60. RORIPPA Scopoli, Fl. Carniol. 520. 1760.

沸菜属 han cai shu

*Tetrapoma* Turczaninow ex Fischer & C. A. Meyer.

Herbs annual, biennial, or perennial, usually of wet or aquatic habitats. Trichomes absent or simple. Stems erect or prostrate, simple or branched, leafy. Basal leaves petiolate, rosulate or not, simple, entire, dentate, sinuate, lyrate, pectinate, or 1–3-pinnatisect. Cauline leaves petiolate or sessile, cuneate, attenuate, auriculate, or sagittate at base, entire, dentate, pinnatifid, or pinnatisect. Racemes ebracteate or rarely bracteate throughout, elongated in fruit. Sepals ovate or oblong, erect or spreading, base of lateral pair not saccate or rarely saccate, margin often membranous. Petals yellow, sometimes white or pink, rarely vestigial or absent; blade obovate, spatulate, oblong, or obovate-oblong, apex obtuse or emarginate; claw sometimes distinct, often shorter than sepals. Stamens 6 and tetradymanous, rarely 4 and equal in length; anthers ovate or oblong, obtuse or rarely apiculate at apex. Nectar glands confluent, often subtending bases of all stamens; median glands narrow; lateral glands semiannular and intrastaminal, or anular. Ovules 10–300 per ovary. Fruit dehiscent siliques or silicles, linear, oblong, ovoid, ellipsoid, or globose, terete or slightly latiseptate, sessile or rarely shortly stipitate; valves 2(–3–6), papery or leathery, veinless or obscurely veined, smooth or torulose; replum round; septicidal; or rarely perforated, membranous, translucent, veinless; style obsolete or distinct; stigma capitate, entire or slightly 2-lobed. Seeds biseriate or rarely uniseriate, wingless or rarely winged, oblong, ovoid, or ellipsoid, plump; seed coat reticulate, colliculate, rugose, tuberculate, or foveolate, mucilaginous or not when wetted; cotyledons accumbent.

About 75 species: worldwide; nine species in China.

1a. Racemes ebracteate or rarely along lowermost third.

2a. Fruits ovate or oblong, 3–6(–8) mm; seeds colliculate. 4. *R. benghalensis*

2b. Fruits ovate or oblong, 0.3–0.7–2(–3) mm; seeds foveolate. 5. *R. cantoniensis*

1b. Racemes ebracteate, rarely lowermost 1 or 2 flowers bracteate.

3a. Fruits ovate or oblong, 0.7–1.5 × 0.3–1.1 mm; seeds colliculate. 6. *R. elata*

3b. Fruits ovate or oblong, 1.1–1.5 × 0.7–1.1 mm; seeds colliculate. 7. *R. indica*

4b. Fruits ovate or oblong, 0.4–0.9 × 0.3–0.6 mm; seeds foveolate. 8. *R. palustris*

5a. Fruits ovate or oblong, 1.5–2.0 × 0.5–1.0 mm; seeds colliculate. 9. *R. barbareifolia*

6b. Fruits linear, 4.5–8.5 × 1.5–2.5 mm; seeds colliculate. 10. *R. indica*

7b. Fruits ovate or oblong, 1.5–2.0 × 0.5–1.0 mm; seeds foveolate. 11. *R. barbareifolia*


欧亚沸菜 ou ya han cai


Herbs perennial, 5–80 cm tall, glabrous or sparsely pubescent. Stems prostrate, decumbent, ascending, or suberect, branched mainly basally. Rosette leaves soon withered, similar to cauline leaves. Middle cauline leaves petiolate, deeply pinnatisect; petiole not auriculate; rarely minutely auriculate; leaf blade 2.5–4 × 0.7–1 cm; lateral lobes 3–6 × 0.7–1 cm; leaf blade 2.5–4 × 0.7–1 cm; lateral lobes 3–6 cm long on the side of midvein, sublinear, lanceolate, oblong, elliptic, or ovate, margin dentate or serrate, sometimes subentire; uppermost leaves with 1–3 lateral lobes or not lobed, often subessellate. Racemes ebracteate. Fruiting pedicels 3–4 × 10(–12) mm, slender, divaricate.
Sepals green or yellow, oblong, 1.8–3(–3.5) × 0.7–1.5 mm, ascending or spreading. Petals yellow, spatulate or obovate, (2.2–)2.8–5.5(–6) × 1.5–2.5 mm, apex rounded. Filaments (1.5–)1.8–3.5(–4) mm; anthers oblong, 0.7–1 mm. Ovule number highly variable, mostly aborted. Fruit linear, very rarely oblong-linear, (0.4–)0.7–2(–2.5) cm × (0.7–)1–1.5(–1.6) mm, rarely producing seeds; style 0.5–1(–1.5) mm; stigma subentire or slightly 2-lobed. Seeds reddish brown, ovoid, colliculate, uniseriate or rarely subbiseriate, 0.6–0.9 × 0.4–0.5 mm. Fl. and fr. May–Sep. 2n = 32, 40, 48.

