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Chionophila (Plantaginaceae)
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X. CHIONOPHILA Bentham in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 10:
331. 1846 [Greek *chion*, snow, and *phili*os, loving, alluding to high-elevation habitats] *
Snowlover E

Craig C. Freeman

Pentstemonopsis Rydberg

Herbs, perennial; caudex woody or herbaceous, short. **Stems** erect, glabrous or puberulent. **Leaves** basal and cauline, cauline much reduced, usually opposite, sometimes alternate, +/- leathery or not; petiole present or absent; blade margins entire. **Inflorescences** terminal, spikelike racemes; bracts present. **Pedicels** present or absent; bracteoles absent. **Flowers** bisexual; sepals 5, connate proximally, calyx radially symmetric, cylindric to funnellform, lobes triangular to narrowly ovate; petals 5, connate, corolla greenish white, creamy white, or pale lavender, bilaterally symmetric, prominently bilabiate, tubular-funnelform, spurs absent, abaxial lobes 3, adaxial lobes 2; stamens 4, adnate to corolla proximally, didynamous, filaments glabrous, staminode 1, +/-filiform; ovary 2-locular, placentation axillary; stigma capitate. **Fruits**: capsules, symmetric, dehiscence septicial. **Seeds** 10--20, tan or brown, ellipsoid to fusiform or elliptic-discoid, winged. $x = 8$.

Species 2 (2 in the flora): w United States.

Chionophila shares many morphological similarities with *Penstemon*, most notably an epistaminal nectary of glandular hairs. Both genera have a base chromosome number of 8. R. M. Straw (1966) hypothesized that they are sister taxa. S. L. Datwyler and A. D. Wolfe (2004) and Wolfe et al. (1997, 2002) found molecular support for *Chionophila*, but with the genus more closely allied with *Chelone* and *Nothochelone* in subtribe Cheloneae than to *Penstemon*. *Chionophila* is distinguished from *Penstemon* by a more prominent calyx tube, spikelike racemes, prominently winged seeds, and the absence of bracteoles.

1. Verticillasters continuous; calyx tubes 8--9 mm..... 1. *Chionophila jamesii*
1. Verticillasters interrupted; calyx tubes 1--2 mm..... 2. *Chionophila tweedyi*

1. **Chionophila jamesii** Bentham in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 10: 331. 1846 *
Rocky Mountain snowlover E F

Stems 1--2(--3), (3--5)--12(--15) cm, puberulent or retrorsely puberulent, sometimes nearly glabrous. **Leaves** glabrous or scarcely puberulent; basal and proximal cauline leaves oblanceolate to narrowly oblanceolate or spatulate, 12--78 x 2--18 mm, base tapered, petiolar, apex obtuse to acute; cauline leaves 1--3 pairs, 8--28 x 1--3 mm, blade narrowly lanceolate to linear, base sessile, apex acute. **Racemes** 1--5 cm, verticillasters 2--7, continuous, secund, sparsely puberulent and, usually, sparsely glandular-puberulent, cymes 1-flowered, 1 per node; peduncle absent; bracts ovate to lanceolate, proximal ones 8--19 x 4--7 mm, margins entire, apex acute. **Pedicels** erect, 0--4 mm, glabrous or sparsely glandular-pubescent. **Flowers**: calyx tube 8--9 mm, sparsely glandular-puberulent, lobes triangular, 1.5--2.5 x 2--2.5 mm, margins entire, herbaceous, apex obtuse to acute, glabrous; corolla greenish white or creamy white, unlined, 10--15 mm, glabrous externally, palate and proximal parts of abaxial limb densely white-lanate with hairs to 1.5 mm, tube 3--4 mm, throat scarcely inflated, usually compressed horizontally, not constricted at orifice, 4--6 mm wide, abaxial lobes projecting, adaxial lobes spreading, stamens included; anther sacs opposite, dark purple or blackish, 0.5--0.6 mm, glabrous, dehiscing from apices across connective, explanate; staminode 5--7 mm, included, essentially terete, 0.1 mm wide, tip straight, glabrous; style

10--12 mm, glabrous. **Capsules** 8--9.5 x 4.5--6 mm, glabrous. **Seeds** tan to brown, ellipsoid to fusiform (with an elongate tail on each end), 3--4.2 mm. $2n = 16$.

Flowering Jun--Aug. Gravelly slopes in alpine meadows, subalpine bogs; 3300--4100 m; Colo., Wyo.

Chionophila jamesii occurs in the central Rocky Mountains from the Medicine Bow Mountains of south-central Wyoming south to the vicinity of Pikes Peak, south-central Colorado.

2. **Chionophila tweedyi** (Canby & Rose) L. F. Henderson, Bull. Torrey Bot. Club 27: 352. 1900 * Tweedy's snowlover E

Pentstemon tweedyi Canby & Rose, Bot. Gaz. 15: 66. 1890 (as *Pentstemon*); *Pentstemonopsis tweedyi* (Canby & Rose) Rydberg

Stems 1--4, (5--10--18(--25) cm, glabrous or scarcely glandular-pubescent distally. **Leaves** glabrous; basal and proximal cauline leaves oblanceolate, (8--25--90 x (1--3--13 mm, base tapered, petiolar, apex obtuse to acute; cauline leaves 1--4 pairs, 2--22 x 1--3 mm, blade narrowly lanceolate to linear, base sessile, apex acute. **Racemes** 1--7 cm, verticillasters 4--10, interrupted, secund, glandular-pubescent, cymes 1-flowered, 1 per node; peduncle absent; bracts lanceolate, proximal ones 3--9 x 1--3 mm, margins entire, apex acute. **Pedicels** erect, 0--7 mm, glandular-pubescent. **Flowers:** calyx tube 1--2 mm, glandular-pubescent, lobes triangular to narrowly ovate, 2.5--3 x 1.4--2 mm, margins entire or erose, broadly scarious proximally, apex acute, glandular-pubescent; corolla pale lavender, unlined, 9--14 mm, glabrous externally, palate and proximal parts of abaxial limb glandular-pubescent with hairs to 0.1 mm, tube 1--2 mm, throat scarcely inflated, usually compressed horizontally, not constricted at orifice, 3--4 mm wide, abaxial lobes projecting, adaxial lobes spreading, stamens included; anther sacs opposite, dark purple or blackish, 0.3--0.4 mm, glabrous, dehiscing from apices across connective, explanate; staminode 4--5 mm, included, essentially terete, 0.1 mm wide, tip straight, glabrous; style 6--7 mm, glabrous. **Capsules** 6.5--9 x 4--5 mm, glabrous. **Seeds** brown, elliptic-discoïd, 2.4--3 mm.

Flowering Jun--Aug. Talus slopes, meadows, usually near timber line; 2100--3200 m; Idaho, Mont.

Chionophila tweedyi is known only from central Idaho and southwestern Montana.