

**PYROCOMA APARGIOIDES (ASTERACEAE: ASTEREAE)  
AND SIMILAR SPECIES**

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**ABSTRACT**

*Pyrocoma apargioides* is a relatively widespread species at high elevations in the Sierra Nevada of California and Nevada. Plants of a long-disjunct population system in the Toiyabe and Toiyabe ranges of Nye Co., Nevada, are morphologically typical of *P. apargioides* except for slightly smaller heads. A localized population system in Fresno Co. is morphologically distinct and recognized here as **Pyrocoma fresnoa** Nesom, **sp. nov.** A population system in Tulare Co. and adjacent Inyo Co., disjunct southward from typical *P. apargioides*, is morphologically distinct and recognized here as **Pyrocoma tularia** Nesom, **sp. nov.** The geographical range of *P. prionophylla* is revised to include additional localities in Mono and Fresno counties. Close relatives of *P. apargioides* also include *P. mineralis* Nesom, *P. thermolibes* Nesom, and **P. sierravallis** Nesom, **sp. nov.**, endemic to the Sierra Valley, mostly of Plumas Co., California.

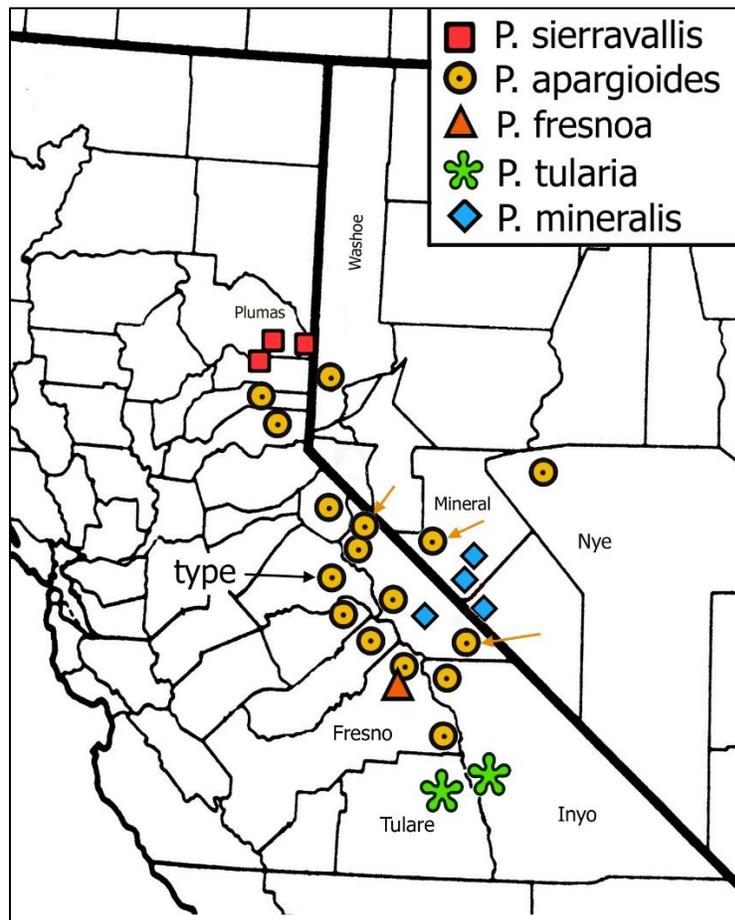
*Pyrocoma apargioides* is a species of the Sierra Nevada of California and Nevada — it has been described as occurring at elevations of about 7200–12,500 feet (e.g., Munz 1959; Brown 1993; Mayes 1976; Keil & Brown 2012), characterized by its low habit, mostly solitary heads, and glabrous achenes. Among the sierran populations, however, two systems at lower elevations are morphologically and geographically distinct from typical *P. apargioides* and are formally segregated here (as *P. fresnoa* at 6600–7900(–9000) feet and *P. tularia* at (5500–)7900–11,500 feet) — *P. apargioides* sensu stricto occurs at 9700–12,500 feet. Four other glabrous-fruited species are hypothesized to be closely related and together constitute the "apargioides group" (Maps 1 and 2) — *P. prionophylla* Greene, *P. mineralis* Nesom, *P. thermolibes* Nesom (Nesom 2025), and another lower-elevation species described here — *P. sierravallis*.

