

27. PULSATILLA Miller, Gard. Dict. Abr., ed. 4, [1136]. 1754.

白头翁属 bai tou weng shu

Wang Wencai (王文采 Wang Wen-tsai); Bruce Bartholomew

Herbs perennial, often covered with long soft hairs. Rhizome erect. Leaves basal, rosulate; petiole long; leaf blade palmately or odd pinnately divided; veins palmate. Scape with 3 bracts forming a bell-shaped involucre; involucral bracts basally connate and apically ± deeply divided into numerous lobes. Flower solitary, bisexual. Sepals 5 or 6. Petals absent. Stamens numerous, outermost whorl staminodial except in *Pulsatilla kostyczewii*; anthers yellow or purple, oblong, narrowly ellipsoid, filiform, or linear, with one longitudinal vein. Pistils numerous; ovule 1 per ovary. Styles long linear, pilose, strongly elongated and plumose when mature. Infructescence globose. Achenes small, spindle-shaped, pilose, with a long plumose beak formed by persistent style.

About 33 species: Asia, Europe, North America; 11 species (one endemic) in China.

Although *Pulsatilla* can easily be distinguished from *Anemone* by the former having a long, plumose beak on the achenes formed by the persistent style, phylogenetic studies have shown that they are probably congeneric.

- 1a. Anthers purple; staminodes not present; all but ultimate leaf blade segments and lobes stipitate; ultimate leaf blade segments ca. 0.5 mm wide 1. *P. kostyczewii*
- 1b. Anthers yellow; staminodes present; not all leaf blade segments and lobes stipitate; ultimate leaf blade segments greater than 0.5 mm wide (may be only 0.5 mm wide in *P. tenuiloba* and *P. sukaczewii* but segments not all stipitate).
- 2a. Leaf blade odd pinnate with (3 or)4–6 pairs of lateral leaflets.
- 3a. Leaf blade consistently 3 × pinnately divided; persistent style of achenes 3–3.5 cm.
- 4a. Leaf blade with (3 or)4 pairs of lateral leaflets; involucral bracts 2.8–3.4 cm, tube 5–6 mm; sepals blue-violet, rarely white, 2.2–4.2 cm 8. *P. turczaninowii*
- 4b. Leaf blade with 6 pairs of lateral leaflets; involucral bracts 0.9–2.2 cm, tube 2–2.5 mm; sepals pale yellowish green, yellow, or reddish purple, 0.9–2 cm 11. *P. millefolium*
- 3b. Leaf blade 2 or 3 × pinnately divided; persistent style of achenes 2–2.8 cm.
- 5a. Leaf blade with 5 or 6 pairs of lateral leaflets; sepals violet 9. *P. tenuiloba*
- 5b. Leaf blade with 4 pairs of lateral leaflets; sepals yellow or sometimes white 10. *P. sukaczewii*
- 2b. Leaf blade 3-foliolate but may appear to be odd pinnate with 2 or 3 pairs of lateral leaflets if terminal leaflet and/or central segment of terminal leaflet stipitate.
- 6a. Leaf blade distinctly 3-foliolate, palmately divided 5. *P. patens*
- 6b. Leaf blade 3-foliolate, but appearing to be odd pinnate with 1–3 pairs of lateral leaflets.
- 7a. Leaf blade 3-foliolate with 1(or 2) pairs of lateral leaflets; leaflet lobes slightly divided, terminal lobe obovate, not stipitate; flowers erect before anthesis 2. *P. chinensis*
- 7b. Leaf blade 3-foliolate and odd pinnately divided with 2 or 3 pairs of lateral pinnate leaflets; leaflet lobes deeply divided, terminal lobe sometimes stipitate; flowers nodding before anthesis.
- 8a. Leaves not fully expanded at anthesis; sepals purplish red to dark purple 3. *P. cernua*
- 8b. Leaves mostly fully expanded at anthesis; sepals various shades of blue, violet, or lilac.
- 9a. Ultimate leaf blade lobes (1.5–)2–4 mm wide; involucral bracts (3–)4–5 cm; sepals pale lilac to pale bluish violet; persistent style (4–)5–6 cm in fruits, slender and softly plumose 4. *P. dahurica*
- 9b. Ultimate leaf blade lobes to 1 cm wide; involucral bracts 1.5–2.5 cm; persistent style 1.5–3 cm in fruit, stiff, bristly pilose.
- 10a. Rhizome 5–8 mm in diam.; sepals dark violet, 2.2–2.8 cm; persistent style 2.5–3 cm 6. *P. ambigua*
- 10b. Rhizome 2.5–4 mm in diam.; sepals blue-violet to lilac, 1.4–1.9 cm; persistent style 1–2.4 cm 7. *P. campanella*

