

3. MYRICARIA Desvaux, Ann. Sci. Nat. (Paris) 4: 349. 1825.

水柏枝属 shui bai zhi shu

Myrtama Ovczinnikov & Kinzikaëva; *Tamaricaria* Qaiser & Ali.

Shrubs, rarely subshrubs, deciduous, erect or prostrate. Leaves simple, alternate, sessile, usually densely arranged on green young branches of current year, margin entire. Flowers bisexual, shortly petiolate, clustered into terminal or lateral racemes or panicles; bracts broadly or narrowly membranous along margin. Calyx 5-fid; lobes often membranous along margin. Petals 5, pink, white, or purplish red, obovate, narrowly elliptic, or obovate-oblong, apex obtuse or emarginate, often incurved, usually persistent in fruit. Stamens 10: 5 long and 5 short; filaments ca. 1/2 or 2/3 united, rarely free; anthers 2-thecate, longitudinally dehiscent, yellow. Pistils consisting of 3 carpels; ovary 3-angled; placentation basal; ovules numerous; stigmas capitate, 3-lobed. Capsule 3-septical. Seeds numerous, apex awned; awns white villous throughout or on more than half; endosperm absent.

About 13 species: Asia, Europe; ten species (four endemic) in China.

Because *Myricaria laxa* W. W. Smith (Notes Roy. Bot. Gard. Edinburgh 14: 123. 1923) was only very briefly described, its identity cannot yet be determined; it requires further study.

Many Chinese specimens in United States herbaria are determined as *Myricaria dahurica* (Willdenow) Ehrenberg (Linnaea 2: 278. 1827). However, further study is needed to ascertain if these identifications are correct and if this species actually occurs in China.

1a. Shrubs prostrate or decumbent.

2a. Branches prostrate; racemes 1–4-flowered 1. *M. prostrata*

2b. Old branches decumbent, young ones erect; racemes many flowered 2. *M. rosea*

1b. Shrubs erect.

3a. Leaves lax, usually 5–15 × more than 2 mm.

4a. Leaves lanceolate or oblong-lanceolate, base attenuate; filaments only united at base 3. *M. elegans*

4b. Leaves broadly ovate, cordate, base dilated; filaments ca. 1/2 or 1/3 united.

5a. Leaves basally deeply cordate, amplexicaul; racemes usually terminal 4. *M. pulcherrima*

5b. Leaves basally not cordate, nor amplexicaul; racemes usually lateral 5. *M. platyphylla*

3b. Leaves dense, usually 1.5–5 × less than 2 mm.

6a. Sepals 1.5–2 mm; petals 3–4.5 mm; bracts lanceolate, 3–4 mm 6. *M. wardii*

6b. Sepals 2–4 mm; petals 4–6 mm; bracts broadly ovate, elliptic, or ovate-lanceolate.

7a. Inflorescences lateral, or several clustered and axillary, base with numerous persistent imbricate scales 7. *M. squamosa*

7b. Inflorescences usually terminal, or both terminal and axillary, base with or without imbricate scales.

8a. Inflorescences of two types; those in spring racemose, lateral, and those in summer and autumn paniculate, terminal, lax 8. *M. paniculata*

8b. Inflorescences of one type, racemose, terminal.

9a. Racemes dense, nearly spikelike; bracts broadly ovate 9. *M. bracteata*

9b. Racemes lax; bracts lanceolate to ovate-lanceolate 10. *M. laxiflora*

1. Myricaria prostrata J. D. Hooker & Thomson in Bentham & J. D. Hooker, Gen. Pl. 1: 161. 1862.

匍匐水柏枝 pu fu shui bai zhi

Myricaria germanica (Linnaeus) Desvaux var. *prostrata* Dyer; *M. hedinii* Paulsen.

Shrubs prostrate, dwarf, 5–14 cm tall. Branches of previous year red-brown, slender, often rooting. Leaves clustered in branches of current year, oblong, narrowly elliptic, or ovate, 2–5 × 1–1.5 mm, margin narrowly membranous, apex obtuse. Racemes globose, lateral on branches of previous year, dense, often consisting of 1–3, rarely 4 flowers. Pedicels very short, 1–2 mm, with ovate or oblong imbricate scales at base; bracts ovate or elliptic, 3–5 × 1.5–3 mm, longer than pedicels, margin narrowly membranous, apex obtuse. Sepals ovate-lanceolate or oblong, 3–4 × 1–2 mm, margin narrowly membranous, apex obtuse. Petals purplish to pink, obovate or obovate-oblong, 4–6 × 2–4 mm; filaments ca. 2/3 united, rarely nearly free and united only at base. Ovary ovoid; stigmas capitate, sessile. Cap-

sule conic, 8–10 mm. Seeds oblong, ca. 1.5 mm, apex awned; awns stout, white villous throughout. Fl. and fr. Jun–Aug.