**1. PYROCOMA APARGIOIDES** (A. Gray) Greene, Erythea 2: 70. 1894. *Haplopappus apargioides* A. Gray, Proc. Amer. Acad. Arts 7: 354. 1868. *Aster apargioides* (A. Gray) Kuntze, Rev. Gen. 1: 317. 1891. **TYPE: California.** Tuolumne Co.: Soda Springs, on the Tuolumne River, 9700 ft, 1866, *H.N. Bolander 5050* (holotype: GH; isotypes: BRU, MO, NDG, NY-3 sheets, UC-3 sheets, US-3 sheets).

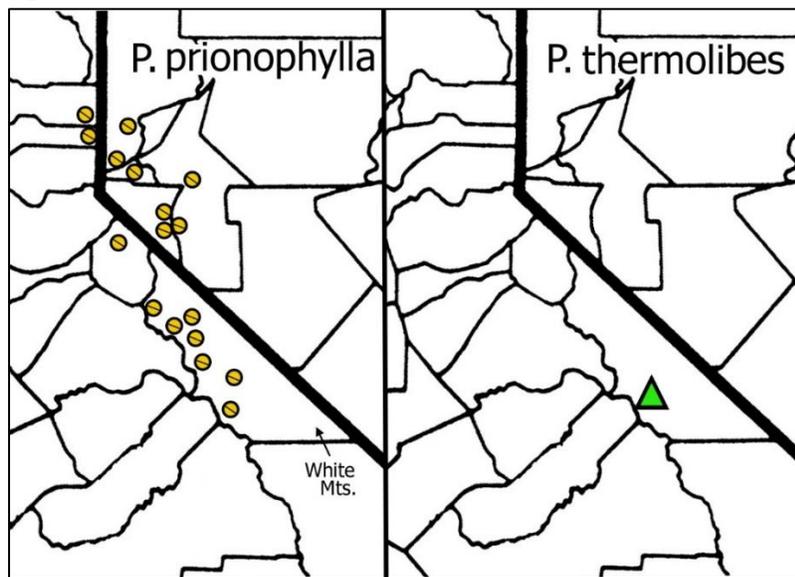
*Pyrocoma demissa* Greene, Leafl. Bot. Observ. Crit. 2: 10. 1909. **TYPE: California.** Nevada Co.: Mt. Stanford, 8800 ft, 5 Aug 1888, *C.F. Sonne 139* (holotype: US; isotypes: F, JEPS, MO, PH, UC-2 sheets).

**Stems** decumbent-ascending to ascending-erect, 4–18 cm, unbranched or rarely with a short branch, glabrous to sparsely villous, eglandular. **Leaves:** basal persistent in a rosette, linear-oblongate, 2–5(–8) cm long, slightly tapering to a barely perceptible petiolar region, blades 1.5–4 mm wide, glabrous, eglandular, fibrous petiole bases persistent, margins usually with coarse teeth or lobe-like teeth, eciliate, cauline gradually reduced proximally, not clasping, subclasping, or sheathing, linear and bractlike distally. **Heads** 1 (rarely 2–3). **Involucres** 12–16[–20] mm wide (pressed); phyllaries in 3–4 series of unequal to subequal length, inner 6–8[–11] mm long, outer usually half as long, oblong with a deltate apex, green area in distal 1/2–1/3, glabrous, eglandular, outer with a narrow, white-indurate margin, inner usually with a prominent, hyaline, often purplish rim. **Ray florets** (12–)15–28, fertile, corollas 9–11 mm long, 1.5–2 mm wide, coiling. **Disc corollas** 6–7 mm long. **Achenes** 3.5–4[–7] mm long, glabrous. Figures 1–10.

Flowering July-August. Streamsides, washes, ridges, gravelly soil, turf, alpine, subalpine; 9700-12,500 feet.



Map 1. Distribution of *Pyrrocomma sierravallis*, typical *P. apargioides*, *P. fresnoa*, *P. tularia*, and *P. mineralis*. Arrows point to areas of multi-headed variants of *P. apargioides* (see text).

