

BOLTONIA (ASTERACEAE: ASTEREAE) IN THE PACIFIC NORTHWEST

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ABSTRACT

Boltonia occidentalis (A. Gray) Howell occurs in marshy habits at ca. 2700 feet in Union Co., Oregon. Plants of estuarine habits of the Columbia River in Clatsop Co, Oregon, and Pacific and Wahkiakum cos., Washington, separated in geography, habitat, and morphology from *B. occidentalis*, are recognized here as ***Boltonia pacifica* Nesom, sp. nov.** Geographically closest and most similar to both of these species is *B. recognita* of the eastern USA and south-central Canada. ***Boltonia kalispelia* Nesom, sp. nov.**, from Bonner Co., Idaho, has long, multibracteate peduncles and perhaps is more closely related to eastern USA species than to the other two from the Pacific Northwest.

Except for small population systems in the Pacific Northwest (Map 1), species of *Boltonia* occur in the eastern USA. Plants from Union County in northeastern Oregon have been recognized as *B. occidentalis* (A. Gray) Howell but most floristic treatments (e.g., Cronquist 1955; Ferris 1960; Giblin et al. 2018; Chambers 2020) often have identified them within an inclusive concept of *B. asteroides* (L.) L'Hér. of the eastern USA (as *B. asteroides* var. *recognita*). Plants from estuarine habits of the Columbia River in Clatsop Co, Oregon, and Pacific and Wahkiakum cos., Washington, have implicitly been regarded as conspecific with the Union County plants but are recognized here as taxonomically separate. A single collection from Bonner Co., Idaho, is remarkably distinct and also is formally described here. A collection of *Boltonia decurrens* from Corvallis in Benton Co., Oregon, is from cultivation (*Halse 7411* — ID, KANU, RENO, RSA, VDB).

1. BOLTONIA OCCIDENTALIS (A. Gray) Howell, Fl. N.W. Amer. 1: 305. 1900. *Boltonia latisquama* var. *occidentalis* A. Gray, Synopt. Fl. N. Amer. 1(2): 166. 1884. *Boltonia asteroides* var. *occidentalis* (A. Gray) M.A. Paz, Phytoneuron 2025-42: 1. 2025. **TYPE: Oregon.** Union Co.: Bottoms, 1882, *W.C. Cusick s.n.* (holotype: GH). See comments by Paz (2025).

Herbaceous perennials, rhizomatous. **Stems** 60–180 cm, not fistulose. **Leaves** 10–17 mm wide. **Inflorescence** corymboid to subcorymboid, heads ca. 15–50; peduncles 1–5 cm long, ebracteate or with a single linear bract. **Involucres** 4.5–6 mm wide (pressed); phyllaries in (2–)3–4 series of unequal length, inner 3–3.5 mm long, outer ca. 1/2–2/3 as long, elliptic to elliptic-oblongate, dark midregion dark, prominently broadened distally, thin midline raised-resinous, apex attenuate-apiculate. **Ray flowers** 45–60. **Achene awns** ca. 1.5 mm long. Figures 7-9.

Boltonia occidentalis is similar to *B. recognita* of the central USA (Map 3) — heads are essentially axillary on relatively short, ebracteate peduncles, each subtended by a relatively unreduced leaf-like bract (continuing from the stem leaves) — but the phyllaries are more variable in morphology, with the median dark region sometimes distally broadened and giving the aspect of *B. latisquama*. The wide geographic disjunction and the apparent native habit of *B. occidentalis* are weighted here in its recognition.

Additional collections. Oregon. Union Co.: La Grande, ca. 45.3° N, 118.10° W, [ca. 2800 ft], no date, *Avery s.n.* (OSC); Grande Ronde Valley, tules [= sedge marsh], ca. 45.25° N, 117.98° W, [ca. 2700 ft], Aug 1897, *Cusick 1767* (US, WS); Grande Ronde Valley, margin of the Tules, ca. 45.25° N, 117.98° W, [ca. 2700 ft], Aug [no year], *Cusick 11307* (OSC, YU); Hot Lake, 45.24° N, 117.96° W, damp ground, [2700 ft], 1 Aug 1915, *Peck 3138* (WILLU); La Grande, ca. 45.35° N, 118.10° W, swampy ground, [ca. 2800 ft],

3 Aug 1910, *Peck 3139* (WILLU); La Grande Valley, bank of dried up creek, 3150 ft [960 m], 17 Aug 1897, *Sheldon 8945* (US). Figures 1-6.