Along ditches, ramp areas, meadows, waste grounds, fields; 100–2000 m. Xinjiang, Liaoning [India, Japan, Kashmir, Russia, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bangladesh, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sikkim, Thailand, Vietnam; naturalized in North and South America].

Although the present authors have not examined the type of *Rorippa liaotungensis*, the detailed description and illustration leave no doubt that it is a synonym of *R. sylvestris*, hundreds of specimens of which were examined from its native and naturalized ranges.


*Sisymbrium indicum* Linnaeus, Sp. Pl., ed. 2, 2: 917. 1763; *Cardamine glandulosa* Blanco; *C. lamontii* Hance; *Nasturtium atrovirens* (Hornemann) de Candolle; *N. diffusum* de Candolle; *N. indicum* (Linnaeus) de Candolle (1821), not Garsault (1764); *N. montanum* Wallich ex J. D. Hooker & Thomson; *N. sinapis* (N. L. Burman) O. E. Schulz; *Radicula montana* (Wallich ex J. D. Hooker & Thomson) Hu ex C. Pei; *Rorippa atrovirens* (Hornemann) Ohwi & H. Hara; *R. montana* (Wallich ex J. D. Hooker & Thomson) Small; *R. spinosa* (N. L. Burman) Ohwi & H. Hara; *S. atrovirens* Hornemann; *S. sinapis* N. L. Burman.

Herbs annual, (4–)20–60–(75) cm tall, glabrous or rarely sparsely pubescent. Stems often branched basally and apically. Basal leaves withered by flowering. Lower and middle cauline leaves auriculate or not; petiole to 4 cm, rarely absent; leaf blade lyrate-pinnatifid or undivided, obovate, oblong, or lanceolate, (2–)3–11(–15) × (0.5–)1–3(–5) cm, margin entire or irregularly crenate or serrate, apex obtuse or subacute; terminal lobe oblong, elliptic, or oblanceolate, to 14 × 4 cm; lateral lobes absent or 1–4 on each side of midvein. Uppermost leaves usually sessile, auriculate or not; leaf blade lanceolate or oblanceolate, margin entire or serrulate, apex acute or acuminate. Racemes ebracteate. Fruiting pedicels slender, divaricate, straight, (2–)3–8(–10) mm. Sepals often pinkish, ascending, oblong-linear, (2–)2.5–3 × 0.5–0.7 mm, margin membranous. Pedals mostly absent, rarely present and linear or narrowly oblanceolate, 1.5–2.5 × 0.2–0.7(–1) mm, often shorter than sepals. Filaments 1.5–2.8 mm; anthers oblong, 0.5–0.8 mm. Ovules 70–90 per ovary. Fruit linear, (1.5–)2.5–4 cm × 0.7–0.9(–1) mm; valves thin papery, not veined; style 0.2–1(–1.5) mm, stout and about as wide as fruit, rarely slender and narrower. Seeds reddish brown, subquadrate or ovate-oblanceolate, 0.5–0.8 × 0.4–0.6 mm, foveolate, uniseriate. Fl. and fr. throughout the year. 2n = 32*, 48*.

Valleys, waste areas, slopes, roadsides, wet grounds, grassy places, field margins; near sea level to 3700 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bangladesh, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam; naturalized in North and South America].


孟加拉沸菜 meng jia la han cai

Nasturtium benghalense de Candolle, Syst. Nat. 2: 198. 1821, not Hance (1873); N. diffusum de Candolle; N. indicum (Linnaeus) var. benghalense (de Candolle) J. D. Hooker & T. Anderson; Rorippa dubia (Persoon) H. Harra var. benghalensis (de Candolle) Mukerjee; R. indica (Linnaeus) subsp. benghalensis (de Candolle) Bennet; R. indica var. benghalensis (de Candolle) Debeaux.