Sandy places in river valleys in high mountains, sandy places at lakesides, rocky mountain slopes, streamsides; 4000–5200 m. Gansu, Qinghai, Xinjiang, Xizang [India, Pakistan; C Asia].

2. Myricaria rosea W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 52. 1917.

卧生水柏枝 wo sheng shui bai zhi

Shrubs recumbent, ca. 1 m tall, much branched. Old branches recumbent, red-brown or purple-brown; young branches erect or oblique, ascending, greenish. Leaves lanceolate, linear-lanceolate, or ovate-lanceolate, falcately curved, 5–8(–15) × 1–2 mm, base slightly narrow, margin narrowly membranous, apex obtuse or acute; green branchlets often in leaf axils; leaves on such branchlets smaller. Racemes terminal, clustered into spikes; inflorescence branches yellow-green or purplish red, often exceeding leafy branches, robust, with sparse linear-lanceolate or ovate-lanceolate bracts in lower part;

bracts yellow-green, leaflike, 7–15 × ca. 2 mm; bracts under flowers lanceolate, 6–10 × ca. 2 mm, equaling or slightly exceeding petals. Pedicels ca. 2 mm. Sepals linear-lanceolate or ovate-lanceolate, 2–4(–6) × 1–1.5 mm, slightly shorter than petals, margin narrowly membranous, apex acute. Petals pink or purple-red, narrowly obovate or narrowly elliptic, 5–7 × 2–4 mm, withering and persistent. Filaments ca. 1/2 or 2/3 united, shorter than petals. Ovary conic, 3–6 mm. Capsule narrowly conic, 8–10(–15) mm, 3-septical. Seeds awned; awns white villous nearly throughout. Fl. May–Jul, fr. Jul–Aug.

Rocky mountain slopes, riversides in high mountains; 2600–4600 m. SE Xizang, NW Yunnan [Bhutan, India, Nepal].

3. Myricaria elegans Royle, Ill. Bot. Himal. Mts. 214. 1839.

秀丽水柏枝 xiu li shui bai zhi

Shrubs or small trees, ca. 5 m tall. Old branches red-brown or dark purple, branches of current year green or red-brown. Leaves usually in green branchlets of current year, sessile, narrowly elliptic, elliptic-lanceolate, or ovate-lanceolate, relatively large, 5–15 × 2–3 mm, base narrow, margin narrowly membranous, apex obtuse or acute. Racemes usually lateral, rarely terminal; bracts ovate or ovate-lanceolate, sometimes narrowly lanceolate, (3–)4–5 × 2–3 mm, margin broadly membranous, apex acuminate. Pedicels 2–3 mm. Sepals ovate-lanceolate, triangular-ovate, or ovate, (1–)2 × ca. 1 mm, ± united at base, margin broadly membranous, apex obtuse. Petals white, pink or purple-red, obovate, obovate-elliptic, or elliptic, or narrowly obovate or obovate-lanceolate, to 5–6 × 2–3 mm, base gradually narrowing, apex obtuse. Stamens slightly shorter than petals; filaments united at base; anthers oblong. Ovary conic, ca. 5 mm; stigmas capitate, sessile, 3-lobed. Capsule narrowly conic, ca. 8 mm. Seeds oblong, ca. 1 mm, apex awned; awns white villous throughout. Fl. Jun–Jul, fr. Aug–Sep.

River banks, riversides, sandy places at lakesides; 3000–4300 m. SW Xinjiang, NW and SE Xizang [India, Pakistan].

- 1a. Racemes usually lateral; bracts ovate or ovate-lanceolate, 4–5 mm; sepals ca. 2 mm; petals 5–6 mm 3a. var. *elegans*
- 1b. Racemes usually terminal; bracts narrowly lanceolate, ca. 3 mm; sepals ca. 1 mm; petals less than 5 mm 3b. var. *tsetangensis*

3a. Myricaria elegans var. *elegans*

秀丽水柏枝(原变种) xiu li shui bai zhi (yuan bian zhong)

Myrtama elegans (Royle) Ovczinnikov & Kinzikaëva; *Tamaricaria elegans* (Royle) Qaiser & Ali; *Tamarix ladachensis* B. R. Baum.