1. Pulsatilla kostyczewii (Korshinsky) Juzepczuk, Fl. URSS 7: 288. 1937.

紫蕊白头翁 zi rui bai tou weng

Anemone kostyczewii Korshinsky, Zap. Imp. Akad. Nauk. Fiz.-Mat. Otd. 4(4): 88. 1896.

Plants ca. 14 cm tall. Leaves 4; petioles ca. 3 cm, sparsely white puberulent; leaf blade 1.2–2 × 3–4 cm, 3-foliolate, 2 or 3 × finely divided, sparsely white puberulent; leaflets petiolulate, all but ultimate segments stipitate; ultimate segments filiform, ca. 0.5 mm wide, margin revolute when fully expanded. Scapes sparsely white puberulent; involucre bracts 1.6–2 cm, palmately divided into linear lobes, thickly pilose. Flowers ca. 5 cm in diam. Pedicel ca. 6 cm, puberulent. Sepals 6, purplish red, ± spreading, obovate to oblong, 2–2.5 × 1.2–1.8 cm, outside puberulent, apex rounded to blunt. Stamens 4–10 mm; staminodes absent; filaments purple; anthers purple, narrowly ellipsoid, ca. 1.2 mm, apex rounded. Pistils thickly pilose. Fl. Jun.

Grassy slopes; ca. 2900 m. W Xinjiang (S Tian Shan) [Kyrgyzstan, Tajikistan].

2. Pulsatilla chinensis (Bunge) Regel, Tent. Fl.-Ussur. 5. 1861

白头翁 bai tou weng

Anemone chinensis Bunge, Enum. Pl. China Bor. 2. 1831.

Plants 15–35 cm tall. Rhizome ca. 0.8–1.5 cm in diam. Leaves 4 or 5, not fully expanded at anthesis; petiole 7–15 cm, densely long pilose; leaf blade broadly ovate, 4.5–14(–24) × 6.5–16(–25) cm, 3-foliolate, abaxially thickly pilose, adaxially glabrous, margin entire or toothed; lateral leaflets unequally 2-lobed, sessile or subsessile; central leaflet petiolulate or sessile, broadly ovate, 3-lobed, central lobe obovate. Scape 1(or 2), 2.5–5.5 cm, to 23 cm in fruit, puberulent; involucre bracts puberulent, basally connate into a 3–10 mm tube, apically palmately 3-lobed, each lobe linear, margin entire or slightly 3-lobed. Sepals violet, erect, oblong-ovate, 2.8–4.4 × 0.9–2 cm, abaxially puberulent. Stamens ca. 1/2 as long as sepals; anthers yellow. Infructescences 9–12 cm in diam. Achenes 3.5–4 mm, flattened, sparsely puberulent. Persistent styles 3.5–6.5 cm. Fl. Mar–May, fr. Jun–Jul.

Forest margins, slopes; 200–3200 m. Anhui, S Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, E Qinghai, Shaanxi, Shandong, Shanxi, W Sichuan [Korea, Russia (Far East)].