Map 1. Distribution of *Boltonia pacifica* (orange), *B. occidentalis* (green), and *B. kalispelia* (blue), Oregon, Washington, and Idaho.

2. *BOLTONIA PACIFICA* Nesom, *sp. nov.* TYPE: Oregon. Clatsop Co.: Columbia River estuary (RM 28), near Svensen, fresh water tidal marsh, common, co-dominant species over several square miles of marshy island, with *Carex lyngbyei*, *Sium suave*, *Juncus oxymeris*, Aug 1980, D.W. Thomas s.n. (holotype: OSC).

Similar to *Boltonia occidentalis* in its rhizomatous habit, fistulose stems, corymboid inflorescence, and long achenial awns but different in its geography, habit, and elevation (0-2 meters vs. 960–2800 meters), involucre 7–8 mm wide, phyllaries oblong-lanceolate to narrowly elliptic-lanceolate, whitish margins narrow, dark midregion slightly broadened distally, midline not raised-resinous, apex acute but not apiculate (vs. involucre 4.5–6 mm wide, phyllaries elliptic to elliptic-oblong-lanceolate, whitish margins broad, dark midregion prominently expanded distally, midline raised-resinous, and apex apiculate), and rays 15–30 (vs. 45–60).

Perennial herbs, rhizomatous, glabrous. **Stems** erect, ca. 60–150 cm, fistulose proximally, branched above the middle. **Leaves**: basal and lower cauline deciduous by flowering; cauline uniform in size or slightly reduced distally, evenly spaced up to the inflorescence, narrowly oblong-lanceolate, 4–8(–10) cm long, 5–10 mm wide, basally attenuate without a distinct petiole, not clasping, apex attenuate-acute. **Inflorescence** corymboid to subcorymboid from distal-most branches, heads ca. 20–35; peduncles 2–4(–8) cm long, ebracteate or with 1–2 linear bracts. **Involucres** 7–8 mm wide (pressed); phyllaries in 2–3 series of subequal to unequal length, inner ca. 3–3.5 mm long, outer ca. 1/2–2/3 as long, oblong-lanceolate to narrowly elliptic-lanceolate (mostly straight-sided, not elliptic-oblong-lanceolate), margins narrow, whitish, dark midregion slightly dilated distally, midline not raised-resinous, apex acute, not apiculate. **Ray flowers** 15–30. **Disc corollas** ca. 2 mm long. **Achene awns** 1.5–2 mm long. Figures 7–9.

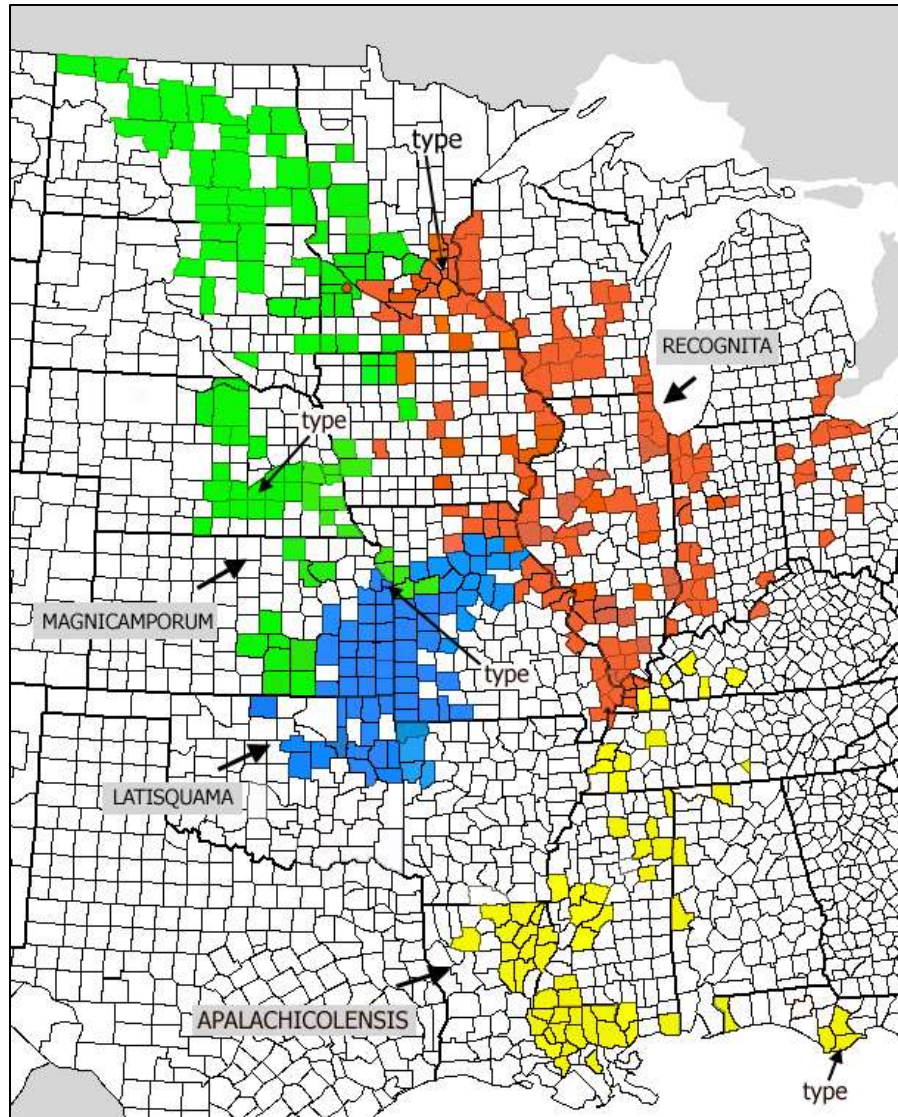
Flowering August–October. Intertidal marshes, tidal flats; ca. 0–2 meters.