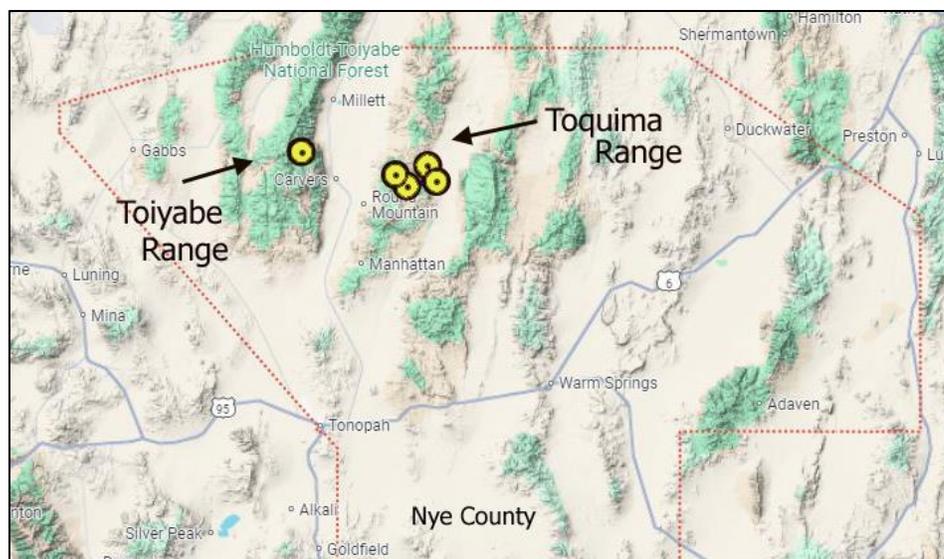


Map 2. Distribution of *Pyrrocomma prionophylla* and *P. thermolibes*. California and Nevada. Maps 6-8 for detailed distribution of *P. prionophylla*; Nesom (2025) for detailed distribution of *P. thermolibes*.

A particularly large variant of *Pyrrocoma apargioides* was collected by C.G. Pringle in Sierra County: "Sierra Nevada Mountains, above Summit Valley, 9000 ft," 27 Sep 1882, *Pringle s.n.* [14559] (MO, OSC, US-Fig. 10) — the printed label has the notation of "Large variety–Gray." Stems 8–14 cm long; basal leaves 5–8 cm long; heads solitary; involucre 18–20 mm wide, inner phyllaries 10–11 mm long; achenes 6–7 mm long. Apart from size, the plants align with the typical expression in overall morphology. The high measurements are included in the species description in square brackets.

Plants from the Carson Range in Washoe Co., Nevada, at the northernmost point of the distribution, are typical *Pyrrocoma apargioides* (e.g., *Heller 9973-RENO*, *Tiehm 17597-NY*, *KANU*, *RENO*, *UTC*, *UNLV*, *RSA*).

In the Toiyabe and Toiyama ranges of northern Nye Co., Nevada, collections have been made of plants identified as *Pyrrocoma apargioides*. Despite their long disjunction from the main Sierran range and an expectation that they would be differentiated, morphological differences are not apparent. They should be studied more closely but here are included within the species.



Map 3. *Pyrrocoma apargioides* in Nye Co., Nevada.

**Nye County collections.** Toiyabe Range: 3 mi NW of Toiyabe Dome, broad *Artemisia tridentata* subsp. *nova* ridge, gravelly soil in shallow wash, 11,000 ft, frequent, 27 Jul 1945, *Maguire & Holmgren 25968* (NY-2 sheets). Toiyama Range: Upper Moores Creek, subalpine, under *Populus tremuloides*, 9940 ft, 2 Jul 1992, *Charlet 1072* (UNLV); Barker Creek, Alta Toiyama Village, alpine along creek, 11,020 ft, 12 Aug 1992, *Charlet 1211* (UNLV); South Peak of Mt. Jefferson, turf on rocky granitic NE slope of the peak, not far below the summit, 11,500 ft, rays 13-18, 15 Jul 1973, *Cronquist 11044* (NY); north fork of Pine Creek Canyon, moist loam soil near stream, 11,000 ft, 19 Jul 1945, *Maguire & Holmgren 25843* (NY); Pine Creek drainage near source of the South Fork, near 11,000 ft, common, 23 Jul 1964, *Reveal 634* (KU, NY); South Jefferson Peak, ridge leading to peak, 11,400 ft, common in protected area, 7 Aug 1976, *Tiehm 2764* (NY, RENO, UNLV).

Some plants identified here as *Pyrrocoma apargioides* in the White Mountains of Inyo County differ from the typical expression in their multiple heads (citations below), but typical plants also occur there. All in the White Mountains occur at high elevations (9500-10,500 feet) and all are interpreted here to be part of a single entity, as are similar variants in Mono and Mineral counties (Map 1).