Pulsatilla chinensis var. *kissii* (Mandl) S. H. Li & Y. H. Huang (Fl. Pl. Herb. Chinae Bor.-Orient. 3: 162. 1975) has been proposed for plants growing on dry slopes in S Liaoning. The basionym *Pulsatilla ×kissii* Mandl (Oesterr. Bot. Z. 71: 178. 1922) was originally described as a hybrid between *P. chinensis* and *P. cernua* which it seems quite likely to be.

Pulsatilla chinensis is used medicinally.

3. Pulsatilla cernua (Thunberg) Berchtold & Presl, Rostl. I. Ranuncul. 22. 1820.

朝鲜白头翁 chao xian bai tou weng

Anemone cernua Thunberg in Murray, Syst. Veg., ed. 14, 510. 1784; *A. cernua* var. *koreana* Yabe ex Nakai; *Pulsatilla cernua* var. *koreana* (Yabe ex Nakai) Y. N. Lee; *P. koreana* (Yabe ex Nakai) Nakai ex Mori.

Plants 14–28 cm tall. Rhizome to 10 cm, 5–7 mm in diam. Leaves 4–6, not fully expanded at anthesis; petiole 4.5–14 cm, with thick long pilose hairs; leaf blade ovate, 3–7.8 × 4.4–6.5 cm, 3-foliolate, abaxially thickly pilose, adaxially glabrous, base cordate; lateral leaflets sessile or subsessile, pinnately divided, lobes sessile; central leaflet long petiolulate, broadly ovate, divided to base into 3 segments, central segment stipitate and deeply 3-lobed, ultimate lobes lanceolate to narrowly ovate, 1.5–2.2 mm wide, and apically toothed. Scape 2.5–6 cm, elongated in fruit, with long hairs; involucre bracts 3–4.5 cm, abaxially puberulent, basally connate into a 0.8–1.2 cm tube, apical palmate lobes linear, margin entire or slightly 3-lobed. Sepals purplish red to dark purple, erect, oblong to ovate-oblong, 1.8–3 × 0.6–1.2 cm, abaxially puberulent, apex rounded to blunt. Stamens ca. 1/2 as long as sepals; anthers yellow. Infructescences 6–8 cm in diam.

Achenes obovate-oblong, ca. 3 mm, sparsely puberulent. Persistent styles ca. 4 cm. Fl. Apr–May, fr. May–Jun.

Grassy slopes. Heilongjiang, Jilin, Liaoning, Nei Mongol [Japan, Korea, Russia (Far East, E Siberia)].

4. Pulsatilla dahurica (Fischer ex de Candolle) Sprengel, Syst. Veg. 2: 663. 1825.

兴安白头翁 xing an bai tou weng

Anemone dahurica Fischer ex de Candolle, Prodr. 1: 17. 1824.

Plants 25–40 cm tall. Rhizome ca. 16 cm, 5–7 mm in diam. Leaves 7–9; petiole 7–15 cm, with thick long pilose hairs; leaf blade ovate, 4.5–7.5 × 3–6 cm, 3-foliolate, abaxially with hairs only along veins, adaxially glabrous, base cuneate; lateral leaflets sessile or subsessile, unevenly 3-lobed; central leaflet long petiolulate, divided to base into 3 segments, lateral segments deeply 2-lobed, central segment stipitate, ultimate segments spatulate to broadly cuneate, 2–4 mm wide, margin entire or apically 2- or 3-toothed. Scapes 2–4, ca. 7.5 cm, elongated in fruit, with hairs; involucre bracts 4–5 cm, basally connate into a 1.2–1.4 mm tube, apical palmate lobes similar to leaves, abaxially puberulent. Sepals pale lilac to pale bluish violet, nearly erect, elliptical, ca. 2 × 0.5–1 cm, abaxially puberulent, apex slightly blunt. Stamens ca. 1/2 as long as sepals; anthers yellow. Infructescences ca. 10 cm in diam. Achenes narrowly obovate, ca. 3 mm, thickly puberulent. Persistent styles 5–6 cm. Fl. May–Jun.

