

8. BERGENIA Moench, Methodus, 664. 1794, nom. cons.

岩白菜属 yan bai cai shu

Pan Jintang (潘锦堂); Douglas E. Soltis

Herbs perennial, forming large clumps. Rhizomes creeping, large, thick, scaly. Leaves all basal, ± persistent, simple, waxy, often leathery; petiole short, broad, sheathing at base; leaf blade thick, margin entire, crenate, or dentate. Inflorescences cymose, bracteate. Flowers showy, large. Sepals 5. Petals 5, white, pink, red, or purple. Stamens 10. Carpels 2, basally connate; ovary 1/4 subsuperior, proximally 2-loculed with axile placentation and distally 1-loculed with marginal placentation; styles 2; ovules many. Fruit a capsule. Seeds numerous, dark brown, small.

Ten species: Asia; seven species (three endemic) in China.

At least two species (*Bergenia crassifolia* and *B. pacumbis*) are cultivated as ornamentals and for medicinal use, and they have been considerably hybridized. *Bergenia* is most closely related to *Mukdenia* and *Oresitrophe*; other close relatives are *Astilboides*, *Darmera* Voss, and *Rodgersia*.

1a. Sheathing petiole base and leaf blade glabrous at margin.

2a. Pedicels, hypanthia, and sepals glabrous 1. *B. scopulosa*

2b. Pedicels, hypanthia, and sepals ± glandular hairy.

3a. Inflorescence branches, pedicels, hypanthia, and sepals sparsely sessile glandular 2. *B. crassifolia*

3b. Inflorescence branches, pedicels, hypanthia, and sepals densely long glandular hairy .. 3. *B. purpurascens*

1b. Sheathing petiole base and often also leaf blade ciliate at margin.

4a. Leaf blade narrowly obovate, margin entire, not ciliate; petals narrowly obovate 4. *B. emeiensis*

4b. Leaf blade orbicular, broadly ovate, or obovate, margin subentire, obscurely crenate, dentate,

serrate, or doubly serrate, ciliate; petals subspatulate, elliptic, or orbicular.

5a. Leaf blade orbicular or broadly ovate to broadly obovate, margin subentire or obscurely crenate; inflorescence branches and pedicels sparsely sessile glandular; sepals spreading, glabrous,

apex sometimes sparsely dentate; petals orbicular 5. *B. pacumbis*

5b. Leaf blade obovate to broadly so, margin dentate, serrate, or doubly serrate; inflorescence branches and pedicels long glandular hairy; sepals glandular hairy, apex not dentate; petals subspatulate or elliptic.

6a. Leaf blade dentate and serrate, sessile glandular, margin only proximally ciliate; sepals sessile glandular, veins mostly confluent at apex, margin glabrous; petals elliptic 6. *B. tianquanensis*

6b. Leaf blade serrate or doubly so, glabrous, margin ciliate; sepals abaxially long glandular

hairy, veins not confluent at apex, margin denticulate-ciliate; petals subspatulate 7. *B. stracheyi*

1. *Bergenia scopulosa* T. P. Wang, Fl. Tsinling. 1(2): 607. 1974.

秦岭岩白菜 qin ling yan bai cai

Herbs perennial, 10–50 cm tall. Rhizomes thick, scaly. Leaves all basal; petiole 1.5–13 cm, sheathing base glabrous at margin; leaf blade orbicular or broadly ovate to broadly elliptic, (5–)16.5–25 × (4–)13.2–22 cm, leathery, glabrous, both surfaces minutely glandular pitted, base usually rounded, rarely broadly cuneate, margin sinuate or sinuate-dentate, sometimes subentire, apex obtuse. Inflorescence cymose, many flowered; pedicels 5–9 mm, glabrous. Hypanthium purple, glabrous. Sepals ovate to broadly so, 4–4.5 × 3.3–5 mm, leathery, both surfaces glabrous, veins many, apex obtuse. Petals elliptic or broadly ovate to orbicular, 8–9 × 6–7.8 mm, veins pinnate, base gradually narrowed into a claw ca. 1 mm, apex obtuse. Stamens 4.5–5 mm. Ovary ovoid, ca. 4.5 mm; styles 2, ca. 5 mm. Fl. May–Sep.

• Forests, rock crevices; 2500–3600 m. S Shaanxi (Qin Ling).

2. *Bergenia crassifolia* (Linnaeus) Fritsch, Verh. Zool.-Bot. Ges. Wien 39: 587. 1889.

厚叶岩白菜 hou ye yan bai cai

Saxifraga crassifolia Linnaeus, Sp. Pl. 1: 401. 1753;

Bergenia bifolia Moench, nom. illeg. (included *S. crassifolia*); *B. cordifolia* (Haworth) Sternberg; *B. coreana* Nakai; *B. crassifolia* var. *cordifolia* (Haworth) A. Borissova; *S. cordifolia* Haworth; *S. crassifolia* var. *elliptica* Ledebour; *S. crassifolia* var. *obovata* Seringe.