Map 2. Distribution of *Boltonia pacifica*, lower Columbia River, Oregon and Washington. From collections and iNaturalist observations.

Additional collections. Oregon. Clatsop Co.: Near Astoria, tide flats, est. ca. 46.19° N, 123.76° W, 23 Sep 23 1951, *Gilkey s.n.* (OSC, WILLU); Cathlamet Bay, Columbia River, fresh tidal marsh, abundant, 10 Sep 1957, *Hotchkiss 7531* (US); John Day [entering Cathlamet Bay], salt marshes, "escaped" [as on the label], 20 Aug 1902, *Sheldon S.11184* (OSC); Columbia River Estuary, 6 mi E of Astoria, Burnside Marsh, 46.19° N, 123.67° W, freshwater tidal marshes, co-dominant species over several square miles of marshy island, "Aug 1982, *Thomas s.n.* (OSC); Cathlamet Bay, S shore of Columbia River, Burnside Marsh by Twilight Eagle Sanctuary, 46.17° N, 123.69° W, common on slightly higher ground in fringes of sunny freshwater intertidal marsh, with *Equisetum fluviatile*, *Phalaris arundinacea*, *Aster subspicatus*, *Leersia*, 20 Aug 2005, *Zika 22188* (WS). **Washington.** Pacific Co.: Baker's Bay, at toe of slope of 1980s landslide S of Hwy 100, SW of Ilwaco, in Cape Disappointment State Park, 46.291808° N, 124.053711° W, tidal marsh, near the cliffs, at back of marsh with *Typha latifolia*, *Phalaris arundinacea*, and other grasses and sedges, small mass of plants, just starting to flower, 16 Sep 2008, *Ray s.n.* (WTU). Wahkiakum Co.: Columbia River, north shore of Grays Bay, 46.31° N, 123.708333° W, lower end of freshwater intertidal marsh, along channels in marsh, with *Alisma*, *Sagittaria*, *Scirpus triqueter*, uncommon perennial, 1 Oct 2003, *Zika 19219* (WTU); north shore of Columbia River, below Steamboat Slough Road, 46.243333° N, 123.423333° W, upper freshwater intertidal marsh, with *Sagittaria latifolia*, *Lythrum salicaria*, *Sium suave*, *Crassula aquatica*, *Juncus oxymeris*, occasional, rhizomatous, 21 Aug 2005, *Zika 22194* (WTU).

iNaturalist observations: T. Abe Lloyd, 1 Aug 2018, Clatsop County <<https://www.inaturalist.org/observations/66407454>>; T. Abe Lloyd, 2 Aug 2018, Wahkiakum County <<https://www.inaturalist.org/observations/66408031>>



Map 3. Distribution of *Boltonia magnicamporum*, *B. recognita*, *B. latisquama*, and *B. apalachicolensis* — *B. magnicamporum* continues northward into Saskatchewan and Manitoba. *Boltonia recognita* is perhaps closely related to *B. pacifica* and *B. occidentalis*, *B. magnicamporum* and *B. latisquama* to *B. kalispelia*.