#### **Multi-headed variants of *P. apargioides*.**

Mono Co. (White Mts.): Along Crooked Creek, N of Crooked Creek Research Station, 37.505° N, 118.166° W, montane riparian bristlecone forest, montane meadow, associated with creek, 10,086 ft, with

*Artemisia tridentata*, *A. rothrockii*, *Erigeron lonchophyllus* *Astragalus lentiginosus*, *Eriogonum ovalifolium*, *E. umbellatum*, *Potentilla* sp., *Arenaria*, *Elymus elymoides*, *Pinus longaeva*, scarce perennial, 2 Aug 2012, Elvin 6884 (LA); Deep Springs Cow Camp, 0.65 mi S 10° W of Station Peak, Deep Springs Valley drainage, 37.504° N, 118.110° W, wet rich sod, 9480 ft, with *Juncus*, *Potentilla*, *Artemisia*, *Cirsium*, Poaceae, etc., locally frequent in moist areas, 13 Aug 1983, *Morefield 1688* (RENO, RSA); North Fork Crooked Creek, 0.38 air mi NE of UC White Mountain Research Center Crooked Creek Station, 37.504° N, 118.168° W, 10,099 ft, meadow, in dry creek channel, with *Carex douglasii*, *Muhlenbergia richardsonis*, 6 Jul 2015, *Neubauer 333* (OBI, RENO); Cottonwood Basin, 1.3 air mi E of Eva Belle Mine, 37.551° N, 118.174° W, 9915 ft, edge of meadow, moist soil, 29 Jul 2016, *Neubauer 873* (RENO); Big Prospector Meadow [37.491° N, 118.185° W], by arrastra, with sagebrush, Douglas sedge and junegrass in sandy loam, 10,400 ft, common, 11 Aug 1969, *Zufelt 71* (CAS, INF).

**Mono Co.** (Sweetwater Mts.): SE side of Wheeler Peak on the SE side of the range, 10,700 ft, locally common in meadow areas near seepages, 25 Aug 1985, *Tiehm 10231* (CAS, RENO)

**Mineral Co.:** Wassuk Range, Lapon Meadows [38.525° N, 118.812° W], 9000 ft, 12 Sep 1938, *Archer 7082* (MO, NY, RENO).

**2. PYRROCOMA FRESNOA** Nesom, **sp. nov.** **TYPE: California.** Fresno Co.: Jackass Meadows, granitic sand at meadow-granitic slope border, 7300 ft, common, 12 Jul 1954, *A.R. Kruckeberg 3451* (holotype: CAS; isotypes: DS, RSA, UT, WS, WTU). Figures 11, 12, 13.

Distinct from *Pyrrocoma apargioides* in its smaller heads (involucre 10–12 mm wide vs. 12–16 mm) usually 2–3(–7) in an open raceme, fewer phyllaries (see illustrations) with a more restricted green patch and abruptly deltate acute-apiculate apex, habitats at lower elevations (6600–7900(–9000) feet vs. 9700–12,500 feet), and separate, coherent geography.