Herbs perennial, 15–30 cm tall. Rhizomes thick, scaly. Leaves all basal; petiole 3–9 cm, sheathing base glabrous at margin; leaf blade narrowly to broadly obovate or elliptic, 5–12.5 × 3.5–9.5 cm, leathery, both surfaces glabrous and ± glandular pitted, base usually cuneate, rarely rounded, margin sinuate-dentate, apex obtuse. Inflorescence cymose, 3.5–13 cm, many flowered; branches and pedicels sessile glandular.

Hypanthium sessile glandular. Sepals erect, obovate to broadly triangular-obovate, 3–4 × 2–4 mm, leathery, abaxially sessile glandular, veins many, margin glabrous, apex obtuse or retuse. Petals purple, elliptic to broadly ovate, 7–8 × 4.6–5 mm, veins many, base narrowed into a claw ca. 1 mm, apex retuse. Stamens ca. 4.5 mm. Ovary ovoid, ca. 2.5 mm; styles 2, ca. 2.5 mm. Fl. May–Sep. 2n = 34.

Forests, rock crevices on shaded slopes; 1100–1800 m. Xinjiang [N Korea, N Mongolia, Russia].

3. *Bergenia purpurascens* (J. D. Hooker & Thomson) Engler, Bot. Zeitung (Berlin) 26: 841. 1868.

岩白菜 *yan bai cai*

Saxifraga purpurascens J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 61. 1858; *Bergenia delavayi* (Franchet) Engler; *B. purpurascens* f. *delavayi* (Franchet) Handel-Mazzetti; *B. purpurascens* var. *delavayi* (Franchet) Engler & Irmscher; *B. purpurascens* var. *macrantha* (Franchet) Diels; *S. delavayi* Franchet; *S. purpurascens* var. *macrantha* Franchet.

Herbs perennial, 13–50 cm tall. Rhizomes thick, scaly. Leaves all basal; petiole 2–7 cm, sheathing base glabrous at margin; leaf blade obovate or narrowly so to subelliptic, rarely broadly obovate to suboblong, 5.5–16 × 3–9 cm, leathery, both surfaces glabrous and glandular pitted, base cuneate, margin sinuate-dentate to entire, apex obtuse. Inflorescence cymose, 3–23 cm; branches and pedicels densely long glandular hairy. Hypanthium densely long glandular hairy. Sepals narrowly ovate, 6.5–7 × 2–4 mm, leathery, abaxially densely long glandular hairy, margin glabrous, apex obtuse. Petals purple, broadly ovate, 1–1.7 cm × 7–7.8 mm, veins many, base narrowed into a claw 2–2.5 mm, apex obtuse or retuse. Stamens 6–11 mm. Ovary ovoid, 6.7–7.5 mm; styles 2, 5.3–7.5 mm. Fl. May–Oct. *2n* = 34.

Forests, scrub, alpine meadows, alpine rock crevices; 2700–4800 m. SW Sichuan, E and S Xizang, N Yunnan [N Bhutan, NE India, N Myanmar, Nepal, Sikkim].

This species is used medicinally and is a source of the drug bergenin.

4. *Bergenia emeiensis* C. Y. Wu in J. T. Pan, Acta Phytotax. Sin. 26: 124. 1988.

峨眉岩白菜 *e mei yan bai cai*

Herbs perennial, ca. 35 cm tall. Rhizomes thick, scaly. Leaves all basal; petiole 3–4.7 cm, sheathless part 1.3–2 cm, sheathing base rigidly ciliate at margin, cilia sometimes glandular tipped; leaf blade narrowly obovate, 9.5–16.5 × 4–8.3 cm, leathery, glabrous, base cuneate, margin entire, apex obtuse. Inflorescence cymose, ca. 18 cm; branches and pedicels sparsely sessile glandular. Sepals spreading, subovate, ca. 6 × 5 mm, leathery, glandular hairy, veins many, apex obtuse. Petals white or reddish, narrowly obovate, 2.7–2.8 × 1–2.1 cm, base gradually narrowed into a claw ca. 3 mm, apex obtuse. Stamens ca. 1.7 cm. Ovary ovoid, ca. 9.5 mm; styles 2, ca. 1.1 cm. Fl. May–Sep.

• Forests, shaded slopes, rock crevices; 1600–4200 m. C and W Sichuan.

1a. Petals white 4a. var. *emeiensis*

1b. Petals reddish 4b. var. *rubellina*

4a. *Bergenia emeiensis* var. *emeiensis*

峨眉岩白菜(原变种) *e mei yan bai cai* (*yuan bian zhong*)

Petals white. Fl. May–Jun.

• Rock crevices; ca. 1600 m. C Sichuan (Emei Shan, Guan Xian).

