellipsoid, sharply trigonous, 1.5–2 mm. Fl. May–

Jun, fr. Jun–Jul. $2n = 40$.

Field margins, riverbanks, streamsides; sea level to 1800 m. ?Fujian, ?Guangxi, ?Guizhou, ?Hainan, Hebei, Heilongjiang, Henan, ?Hubei, ?Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, ?Shandong, Shanxi, ?Taiwan, Xinjiang [Kazakhstan, Mongolia, Myanmar, Russia (Far East, Siberia); Europe; introduced in North America].

Rumex maritimus s.str. is native to Asia and Europe, but it is nearly absent from E Asia, where it is substituted by closely related and/or similar species. Previous records of *R. maritimus* from North America (except several localities of introduced plants) were also mainly based on misidentifications of related taxa (mostly *R. persicarioides* Linnaeus and *R. fueginus* Philippi). Because of that, earlier literature records of *R. maritimus* should be critically verified. Distribution patterns of *R. maritimus* and similar taxa (see below) in China need clarification.

24. *Rumex similans* K. H. Rechinger, Candollea 12: 133. 1949.

蒙新酸模 meng xin suan mo

Rumex marschallianus var. *brevidens* Bongard & C. A. Meyer.

Herbs annual. Stems erect, purplish red, 15–30 cm tall, branched from base, finely grooved. Lower leaves: petiole 1–3 cm; leaf blade oblong or lanceolate-oblong, 3–7 × 0.8–2 cm, both surfaces glabrous, with conspicuous midvein, base rounded or broadly cuneate, margin slightly crisped, apex acute, cauline leaves shortly petiolate or nearly sessile, small, upper ones linear-lanceolate; ocrea fugacious, membranous. Inflorescence terminal, racemose, leafy. Flowers bisexual. Pedicel articulate at base. Outer tepals lanceolate, ca. 0.5 mm; inner tepals enlarged in fruit; valves triangular-ovate, 2–2.5 × 1–1.5 mm, all valves with tubercles, base rounded, each margin with 3 or 4 pairs of narrow teeth, apex narrowly acute; teeth 1–1.5 mm. Achenes shiny, ovoid, 1–1.5 mm, sharply trigonous, apex acute. Fl. Jun–Jul, fr. Jul–Aug.

Waste areas, saline deserts and sands; 400–1000 m. Nei Mongol, Xinjiang [Kazakhstan, Mongolia, Russia (SW Siberia); SE Europe].

25. *Rumex marschallianus* Reichenbach, Iconogr. Bot. Pl. Crit. 4: 58. 1826.

单瘤酸模 dan liu suan mo

Herbs annual. Stems erect, 10–30(–50) cm tall, branched from base, glabrous, finely grooved. Lower leaves: petiole 1–1.5 cm, slender; leaf blade lanceolate or elliptic-lanceolate, 1.5–5 × 0.7–1.5 cm, both surfaces glabrous, midvein conspicuous, base cuneate or rounded, margin slightly crisped, apex acute; cauline leaves small, with short petiole 3–5 mm. Inflorescence racemose, several racemes aggregated and panicle-like, leafy. Flowers bisexual. Pedicel slender, articulate at base. Outer tepals elliptic; inner tepals enlarged in fruit; valves ovate-triangular, 2.5–3 mm, only 1 valve with tubercle, base rounded, each margin with 2 or 3 narrow teeth (ca. 1.5 or) 4–5 mm, apex narrowly acute; others without tubercles, with shorter teeth, or all valves with subequal teeth. Achenes brown, shiny, ovoid, sharply trigonous, ca. 1 mm, base truncate, apex acute. Fl. Jun–Jul, fr. Jul–Aug.

Riverbanks, waste areas, in sand of lakeshores, moist valleys; 300–1000 m. Nei Mongol, Xinjiang [Kazakhstan, Mongolia, Russia].

26. *Rumex amurensis* F. Schmidt ex Maximowicz, Prim. Fl. Amur. 228. 1859.

黑龙酸模 hei long suan mo

Herbs annual. Stems erect, 10–30 cm tall, branched from base, glabrous. Lower leaves: petiole 1–2.5 cm, slender; leaf blade oblanceolate or narrowly oblong, 2–7 × 0.3–1.2 cm, both surfaces glabrous, midvein conspicuous, base narrowly cuneate, margin slightly crisped, apex obtuse or acute; cauline leaves with short 2–5 mm petiole, leaf blade linear-lanceolate; ocrea

fugacious, membranous. Inflorescence racemose, several racemes aggregated and panicle-like, leafy. Flowers bisexual. Pedicel articulate at base. Outer tepals elliptic, smaller; inner tepals enlarged in fruit; valves triangular-ovate, all with tubercles; only 1 valve with 2 pairs of narrow teeth; teeth 3.5–4 mm, straight or slightly curved at apex, other valves shortly denticulate. Achenes brownish, shiny, ellipsoid, sharply trigonous, ca. 1.5 mm, base narrow, apex acute. Fl. May–Jun, fr. Jun–Jul.

Streamsides, ditches, wet areas; sea level to 300 m. Anhui, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Shandong [Russia (Far East)].

27. *Rumex microcarpus* Campdera, Monogr. Rum. 143. 1819.

小果酸模 xiao guo suan mo

Rumex wallichianus Meisner; *R. wallichii* Meisner.

Herbs annual. Stems erect, 40–80 cm tall, branched above, glabrous, grooved. Lower leaves: petiole 2–4 cm; leaf blade oblong, 10–15 × 2–5 cm, both surfaces glabrous, midvein large, base cuneate, margin entire, apex acute or subobtusate; cauline leaves shortly petiolate, narrowly elliptic; ocrea fugacious, membranous. Inflorescence paniculate, usually leafy. Flowers bisexual. Pedicel slender, articulate near base. Perianth yellow-green; outer tepals lanceolate, ca. 1 mm; inner tepals enlarged in fruit; valves narrowly triangular-ovate, 3–4 × 1.5–2 mm, all valves with tubercles, base truncate, margin entire, apex acute; tubercles oblong, 1.5–2 mm. Achenes brown, shiny, ovoid, sharply trigonous, 1–2 mm. Fl. Apr–Jun, fr. May–Jul.

Moist valleys, field margins; sea level to 2200 m. Guangxi, Guizhou, ?Hainan, Hebei, Henan, Hubei, Jiangsu, Liaoning, Taiwan, Yunnan [India, Vietnam].