Grassy slopes. Heilongjiang, Jilin, Nei Mongol [Korea, Russia (Far East, E Siberia)].

5. Pulsatilla patens (Linnaeus) Miller, Gard. Dict., ed. 8, *Pulsatilla* no. 4. 1768.

肾叶白头翁 shen ye bai tou weng

Plants to 40 cm tall. Rhizome cylindrical, branched distally. Leaves 5, not fully expanded at anthesis; petiole 5.5–15 cm, with thick long pilose hairs; leaf blade nearly kidney-shaped, rounded-ovate, or 5-angled, 2.5–7 × 4.5–11 cm, ± equally 3-foliolate, abaxially with white hairs, adaxially glabrous, base broadly cordate; lateral leaflets subsessile, unevenly 2-lobed; central leaflet subsessile or with a 1–4 mm petiolule, deeply 3-lobed, lobes entire or dissected, ultimate lobes triangular to narrowly linear and 2–3.5 mm wide. Scapes erect, elongated in fruit, with hairs; involucre bracts 3.5–4.5 cm, basally connate into a 0.8–1.2 mm tube, apical palmate lobes linear, abaxially thickly puberulent. Sepals lilac to blue-violet, rarely milk-white to yellowish (subsp. *flavescens*), erect, oblong-ovate, ca. 3 × 1 cm, inside glabrous, outside sparsely hairy. Anthers yellow. Infructescences ca. 5 cm in diam. Achenes ca. 5 mm, thickly puberulent. Persistent styles 2.8–4.8 cm. Fl. Jun–Jul.

Grassy slopes, mountain slopes under forests; ca. 1100 m. Heilongjiang, N Nei Mongol, N Xinjiang [Kazakhstan, Mongolia, Russia; N Europe, North America].

- 1a. Leaf blade lobes with 1 or 2 secondary lobes; ultimate lobes of leaf blade triangular, narrowly triangular, or triangular-lanceolate 5a. subsp. *patens*
- 1b. Leaf blade lobes finely divided; ultimate lobes of leaf blade linear-lanceolate to narrowly linear.
 - 2a. Sepals lilac to blue-violet 5b. subsp. *multifida*
 - 2b. Sepals milk-white to yellowish 5c. subsp. *flavescens*

5a. *Pulsatilla patens* subsp. *patens*

肾叶白头翁(原亚种) shen ye bai tou weng (yuan ya zhong)

Anemone patens Linnaeus, Sp. Pl. 1: 538. 1753. Leaf blade nearly kidney-shaped, 2.5–4.5 × 4.5–7 cm; central leaflet subsessile; leaf blade lobes with 1 or 2 secondary lobes and ultimate lobes triangular, narrowly triangular, or triangular-lanceolate. Sepals lilac to blue-violet. Persistent styles 2.8–3 cm.

Mountain slopes; ca. 1100 m. N Xinjiang [Kazakhstan, Russia; N Europe].

5b. *Pulsatilla patens* subsp. *multifida* (Pritzel) Zämelis, Acta Hort. Bot. Univ. Latv. 1: 98. 1926.

掌叶白头翁 zhang ye bai tou weng

Anemone patens Linnaeus var. *multifida* Pritzel, Linnaea 15: 581. 1841; *Pulsatilla multifida* (Pritzel) Juzepczuk; *P. patens* var. *multifida* (Pritzel) S. H. Li & Y. H. Huang.

Leaf blade round-ovate or 5-sided, 5.5–7 × 8–11 cm; central leaflet with a 0.6–1.4 cm petiolule; leaf blade lobes finely divided with ultimate lobes linear-lanceolate to narrowly linear. Sepals lilac to blue-violet. Persistent styles 3.5–4.8 cm.

Grassy slopes, mountain slopes under forests. Heilongjiang, N Nei Mongol, N Xinjiang [Mongolia, Russia; N Europe, North America].