4b. *Bergenia emeiensis* var. *rubellina* J. T. Pan, Acta Phytotax. Sin. 32: 573. 1994.

淡红岩白菜 *dan hong yan bai cai*

Petals reddish. Fl. May–Sep.

• Forests, shaded slopes, rock crevices; 3500–4200 m. W Sichuan.

5. *Bergenia pacumbis* (Buchanan-Hamilton ex D. Don) C. Y. Wu & J. T. Pan in J. T. Pan, Acta Phytotax. Sin. 26: 126. 1988.

舌岩白菜 *she yan bai cai*

Saxifraga pacumbis Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 209. 1825; *Bergenia ciliata* (Haworth) Sternberg f. *ligulata* Yeo; *B. himalaica* A. Borissova; *B. ligulata* Engler; *S. ligulata* Wallich (1820), not Murray (1781); *S. ligulata* var. *densiflora* Seringe; *S. ligulata* var. *minor* Wallich ex de Candolle.

Herbs perennial, ca. 17 cm tall. Rhizomes thick, scaly. Leaves all basal; petiole 3–10 cm or longer, sheathless part ca. 1 cm, sheathing base rigidly ciliate at margin; leaf blade orbicular or broadly ovate to broadly obovate, 7–15 × 6.6–13.2 cm, leathery, both surfaces glabrous, base rounded, margin entire or obscurely crenate, rigidly ciliate, apex obtuse. Inflorescence cymose, ca. 7.5 cm; branches and pedicels sparsely sessile glandular. Hypanthium sparsely glandular hairy. Sepals spreading, broadly ovate, 3–3.5 mm, leathery, glabrous, veins many, apical margin sometimes sparsely dentate. Petals white or pink, orbicular, ca. 8.5 × 6 mm, veins many, base narrowed into a claw ca. 2 mm, apex obtuse. Stamens ca. 5.5 mm. Ovary ovoid, ca. 4 mm; styles 2, ca. 4 mm. Fl. Jun–Aug. *2n* = 34.

Forests, rock crevices; 2300–2400 m. S Xizang, W Yunnan (Lincang Daxue Shan) [Afghanistan, Bhutan, NE India, Kashmir, Nepal, Pakistan, Sikkim].

6. *Bergenia tianquanensis* J. T. Pan, Acta Phytotax. Sin. 32: 571. 1994.

天全岩白菜 *tian quan yan bai cai*

Herbs perennial, ca. 25 cm tall. Rhizomes dark brown, thick, scaly. Leaves all basal; petiole pilose, sheathless part ca. 1.5 cm, sheathing base rigidly ciliate at margin; leaf blade obovate to broadly so, 4.9–8.4 × 4.3–8.8 cm, leathery, both surfaces sessile glandular, base cuneate, margin dentate and serrate, rigidly ciliate, apex obtuse. Inflorescence cymose, 7–11.5 cm; branches and pedicels glandular hairy. Sepals erect, subligulate, 9–10 × 4–5.6 mm, leathery, sessile glandular, veins mostly confluent at apex, margin glabrous, apex obtuse. Petals reddish, elliptic, ca. 1.6 × 1 cm, veins many, base narrowed into a claw ca. 3 mm, apex obtuse. Stamens ca. 1.2 cm; filaments subulate. Ovary semi-inferior, ovoid, ca. 6 mm; styles 2, ca. 1 cm. Fl. May–Jun.

• Rock crevices; 2200–3300 m. C Sichuan (Tianquan Xian).

7. *Bergenia stracheyi* (J. D. Hooker & Thomson) Engler, Bot. Zeitung (Berlin) 26: 842. 1868.

短柄岩白菜 duan bing yan bai cai

Saxifraga stracheyi J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 61. 1858; *S. milesii* Baker.

Herbs perennial, ca. 20 cm tall. Rhizomes thick. Leaves all basal; petiole 1–1.8 cm, sheathless part to 1 cm, sheathing base rigidly ciliate at distal margin; leaf blade obovate, 7–7.5 × 4.2–4.6 cm, both surfaces glabrous, base cuneate or rounded, margin serrate or doubly so, rigidly ciliate, apex obtuse. Inflorescence cymose, 5–8 cm; branches and pedicels long glandular hairy.

Hypanthium glandular hairy. Sepals subovate, 5–6 × 3.5–4 mm, fleshy, abaxially glandular hairy, veins many, not confluent at apex, margin denticulate-ciliate.

Petals red, subspatulate, ca. 9.5 × 4–5 mm, base gradually narrowed into a claw 2–3 mm, apex obtuse.

Stamens 6–7 mm. Ovary ovoid, ca. 6 mm; styles 2, ca. 7 mm. Fl. Jun–Oct. $2n = 34$.

Forests, rock crevices; 3900–4500 m. SW Xizang [E Afghanistan, N India, Kashmir, Nepal, W Pakistan, Tajikistan].

Flora of China 8: 278–280. 2001.