The earliest collection was in 1902 by Edmund Sheldon — his label note of "escaped" did not include the basis for the observation. Duncan Thomas in 1980, perhaps in response to Sheldon's label, noted that it was a "co-dominant species over several square miles of marshy island" and that "All indications point to its having been there for a very long time." The occurrence of *Boltonia pacifica* as an introduced non-native can't be discounted (David Giblin, pers. comm., and Giblin 2020), but its morphology is not matched by species of the eastern USA — an unambiguous assessment of its nativity perhaps awaits molecular evidence.

A record of *Boltonia* from northern Idaho, distant in geography and distinct in morphology from both *B. occidentalis* and *B. pacifica*, is known only from a single collection. Morphology suggests that it may be more closely related to species of the eastern USA than to either of the others from the Pacific Northwest. J.H. Christ made numerous collections of wetland species in 1929-1941 from the area Sandpoint, Idaho (as well as elsewhere around Lake Pend Oreille), some explicitly from the "lakeshore" and along "sloughs," as with the type collection here.

3. BOLTONIA KALISPELIA Nesom, **sp. nov.** **TYPE:** **Idaho.** Bonner Co.: Sandpoint, lakeshore along edge of slough, [ca. 48.28 N, 116.55 W, ca. 2100 ft], 13 Aug 1941, *J.H. Christ 12830* (NY). Figures 10-13.

Similar to *Boltonia occidentalis* and *B. pacifica* in its rhizomatous habit but different in its non-fistulose stems, narrower leaves, and subcorymboid-paniculate (vs. corymboid) inflorescence of a greater number of heads essentially solitary on long, linear-bracteate peduncles. Similar to *B. magnicamporum* in its rhizomatous habit and subcorymboid-paniculate inflorescence but distinct in its longer peduncles (3.5–10 cm vs. 0.5–2.5 cm) with more numerous bracts (5–8 vs. 0–5), smaller heads (involucres 6–7 mm wide vs. 7–8 mm), and narrow phyllaries (0.8–0.9 mm vs. 1–1.5 mm) with narrower white margins and acute, non-apiculate apex (vs. obtuse-rounded and apiculate).

Perennial herbs, rhizomatous, glabrous. **Stems** erect, ca. 80 cm, branched above the middle. **Leaves:** basal and lower cauline deciduous by flowering; cauline uniform up to ca. midstem where the inflorescence begins, narrowly oblong-lanceolate, 5–10 cm long, 5–7 mm wide, basally attenuate without a distinct petiole, not clasping, margins scabrous, apex attenuate-acute, much smaller or bracteate in the inflorescence. **Inflorescence** paniculate, heads ca. 50–60 per main axis, from nodes distal to midstem, peduncles 3.5–10 cm long (heads essentially solitary) with 5–8 linear bracts. **Involucres** 6–7 mm wide (pressed); phyllaries in 2–3 series of subequal length, inner 3–4 mm long, oblong-lanceolate to narrowly elliptic-lanceolate, 0.8–0.9 mm wide, margins narrow, whitish, midregion dark, midline not raised-resinous, apex acute, not apiculate. **Ray flowers** 35–40. **Disc corollas** ca. 2 mm long. **Achene** awns ca. 0.5 mm long. Figures 10-13.

The paniculate, long-peduncled inflorescence of *Boltonia kalispelia* is similar to that of *B. latisquama* among the Midwest species closest in distance to Bonner County (albeit more than 600 miles), but the latter is not rhizomatous and is conspicuously different in phyllary morphology. A guess about relationships among *Boltonia* species based on morphology is no more than a guess.

The traditional territory of the indigenous Kalispel people, colloquially known as the Pend Oreille, extended over the drainage systems of the Flathead River, Clark Fork, and the Pend Oreille River in eastern Washington and into British Columbia (Wikipedia).

ACKNOWLEDGEMENTS

Gratitude to David Giblin for his comments and suggestions, including those from his 2020 presentation, now on YouTube.

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Figure 1. *Boltonia occidentalis*. Union Co., Oregon, Cusick s.n. in 1882 (GH), holotype.