Herbs annual, 5–10–35–45 cm tall, glabrous throughout, sometimes sparsely with semiglobose papillae 0.05–0.1 mm. Stems erect or decumbent, branched basally and above, rarely simple. Basal leaves petiolate, rosulate, soon withered, lyrate, pinnatisect, or bipinnatisect, up to 10 × 3 cm, with up to 12 lateral lobes on each side of midvein. Cauline leaves and bracts sessile or rarely petiolate throughout, auriculate or sagittate at base, lyrate, pinnatisect, or bipinnatisect, rarely sinuate or toothed, (0.3–)1.5–5–(7) × (0.3–)0.8–2.3–(3) cm; lateral lobes 2–6(or 7) on each side of midvein, to 10 × 5 mm, incised, dentate, or entire. Racemes bracteate throughout; bracts rarely adnate to pedicel. Fruiting pedicels stout, ascending, (0.3–)0.7–2 (–3) mm. Sepals oblong or subelliptic, 1.5–2–(2.5) × 0.5–0.8 mm. Petals pale yellow, obovate or narrowly spatulate, 2–3 (–3.5) × 0.5–1 mm. Filaments 1.5–2 mm; anthers oblong, 0.3–0.4 mm. Ovules 100–230 per ovary. Fruit broadly or narrowly oblong, (3–)4.5–8.5 (–10) × 1.5–2.5 mm; valves thin papery, veinless; style 0.1–0.5 mm. Seeds reddish brown, ovate or ovate-reniform, foveolate, biseriate, (0.3–)0.4–0.6 × 0.2–0.3–0.4 mm. Fl. and fr. Feb–Nov.

Fields, roadsides, valleys, river banks, along irrigation ditches, waste places, damp areas; near sea level to 1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea, Russia (Far East), Vietnam].


Ricicia elata Barbarea elata J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 5: 140. 1861; Nasturtium barbareifolium Fedtschenko (1812), not Baker (1877), nor (de Candolle) B. Fedtschenko (1912); N. elatum (J. D. Hooker & Thomson) Kuntze ex O. E. Schultz.

Herbs annual or short-lived perennial, (20–)30–90 (–100) cm tall, sparsely to rarely densely hirsute, glabrous or glabrescent above. Stems erect, simple at base, often branched above. Basal leaves not petiolate, soon withered, petiolate. Lowermost and middle cauline leaves often petiolate; petiole auriculate-amplexicaul at base, (0.5–)1.5–6–(8) cm; leaf blade lyrate or lyrate-pinnatifid, sometimes sinuate or undivided, oblong to oblanceolate, (1.5–)2.5–10 (–14) × (0.5–)1–4 (–5) cm, margin crenate; lateral lobes 1–5–(8) on each side of midvein, oblong or ovate, to 2.5 × 1.2 cm; terminal lobe oblong or elliptic, to 10 × 4 cm, much larger than lateral
ones. Uppermost cauline leaves sessile, often undivided, crenate or rarely sinuate. Racemes ebracteate, to 20–40 cm in fruit. Fruiting pedicels (5–)6–10 (–13) mm, erect to erect-ascending, subapressed to rachis. Sepals oblong, 2–3 × 1–1.5 mm. Petals yellow, obovate, 3–4 × 1.5–2 mm, apex obtuse. Filaments 2–3 mm; anthers narrowly oblong, 0.8–1 mm. Ovules 36–60 per ovary. Fruit linear or oblong-linear, (0.8–)1.2–2(–2.3) cm × 2.5–4 mm; valves with a distinct midvein and obscure other veins, subleathery, obtuse at both ends or reutse apically; style 0.5–1.5 (–2) mm. Seeds brown or yellowish brown, ovate, slightly compressed, biseriate, 1.1–1.5 × 0.7–1.1 mm, colliculate. Fl. May–Aug. fr. Jun–Oct. 2n = 32*. 

Sunny grasslands, mountain slopes, forest margins, woodlands, streamsides, meadows, shady ditchesides, roadsides; 2300–4500 m. Qinghai, Shaanxi, Sichuan, Xizang, NW Yunnan [Bhutan, Sikkim]. Three-valved fruits are occasionally produced on misidentified plants with 2-valved fruit, as seen in T. T. Yu 14587 (A, BM).