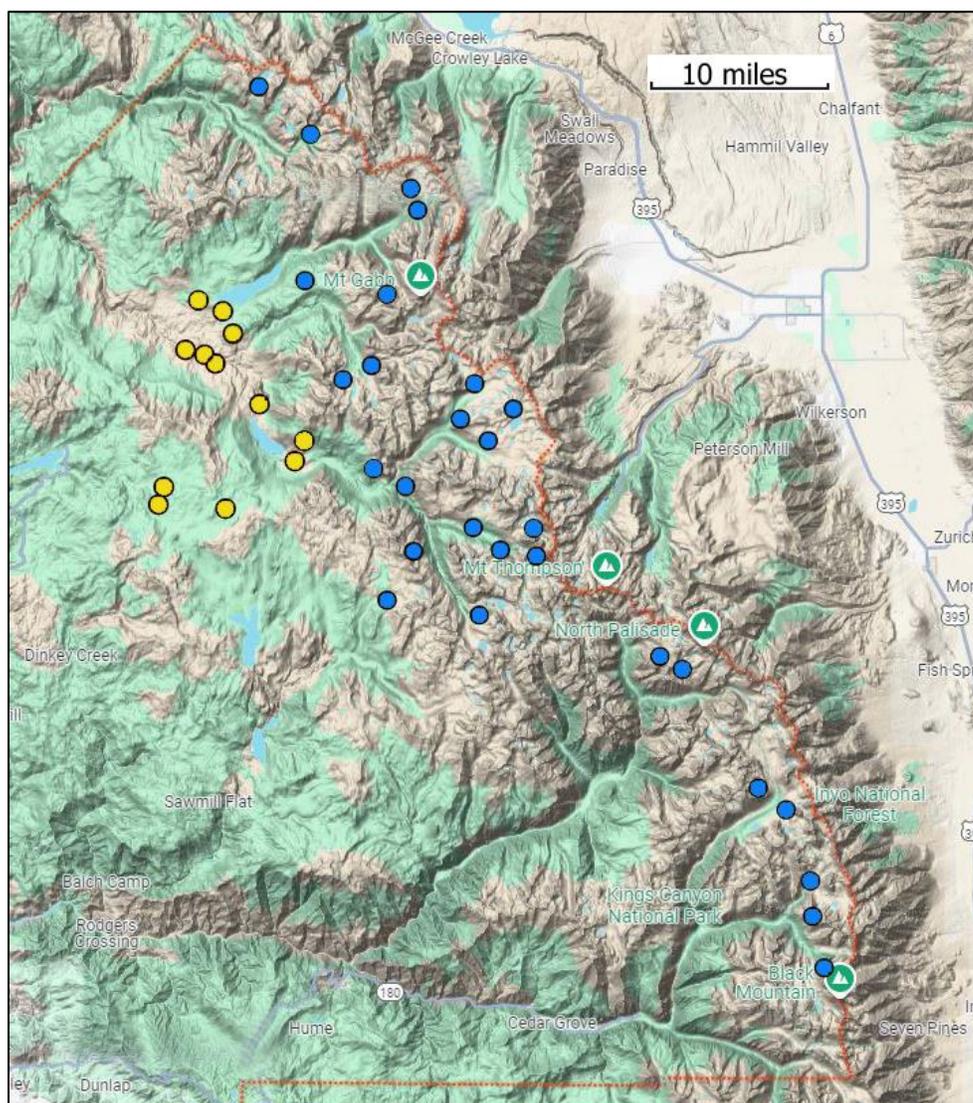
**Stems** decumbent ascending to ascending erect, (6–)8–25 cm, glabrous to sparsely pubescent near the heads, eglandular, often purplish. **Leaves:** basal linear-lanceolate or linear-oblong to narrowly oblanceolate, 4–14 mm long, attenuate to a vaguely defined petiolar region, remnants of fibrous petiole bases persistent, blades 4–8 mm wide, margins entire or subentire to evenly serrate, surfaces glabrous, cauline mostly narrowly oblong-lanceolate to linear, proximal sometimes subclasping. **Heads** 1 or usually 2–3(–7) in an open raceme (peduncles 1–4 cm long) or subcorymboid, without immediately subtending bracts. **Involucres** 10–12 mm wide (pressed); phyllaries in 3–4 series of unequal length, inner (5.5–)6–8 mm long, outer half as long, narrowly oblong-lanceolate, with an abruptly deltate acute-apiculate apex, green area sharply delimited in distal 1/3–1/2, glabrous, eglandular, whitish-indurate proximally with a green midline, margins smooth with a narrow indurate-whitish to slightly scarious rim. **Ray florets** (12–)14–24, fertile, corollas 8–10 mm long, 1 mm wide, coiling. **Disc corollas** 5 mm long. **Achenes** ca. 3 mm long, glabrous. Figures 11–19.

Flowering July–August (September). Wet and dry meadows, around hot and saline springs, alkaline flats; 6600–7900 (–9000) feet.