5c. *Pulsatilla patens* subsp. *flavescens* (Zuccarini) Zämelis, Acta Hort. Bot. Univ. Latv. 1: 95. 1926.

发黄白头翁 fa huang bai tou weng

Anemone flavescens Zuccarini, Regensb. Zeit. 1: 371. 1826; *P. flavescens* (Zuccarini) Juzepczuk.

Leaf blade round-ovate or 5-sided, 5.5–7 × 8–11 cm; central leaflet with a 0.6–1.4 cm petiolule; leaf blade lobes finely divided with ultimate lobes linear-lanceolate to narrowly linear. Sepals milk-white to yellowish. Persistent styles 3.5–4.8 cm.

N Xinjiang [Mongolia, E Russia].

6. *Pulsatilla ambigua* (Turczaninow ex Hayek) Juzepczuk, Fl. URSS 7: 307. 1937.

蒙古白头翁 meng gu bai tou weng

Anemone ambigua Turczaninow ex Hayek, Festschr. Z. Feier. D. Siebzigst. Geburtst. Prof. Dr. Ascher 466. 1904.

Plants 16–22 cm tall. Rhizome 5–8 mm in diam. Leaves 6–8; petiole 3–10 cm; leaf blade ovate, 2–3.2 × 1.2–3.2 cm, 3-foliolate, abaxially sparsely pilose, adaxially glabrous, base cuneate; lateral leaflets petiolulate, divided into three segments, segments further lobed; central leaflet petiolulate, broadly ovate, 3-lobed, central segment stipitate and deeply 3-lobed; ultimate lobes lanceolate, 0.8–1.5 mm wide, apically 2- or 3-toothed. Scapes 1 or 2, erect, ca. 4 cm, elongated to 16 cm in fruit, pilose; involucre bracts 3, 1.5–2.8 cm, basally connate into a ca. 2 mm tube, apical palmate lobes lanceolate to linear-lanceolate, abaxially puberulent, margin entire or with 1 or 2 lobes. Sepals dark violet, erect, oblong-ovate, 2.2–2.8 × 0.8–1 cm, abaxially puberulent, apex slightly acute and with or without a barbate apical appendage. Stamens ca. 1/2 as long as sepals; anthers yellow. Infructescences 4–4.5 cm in diam. Achenes ca. 2.5 mm, puberulent. Persistent styles 2.5–3 cm. Fl. and fr. Apr–Jul.

Grassy slopes, margin of forests; 2000–3400 m. N Gansu, Heilongjiang, Nei Mongol, Ningxia, N Qinghai, Xinjiang [Mongolia, Russia (Siberia)].

- 1a. Sepals apex without an apical appendage 6a. var. *ambigua*
- 1b. Sepal apex with a barbate apical appendage 6b. var. *barbata*

Rudolf V. Kamelin (pers. comm.) feels that the records for *Pulsatilla ambigua* in Xinjiang may be referable to *P. bungeana* C. A. Meyer.

6a. *Pulsatilla ambigua* var. *ambigua*

蒙古白头翁(原变种) meng gu bai tou weng (yuan bian zhong)

Sepal apex without an apical appendage.

Grassy slopes; 2000–3900 m. N Gansu, W Heilongjiang, Nei Mongol, Ningxia, N Qinghai, Xinjiang [Mongolia, Russia (W Siberia)].

6b. *Pulsatilla ambigua* var. *barbata* J. G. Liu, Bull. Bot. Res., Harbin 12: 236. 1992.

拟蒙古白头翁 *ni meng gu bai tou weng*

Sepal apex with a barbate apical appendage.

• Margin of forests; ca. 2100 m. Xinjiang (Shawen Xian).

7. *Pulsatilla campanella* Fischer ex Krylov, Fl. Zapadnoi Sib. 5: 1168. 1931.

钟萼白头翁 *zhong e bai tou weng*

Pulsatilla albana (Stevenson) Berchtold & J. Presl var. *campanella* Fischer ex Regel & Tiling, Fl. Ajan. 30. 1859.