Racemes usually lateral; bracts ovate or ovate-lanceolate, 4–5 mm. Sepals ca. 2 mm. Petals 5–6 mm.

River banks, sandy places at lakesides; 3000–4300 m. SW Xinjiang, NW Xizang [India, Pakistan].

3b. Myricaria elegans var. *tsetangensis* P. Y. Zhang & Y. J. Zhang, Bull. Bot. Res., Harbin 4(2): 73. 1984.

泽当水柏枝 ze dang shui bai zhi

Racemes usually terminal, large, 20–32 cm; bracts narrowly lanceolate, ca. 3 mm. Sepals ovate, small, ca. 1 mm, margin membranous. Petals narrowly obovate or obovate-lanceolate, less than 5 mm.

- Riversides; ca. 3500 m. SE Xizang.

4. Myricaria pulcherrima Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 11: 483. 1891.

心叶水柏枝 xin ye shui bai zhi

Shrubs or subshrubs, 1–1.5 m tall. Stem usually simple, rarely much branched; old branches red-brown; branches of current year reddish or gray-green. Leaves lax, cordate or broadly ovate, relatively large, 5–10(–18) × 6–7 mm, abruptly narrowing upward from middle, base enlarged and deeply cordate, amplexicaul, apex acuminate; green branchlets often in leaf axils; leaves on such branchlets smaller and denser. Racemes usually terminal, 2–12 cm; bracts yellow-white, broadly ovate, 5–6 mm, equaling or slightly shorter than calyx, thickening at middle, margin broadly membranous and pellucid, apex acute or acuminate. Pedicels 2–3 mm. Sepals ovate-oblong or ovate-lanceolate, ca. 4 × 2 mm, margin narrowly membranous, apex obtuse. Petals purple-red or pinkish, obovate or narrowly elliptic, ca. 7 × 3 mm, apex obtuse. Filaments ca. 1/2 united. Ovary conic or narrowly ovate, ca. 6 mm; stigmas 3-lobed. Capsule conic, 1.5–1.6 mm, ca. 4 × exceeding calyx. Seeds awned; awns more than 1/2 white villous. Fl. and fr. Jun–Sep.

- Sandy places on river banks, lowlands among mountains. S Xinjiang.

5. Myricaria platyphylla Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 425. 1881.

宽叶水柏枝 kuan ye shui bai zhi

Shrubs erect, ca. 2 m tall, much branched. Old branches red-brown or gray-brown; branches of current year gray-white or yellow-gray. Leaves lax, spreading, broadly ovate or elliptic, relatively large, 7–12 × 3–8 mm, base enlarged and rounded or broadly cuneate, not amplexicaul, apex acuminate; numerous green branchlets often in leaf axils; leaves on such branchlets smaller, ovate or narrowly elliptic, 5–7 × 3–4 mm. Racemes lateral, rarely terminal, 9–14 cm, with numerous imbricate scales at base; scales ovate, margin broadly membranous; bracts broadly ovate or elliptic, ca. 7 × 4 mm, slightly shorter than calyx, base narrow, cuneate, margin broadly membranous, apex obtuse. Pedicels ca. 2 mm. Sepals narrowly elliptic or ovate-lanceolate, 4–5 × 1.5–2.5 mm, slightly shorter than petals, margin narrowly membranous, apex obtuse. Petals reddish or pinkish, obovate, 5–6 mm, base narrow, apex obtuse. Filaments ca. 2/3 united. Ovary ovoid-orbicular, ca. 5 mm; stigmas capitate. Capsule conic, ca. 1 cm. Seeds numerous, oblong, apex awned; awns white villous throughout. Fl. Apr–Jun, fr. Jul–Aug.

- Sandy places on river banks, sandy slopes, lowlands between mobile sand dunes; ca. 1300 m. Nei Mongol, Ningxia, NW Shaanxi.