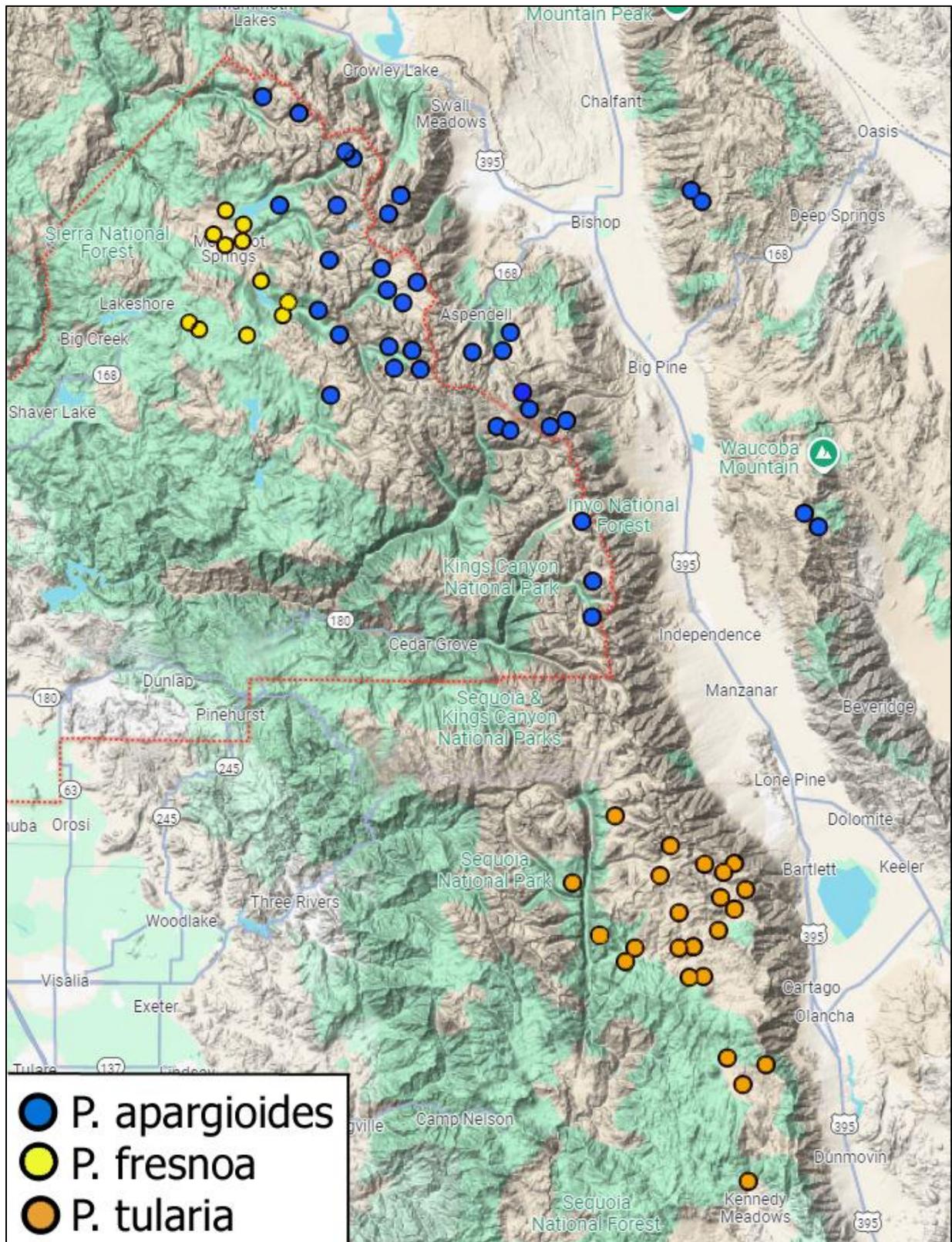
**Additional collections. California.** **Fresno Co.:** Hot Spring Pass, 18 Aug 1906, *Eastwood s.n.* (CAS-2 sheets); Vermilion Valley, wet meadow, boggy soil, open forest, ca. 7700 ft, abundant, 18 Jul 1935, *Everett 7381* (DS, MO, OSC, RSA, WTU); Mono Hot Springs, 6400 ft, 3 Aug 1918, *Grant 1486* (FSC, JEPS); Mono Meadow, Mono Creek, 37.34664° N, 119.012955° W, edge of boggy meadow, which is full of mineral springs, 6900 ft, 10 Aug 1928, *Jepson 13223* (JEPS); vicinity of trail eastward from S end of Florence Lake to boundary of Kings Canyon Natl Park, 37.2405° N, 118.926° W, mosaic of montane coniferous forests, meadows, and montane chaparral, locally common in dry meadow, 7200–7900 ft, 7–10 Sep 1993, *Keil s.n.* (OBI); southern arm of Long Meadow, near Black Peak or Potato Hill, tributary to South Fork Big Creek, along trail to Dinkey Lake, fairly dry meadow, 9000 ft, 31 Jul 1951, *Quibell 468* (FSC); 1/8 mi above E end of Vermilion Valley, W side of Mono Creek, just below 1st rapids, ca. 7600 ft, below high water of prospective reservoir, common in *Carex exserta* meadows, 7 Jul 1953, *Quibell 2532* (FSC); 1/8 mi above E end Vermilion Valley, W side Mono Creek Canyon, ca. 7650 ft, near high water mark of prospective reservoir, near high water mark of prospective reservoir, in rock crevices above second aspen