Plants 14–20 cm tall, to 40 cm in fruit. Rhizome 2.5–4 mm in diam. Leaves 5–8, fully expanded by anthesis; petiole 2.5–12 cm, with pilose hairs; leaf blade ovate to narrowly ovate, 2.8–6 × 2–3.5 cm, 3-foliolate but lower leaflets essentially same shape as lateral segments of central leaflet, 2 × pinnate, abaxially sparsely pilose, adaxially nearly glabrous; lower leaflets and lateral segments of terminal leaflet obliquely ovate, pinnately divided, terminal lobes narrowly lanceolate to narrowly ovate, ca. 1 mm wide, apex acute. Scapes 1 or 2, erect, 2.5–4.5 cm, elongated to 22 cm in fruit, with hairs; involucre bracts ca. 1.8 cm, basally connate into a ca. 2 mm tube, apically deeply 3-lobed, lobes narrowly lanceolate, abaxially puberulent, margin entire or with 3 lobes. Flower nodding before and at anthesis. Sepals blue-violet to lilac, erect, elliptical to ovate, 1.4–1.9 × 0.8–0.9 cm, abaxially puberulent, apically slightly recurved. Anthers yellow. Infructescences ca. 5 cm in diam. Achenes ca. 4 mm, long puberulent. Persistent styles 1.5–2.4 cm. Fl. May–Jun.

Grassy slopes; 1800–3700 m. W Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia (W Siberia), Tajikistan].

8. *Pulsatilla turczaninovii* Krylov & Sergievskaja, Sist. Zametki Mater. Gerb. Krylova Tomsk. Gosud. Univ. Kuybysheva 5–6: 1. 1930.

细叶白头翁 *xi ye bai tou weng*

Pulsatilla turczaninovii f. *albiflora* Y. Z. Zhao.

Plants 15–25 cm tall. Leaves 4 or 5, expanding after anthesis; petiole 5–8 cm, with long pilose hairs; leaf blade narrowly elliptical, sometimes ovate, 7–8.5 × 2.5–4 cm, with (3 or) 4 pairs of lateral leaflets, 3 × pinnately divided, abaxially sparsely with hairs, adaxially glabrous; segments ovate, terminal lobes linear-lanceolate to linear, sometimes ovate, 1–1.5 (–2.5) mm wide, margin revolute, apex acute; lower segments petiolulate, upper segment sessile. Scapes ca. 1.5 cm, elongated to 15 cm in fruit, with hairs; involucre bracts 2.8–3.4 cm, basally connate into a 5–6 mm tube, apically finely divided, lobes linear to linear-lanceolate, 1–1.5 mm wide, abaxially puberulent. Sepals blue-violet, rarely white, erect, ovate-oblong to elliptical, 2.2–4.2 × 1–1.3 cm, abaxially puberulent, apex slightly acute to blunt. Anthers yellow. Infructescences ca. 5 cm in diam. Achenes ca. 4 mm, thickly puberulent. Persistent styles 4–5 cm. Fl. May–Jun, fr. Jun–Jul.

Grassy slopes. N Hebei, W Heilongjiang, W Jilin, W Liaoning, Nei Mongol, Ningxia, N Xinjiang [Mongolia, Russia (Far East, Siberia)].

This species is used medicinally.

9. *Pulsatilla tenuiloba* (Turczaninow ex Hayek) Juzepczuk, Fl. URSS 7: 298. 1937.

细裂白头翁 *xi lie bai tou weng*

Anemone tenuiloba Hayek, Festschr. Z. Feier. D. Siebzigtst. Geburtst. Prof. Dr. Ascher 472. 1904.