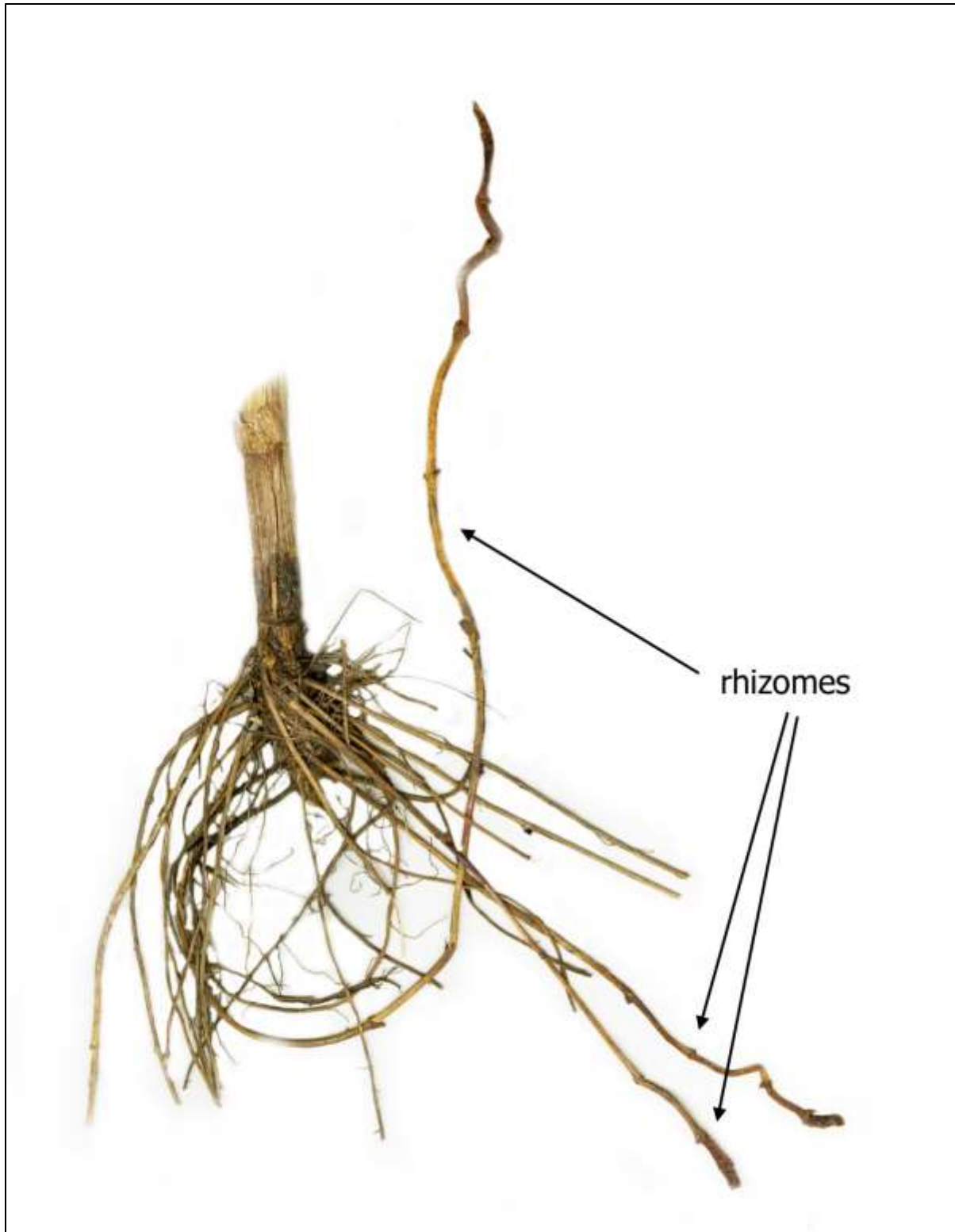


Figure 2. *Boltonia occidentalis*. Detail from *Cusick s.n.* (GH), holotype.



Figure 3. *Boltonia occidentalis*. Detail from *Cusick s.n.* (GH), holotype.



Figure 4. *Boltonia occidentalis*. Union Co., Oregon, Grande Ronde Valley, margin of the Tules, Cusick s.n. (OSC).



Figure 5. *Boltonia occidentalis*. Union Co., Oregon, Cusick 1767 in 1897 (BRU).



Figure 6. *Boltonia occidentalis*. Union Co., Oregon, Cusick 1767 in 1897 (US).



Figure 7. *Boltonia pacifica*. Clatsop Co., Oregon, Hotchkiss 7531 (US).



Figure 8. *Boltonia pacifica*. Clatsop Co., Oregon, Thomas s.n. (OSC).