drainage, foot of rolling ice-planed granite W wall, ca. 7650 ft, 8 Jul 1953, *Quibell 2596* (CAS, JEPS, RSA); floor of Vermilion Valley, opposite E granite bulge, N wall, 1/2 mi from E end, ca. 50 ft below water line of reservoir, scattered in *Carex exserta* meadow, 9 Jul 1953, *Quibell 2605* (FSC); Rock Meadow (or Long Meadow), Black Peak and just W of emergence of South Fork Big Creek in meadow, above Huntington, along Dinkey Lakes Trail in *Carex exserta* meadow, 9000 ft, occasional and just starting to flower, 26 Jul 1953, *Quibell 3016* (FSC); Blayney Meadows, hot springs, 7800 ft, 2 Aug 1952, *Raven 4886A* (CAS); Mono Meadow along Mono Creek, a few mi from the San Joaquin River, dry, grassy spot near a rock pile, 7000 ft, 13 Jul 1936, *Robinson b69* (FSC); along Camp 61 Creek ca. 200 meters up from confluence with South Fork San Joaquin River, 37.317 N, 119.016 W, saline margin of mineral spring in meadow, 6600 ft, 15 Aug 1985, *Taylor 8709* (CAS); unnamed lake 0.5 mi NE of Doris Lake, ca. 1 air mi N of Mono Hot Springs, strongly alkaline flat with salt crust, dominated by *Triglochin maritima*, 6780 ft, 10 Sep 2008, *Taylor 20373* (JEPS).

*Pyrrocoma apargioides* (typical), mapped in Map 4 for Fresno County. Armacost 23; Bacigalupi 3940; Burke 393B; Crafts 595; DeDecker 965; Evans s.n.; Gordon 1146; Halton H-132; Hardham 8788; Kerr s.n.; Lorraine 9209; McDonald 492; Payne s.n.; Quibell 674, 3016, 3396, 4795, 4812, 4946, 5223, 5349, 5598, 5948, 6404, 6464, 6672, 7211, 7973; Raven 7184, 7894, 9870; Rountree s.n.; Sharsmith 3141; Smith s.n.; Thomas 4655; Wrightson 8852; York 1321, 1387.



Map 4. Distribution of *Pyrrocoma fresnoa* (yellow) and *P. apargioides* (blue) — Fresno Co., California.



Map 5. Distribution of *Pyrocoma tularia* (Tulare and Inyo cos.) and *P. fresnoa* (Fresno Co.) in relation to closest population of typical *P. apargioides* in Fresno, Inyo, and Mono counties. This shows *P. apargioides* at the southernmost extremity of its range. The Fresno County boundary is outlined in red.

**3. PYRROCOMA TULARIA** Nesom, **sp. nov.** **TYPE: California.** Tulare Co.: South Fork Kern River, Bakeoven Meadows, 8100 ft, 14 Jul 1950, *Howell 26876* (holotype: US; isotype: CAS). Figures 20, 21.

Similar to *Pyrocoma apargioides* in its high elevation habitats, basal rosette, decumbent-ascending stems, mostly herbaceous phyllaries, and glabrous achenes. Distinct in its taller stems, unbranched or commonly branching with 2–4(–7) heads per stem, larger leaves with entire to subentire or serrulate margins evenly short-ciliate with stiffly spreading hairs, phyllaries green only on the distal portion, more rays (24–40 vs. (12–)15–28), and allopatric, more southern geographic range.