6. Myricaria wardii Marquand, J. Linn. Soc., Bot. 48: 166. 1929.

小花水柏枝 xiao hua shui bai zhi

Shrubs erect, 1–2 m tall. Old branches red-brown or purple-brown; branches of current year red-brown. Leaves linear-lanceolate, ovate-lanceolate, or oblong, 1.5–3 × 0.5–1 mm, base slightly enlarged, margin narrowly membranous, apex obtuse or acute. Racemes lateral or terminal, lax; bracts usually purple, or only so in lower part, greenish in upper part, lanceolate or ovate-lanceolate, 3–4 × ca. 1 mm, margin narrowly membranous, apex acuminate. Flowers small, less than 5 mm. Pedicels 1–2 mm. Sepals lanceolate, 1.5–2 mm, less than 1/2 as long as petals, margin narrowly membranous. Petals purplish, narrowly obovate or narrowly elliptic, 3–4.5 × 1–2 mm, apex incurved. Stamens shorter than petals; filaments ca. 2/3 united. Ovary conic, 2.5–5 mm, apex attenuate; stigmas capitate, 3-lobed. Capsule conic, 9–11 mm. Seeds oblong, ca. 1.5 mm, awned; awns white villous throughout. Fl. and fr. May–Aug.

Sandy places at riversides; 3000–4000 m. SE Xizang [Nepal].

7. *Myricaria squamosa* Desvaux, Ann. Sci. Nat. (Paris) 4: 350. 1825.

具鳞水柏枝 ju lin shui bai zhi

Myricaria germanica (Linnaeus) Desvaux var. *squamosa* (Desvaux) Maximowicz.

Shrubs erect, 1–5 m tall, much branched in upper part. Old branches purple-brown, red-brown, or gray-brown; branches of current year yellowish green to red-brown. Leaves lanceolate, ovate-lanceolate, oblong, or narrowly ovate, 1.5–5(–10) × 0.5–2 mm, base slightly enlarged, margin narrowly membranous, apex obtuse or acute. Racemes lateral on old branches, solitary or several clustered in axils, dense before anthesis, later elongating and lax, with many imbricate scales at base; scales broadly ovate or elliptic, submembranous; bracts elliptic, broadly ovate, or obovate-oblong, 4–6(–8) × 3–4 mm, equaling or exceeding calyx, rarely shorter than calyx, base narrow, acuminate, margin broadly membranous or submembranous, apex obtuse or acute. Pedicels 2–3 mm. Sepals ovate-lanceolate, oblong, or narrowly elliptic, 2–4 × 0.5–1 mm, margin broadly or narrowly membranous, apex acute or obtuse. Petals purple-red or pink, obovate or narrowly elliptic, 4–5 × ca. 2 mm, base narrow, apex obtuse, often incurved. Filaments ca. 2/3 united. Ovary conic, 3–5 mm. Capsule conic, ca. 1 cm. Seeds narrowly elliptic or narrowly obovate, ca. 1 mm, apex awned; awns more than 1/2 white villous. Fl. and fr. May–Aug. $2n = 24$.

Riversides in mountains, sandy places at lakesides; 2400–4600 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang [Afghanistan, India, ?Nepal, Pakistan; C Asia].

8. *Myricaria paniculata* P. Y. Zhang & Y. J. Zhang, Bull. Bot. Res., Harbin 4(2): 75. 1984.

三春水柏枝 san chun shui bai zhi

Shrubs, 1–3 m tall. Old branches deep brown, red-brown, or gray-brown; branches of current year gray-green or red-brown. Leaves sessile, lanceolate, ovate-lanceolate, or oblong, 2–4(–6) × 0.5–1 mm, base slightly enlarged or not, margin narrowly membranous, apex obtuse or acute; green branchlets often in leaf axils, with dense leaflets. Flowers blooming 2

times per year, forming two types of inflorescences. Racemes in spring lateral on branches of previous year, with many imbricate scales at base; bracts elliptic or obovate, 3–5 × 3–3.5 mm, apex obtuse, base cuneate; pedicels 1–1.5 mm; sepals lanceolate or ovate-lanceolate, slightly shorter than petals; ovary conic, ca. 3 mm; capsule narrowly conic, ca. 1 cm. Large panicles terminal on branches of current year, 14–34 cm, dense before anthesis, lax after anthesis; bracts ovate-lanceolate or narrowly ovate, 4–6 mm, margin broadly membranous, apex usually abruptly elevated, rarely acuminate or caudate-acuminate; flowers 4–6 mm; pedicels 1–2 mm, shorter than calyx; sepals ovate-lanceolate or ovate-oblong, 3–4 mm, slightly shorter than petals, margin broadly membranous, apex acuminate, incurved; petals purplish red or pink, obovate or obovate-lanceolate, 4–5 mm, apex obtuse, often incurved, persistent in fruit; filaments ca. 1/2 or 2/3 united, shorter than petals; ovary conic, 3–4 mm; capsule narrowly conic, 8–10 mm, 3-septical. Seeds narrowly oblong, 1–1.5 mm, apex awned; awns more than 1/2 white villous. Fl. Mar–Sep, fr. May–Oct.