Figure 9. *Boltonia pacifica*. Clatsop Co., Oregon, Sheldon S.11184 (OSC).



Figure 10. *Boltonia kalispelia*, Bonner Co., Idaho, Christ 12830 (NY). Holotype.



Figure 11. *Boltonia kalispelia*. Detail from Figure 10.



Figure 12. *Boltonia kalispelia*. Detail from Figure 10.

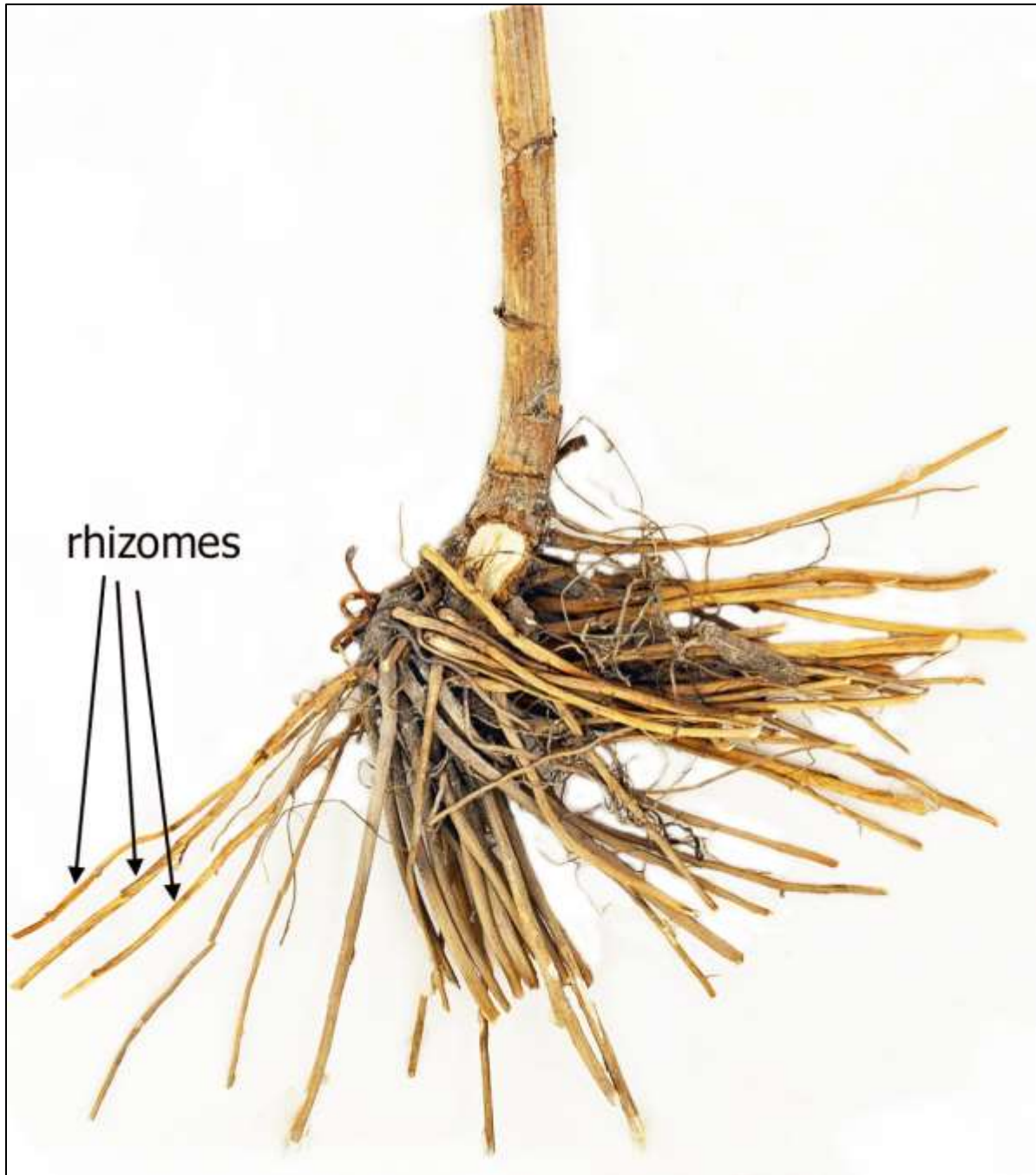


Figure 13. *Boltonia kalispelia*. Detail from Figure 10.