_Nasturtium globosum_ Turczaninow ex Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 35. 1835; _Camelina yunnanensis_ W. W. Smith; _Cochlearia globosa_ (Turczaninow) Ledebour; _N. cantoniense_ Hance. Herbs annual or short-lived perennial, (20–)30–90 (–120) cm tall, densely villous or hirsute at least near base, rarely glabrous above. Stems erect, simple at base, branched above. Basal leaves resolute, soon withered; petiole 1–4 cm; leaf blade lyrate-pinnatifid or subruncinate. Lower and middle cauline leaves sessile, lanceolate, oblanceolate, or oblong, 2.5–10 (–15) × 0.3–2.5 (–4) cm, hirsute, lyrate-pinnatifid and with 1–3 lateral lobes on each side of midvein, sometimes leaves not lobed, base auriculate or amplexicaul, margin irregularly dentate, incised, or serrate, apex acute; terminal lobe not distinct or well developed and to 8 × 4 cm; uppermost leaves undivided, serrate, dentate, or serrulate. Racemes ebracteate. Fruiting pedicels divaricate, (2–)4–8 (–10) mm, straight or slightly recurved, slender, glabrous or hirsute. Sepals oblong, spreading, (1–)1.3–1.8 (–2) × 0.5–0.9 mm. Petals yellow, obovate, 0.7–1.3 × (1.5–)2.2 (–3.8) × 0.3–0.8 mm, apex obtuse. Filaments spreading, 1.2–1.8 (–2) mm; anthers oblong, 0.4–0.5 mm. Ovules 60–100 per ovary. Fruit globose or subglobose, 2.8–4 (–4.3) mm; valves (3 or)4 (–6); leathery, glabrous, not veined; gynophore 0.3–0.8 (–1) mm; style stout, 0.5–1 (–1.4) mm. Seeds dark reddish brown, oblong-ovate, 0.5–0.7 × 0.3–0.4 mm, reticulate. Fl. & fr. Mar–Aug. 2n = 16. 

Forest borders, roadsides, moist areas, river banks; 100–2100 m. Heilongjiang, Jilin, NE Mongolia [Mongolia, Russia; North America (Alaska, N Canada)].


_Sisymbrium amphibium_ Linnaeus var. _palustre_ Linnaeus, Sp. Pl. 2: 657. 1753; _Cardamine palustris_ (Linnaeus) Kuntze; _Nasturtium densiflorum_ Turczaninow; _N. palustre_ (Linnaeus) de Candolle; _N. palustre_ f. _longipes_ Franchet; _N. palustre_ f. _stoloniferum_ Franchet. Herbs annual or rarely short-lived perennial, (5–)10–100 (–140) cm tall, glabrous, rarely hirsute. Stems erect, simple or often branched above, ribbed. Basal leaves resolute, withered early; leaf blade lyrate-pinnatisept, (4–)6–20 (–30) × 1–5 (–8) cm. Cauline leaves petiolate or sessuissile, auriculate or amplexicaul, lyrate-pinnatisept, (1.5–)2.5–8 (–12) × (0.5–)0.8–2.5 (–3) cm; lateral lobes oblong or ovate, smaller than terminal lobe, (1 or)2–6 (or 7) on each side of midvein, sometimes absent, margin subentire or irregularly dentate, sinuate,
serrate, or crenate. Racemes ebracteate. Fruiting pedicels divaricate or slightly to strongly reflexed, (2.5–)3–8(–12) mm, slender, straight or curved. Sepals oblong, 1.5–2.4(–2.6) × 0.5–0.8 mm. Petals yellow or pale yellow, spatulate, (1.5–)1.8–2.6(–3) × 0.5–1.3(–1.5) mm. Filaments 1–2.5 mm; anthers ovate, 0.3–0.5 mm. Ovules 20–90 per ovary. Fruit oblong, ellipsoid, or oblong-ovoid, often slightly curved, (2.5–)4–10(–14) × (1.5–)1.7–3(–3.5) mm; valves not veined; style 0.2–1(–1.2) mm. Seeds brown to yellowish brown, ovoid or subglobose, colliculate, biseriate, 0.5–0.9 × 0.4–0.6 mm. Fl. and fr. Mar–Oct. 2n = 32.

Marshlands, pastures, meadows, roadsides, shores of lakes and ponds, streambanks, thickets, grasslands; near sea level to 4000 m. Anhui, Gansu, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan [Afghanistan, Bhutan, India, Japan, Kazakhstan, Korea, Mongolia, Nepal, Pakistan, Russia, Sikkim, Tajikistan, Turkmenistan, Uzbekistan; Europe, North America; introduced in Australia, South America, and elsewhere].

All records of Rorippa islandica (Oeder ex Murray) Borbély from China are based on misidentifiable plants of R. palustris. Plants of the former are prostrate diploids (2n = 16) restricted to Europe and W Russia; they have nonauriculate cauline leaves, sepals and petals 1–1.5 mm, and fruit often 2–3(–5) × longer than the pedicels. By contrast, plants of R. palustris are widespread, erect tetraploids (2n = 32) with auriculate cauline leaves, sepals and petals 1.5–2.6 mm, and fruit shorter than to 2 × longer than the pedicels.

* Rorippa palustris is highly variable and has been divided into as many as four subspecies and seven varieties, all of which are indigenous to North America; only subsp. palustris is also indigenous in Eurasia.