• Sandy places in river valleys in mountains, mountain slopes of river valleys; 1000–2800 m. Gansu, W Henan, SE Ningxia, Shaanxi, Shanxi, Sichuan, Xizang, NW Yunnan.

9. *Myricaria bracteata* Royle, Ill. Bot. Himal. Mts. 214. 1839.

宽苞水柏枝 kuan bao shui bai zhi

Myricaria germanica (Linnaeus) Desvaux var. *bracteata* (Royle) Franchet.

Shrubs, 0.5–3 m tall, much branched. Old branches gray-brown or purple-brown. Leaves dense on green branchlets of current year, ovate, ovate-lanceolate, linear-lanceolate, or narrowly oblong, 2–4(–7) × 0.5–2 mm, base slightly enlarged or not, margin often narrowly membranous, apex obtuse or acute. Racemes terminal on branches of current year, clustered into spike; bracts usually broadly ovate or elliptic, sometimes rhombic, 7–8 × 4–5 mm, base narrow, margin membranous, spreading or recurved, apex acuminate. Pedicels ca. 1 mm. Sepals lanceolate, oblong, or narrowly elliptic, ca. 4 × 1–2 mm, margin broadly membranous, apex obtuse or acute, often incurved. Petals pink, reddish, or purplish, obovate or obovate-oblong, 5–6 × 2–2.5 mm, base narrow, apex obtuse, often incurved, persistent in fruit. Stamens slightly shorter than petals; filaments ca. 1/2 or 2/3 united. Ovary conic, 4–6 mm; stigmas capitate. Capsule narrowly conic, 8–10 mm. Seeds narrowly oblong or narrowly obovate, 1–1.5 mm, apex awned; awns more than 1/2 white villous. Fl. Jun–Jul, fr. Aug–Sep.

Sandy places in river valleys, sandy places at lakesides, sandy places in Gobi Desert; 1100–3300 m. NW Gansu, Hebei, Nei Mongol, NW Ningxia, Qinghai, Shaanxi, Shanxi, Xinjiang, Xizang [Afghanistan, India, Kashmir, Mongolia, Pakistan; C Asia].

Qaiser (Pakistan J. Bot. 8: 201. 1976) treated this taxon as *Myricaria germanica* subsp. *alopecuroides* (Schrenk) Kitamura.

10. *Myricaria laxiflora* (Franchet) P. Y. Zhang & Y. J. Zhang, Bull. Bot. Res., Harbin 4(2): 76. 1984.

疏花水柏枝 shu hua shui bai zhi

Myricaria germanica (Linnaeus) Desvaux var. *laxiflora*
Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 205. 1886.

Shrubs, erect, ca. 1.5 m tall. Old branches red-brown or purple-brown; branches of current year green or red-brown. Leaves dense on green branchlets of current year, lanceolate or oblong, 2–4 × 0.8–1 mm, base slightly enlarged, margin narrowly membranous, apex obtuse or acute, often incurved. Racemes usually terminal, lax, 6–12 cm; bracts lanceolate or ovate-

lanceolate, ca. 4 × 1.5 mm, margin narrowly membranous, apex acuminate. Pedicels ca. 2 mm. Sepals lanceolate or oblong, 2–3 × ca. 1 mm, margin narrowly membranous, apex obtuse or acute. Petals pink or purplish, obovate, 5–6 × ca. 2 mm. Filaments ca. 1/2 or 1/3 united. Ovary conic, ca. 4 mm. Capsule narrowly conic, 6–8 mm. Seeds 1–1.5 mm, apex awned; awns more than 1/2 white villous. Fl. and fr. Jun–Aug.

- Riversides, roadsides. Hubei, Sichuan.

Flora of China 13: 66–69. 2007.