Plants (8–)15–20 cm tall. Rhizome thick, with dried remains of previous year's leaves. Leaves appearing before flowering, sparsely white puberulent; petiole ca. 2.5 cm; leaf blades narrowly oblong, ca. 5 × 2 cm, with 5 or 6 leaflets, 2 or 3 × pinnately divided, each lobe narrowly linear, 0.5–1 mm wide, apex acute. Scapes (1 or)2 or 3, thickly white puberulent at anthesis, sparsely white puberulent in fruit; involucre bracts deeply 3-lobed, each lobe further pinnately divided, lobes narrowly linear, 0.5–1 mm wide, abaxially thickly white puberulent, adaxially glabrous. Sepals violet, narrowly oblong-ovate, 2–3 × 0.6–1 cm, hairy abaxially, glabrous adaxially. Stamens ca. 1/2 as long as sepals; anthers yellow. Ovary thickly puberulent. Achenes obovate-oblong. Persistent styles ca. 2 cm, thickly puberulent proximally, glabrous apically. Fl. Jun–Jul.

Rocky grasslands. Nei Mongol [Mongolia, Russia (W Siberia)].

10. *Pulsatilla sukaczewii* Juzepczuk, Fl. URSS 7: 741. 1937.

黄花白头翁 *huang hua bai tou weng*

Plants 5–15 cm tall. Rhizome ca. 6 cm, 3–5 mm in diam.

Leaves 4–6, not fully expanded at anthesis; petiole 2–3.5 (–5.5) cm, puberulent; leaf blade narrowly ovate to oblong-ovate, 2–3.7 × 1.2–1.7 cm, with 4 pairs of lateral leaflets, 2 or 3 × pinnately divided, glabrous or sparsely hairy, apex acute, terminal lobes lanceolate-linear, 0.5–0.8 mm wide, wrinkled on both surfaces. Scape 1, erect, 5–6 cm, elongated to 14 cm in fruit, with hairs; involucre bracts 1.5–1.8 cm, similar to leaves, basally connate into a 1.5–3 mm tube, apically finely divided, puberulent. Sepals yellow or sometimes white, erect, oblong-ovate, 1–2.3 × 0.5–1 cm, abaxially thickly puberulent, apex slightly acute. Anthers yellow. Infructescences ca. 4.2 cm in diam. Achenes ca. 3 mm, thickly puberulent. Persistent styles 2–2.8 cm, basally puberulent, apically pilose. Fl. May–Jun.

Sandy slopes; ca. 300 m. Heilongjiang, Nei Mongol [Mongolia, Russia (E Siberia)].

11. *Pulsatilla millefolium* (Hemsley & E. H. Wilson) Ulbrich, Notizbl. Bot. Gart. Berlin-Dahlem 9: 225. 1925.

西南白头翁 *xi nan bai tou weng*

Anemone millefolium Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1906: 149. 1906; *Anemone mairei* H. Léveillé.

Plants 3.5–20 cm tall. Rhizome 7–9 mm in diam. Leaves 5–14, fully developed at anthesis; petiole 1.9–6.5 cm, with long pilose hairs; leaf blade ovate-elliptical to ovate-oblong, 2–10 × 1.2–4 cm, with 5 or 6 pairs of lateral leaflets, 3 × pinnately divided, abaxially sparsely pilose, adaxially glabrous, apex acute, secondary lobes finely divided, terminal lobes triangular to narrowly ovate and ca. 2 mm wide. Scape 1, erect, 10–15 cm, thickly pilose; involucre bracts

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0.9–2.2 cm, basally connate into a 2–2.5 mm tube, apically finely divided, terminal lobes lanceolate-linear, 0.5–1 mm wide, sparsely pilose. Sepals pale yellowish green, yellow, or reddish purple, erect, ovate-elliptical, 0.9–2 × 0.4–0.8 cm, abaxially thickly puberulent. Stamens ca. 1/2 as long as sepals; anthers yellow. Infructescences ca. 7 cm in diam. Achenes ca. 4 mm, thickly puberulent. Persistent styles 3–3.5 cm, puberulent. Fl. May–Jul.

- Forests, scrub, roadsides, slopes, dry stony places; 2200–3300 m. Sichuan, NE Yunnan.

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