**Stems** decumbent-ascending, (6–)10–20 cm, sparsely villous, eglandular, often purplish, simple or with 2–3(–6) branches above the middle. **Leaves:** basal persistent in a rosette, obovate-ob lanceolate to oblanceolate, rarely linear-ob lanceolate, 4–10 cm long, blade (4–)6–15 mm wide, surfaces glabrous, margins entire to subentire or serrulate, evenly short-ciliate with stiffly spreading hairs, remnants of fibrous petiole bases persistent, cauline mostly 4–6 up to the heads, narrowly oblong to linear-lanceolate, proximal often subclasping-sheathing. **Heads** 1 or 2–4(–7) from distal branches, sometimes vaguely racemoid, without immediately subtending bracts, peduncles 1.5–7 cm long. **Involucres** 12–16 mm wide (pressed); phyllaries in 3–4 series of subequal to unequal length, inner 8–10 mm long, outer half as long, narrowly oblong-lanceolate, with an acute apex, green area in distal 1/2–1/3, sparsely puberulent with minute, appressed hairs, eglandular, indurate proximally. **Ray florets** 24–40, fertile, corollas 10–12 mm long, 1.2–1.8 mm wide, coiling. **Disc corollas** 6 mm long. **Achenes** 4–5 mm long, glabrous. Figures 20–32.

Flowering (June) July–August (September). Alkaline areas in meadows, around mineral springs, areas of Jeffrey pine and pinyon-sagebrush at lower elevations, mostly higher in areas of lodgepole and foxtail pine; (5500–) 7900–11,500 feet.

Plants of *Pyrocoma tularia* are variable in leaf size but margins of even the smallest (e.g., Fig. 7) are subentire to shallowly serrate, in contrast to the characteristically coarsely toothed margins of *P. apargioides*. Involucral morphology also is variable and sometimes closely approaches that of typical *P. apargioides*. The stiffly short-ciliate margins of leaves that tend to be large and obovate, the consistently greater number of rays, and the disjunct and coherent geography support recognition of this population system as distinct.

**Additional collections. Inyo Co.:** W of Independence, Onion Valley, 36.774° N, 118.335° W, 9000 ft, grassy flat, 24 Jul 1942, *Alexander 3146* (UC); Cottonwood Lakes, SW of Lone Pine, meadows, 11,000 ft, common, 17 Aug 1942, *Alexander 3314* (CAS, MO, UC); crest of Lead Canyon Trail, 36.949° N, 118.042° W, bristlecone pine forest, 10,100 ft, cracking clay of drying pond, with *Quercus tomentella*, *Diplacus parviflorus*, *Salvia brandegeei*, *Heuchera maxima*, *Acmispon dendroideus* var. *dendroideus*, *Quercus pacifica*, *Comarostaphylis diversifolia* subsp. *planifolia*, *Arctostaphylos confertiflora*, 8 Sep 1971, *DeDecker 2854* (RSA, SBBG); Cottonwood Creek, 10,200 ft, 12 Aug 1949, *Howell 26250* (CAS, US); Horseshoe Meadow, 36.445477° N, 118.17414° W, 9000 ft, 23 Jul 1900, *Jepson 932* (JEPS); John Muir Wilderness, "Windy Gap," ca. 1–1.5 mi NE of Golden Trout Camp, 36.49389° N, 118.15806° W, subalpine forest and meadows, 10,801 ft, with *Pinus flexilis*, *P. balfouriana*, *Artemisia tridentata*, *A. rothrockii*, 15 Aug 1988, *Pitzer 1148* (RSA) and *Pitzer 1156* (UCR); Cotton Creek, E of Army Pass, 36.497° N, 118.2386° W, edge of meadow, 11,000 ft, 29 Jul 1949, *Munz 14308* (RSA); Cottonwood Lakes Basin, Windy Gap, 36.49472° N, 118.15556° W, subalpine meadow, 10,875 ft, with *Calamagrostis breweri*, *Carex exerta*, common, 14 Aug 2007, *Thomas 4228* (WC); along Cottonwood Creek below vicinity of road crossing the creek and above confluence with Horseshoe Meadow fork, near the old pack station, 36.46245° N, 118.15073° W, subalpine meadows surrounded by lodgepole and foxtail pines, 9500 ft, infrequent in moist soil, 25 Jul 2008, *Thomas 4547* (WC); Cottonwood Lakes Basin, lower South Fork between trail and creek, Cirque Peak, 36.4617° N, 118.17722° W, 10,020 ft, creek vicinity in lodgepole pine forest, with *Salix drummondiana*, *Artemisia rothrockii*, *Achillea millefolium*, *Mimulus primuloides*, infrequent, 17 Jul 2017, *Thomas 7331* (WC); Cottonwood Creek, upper end of Horseshoe Meadows,

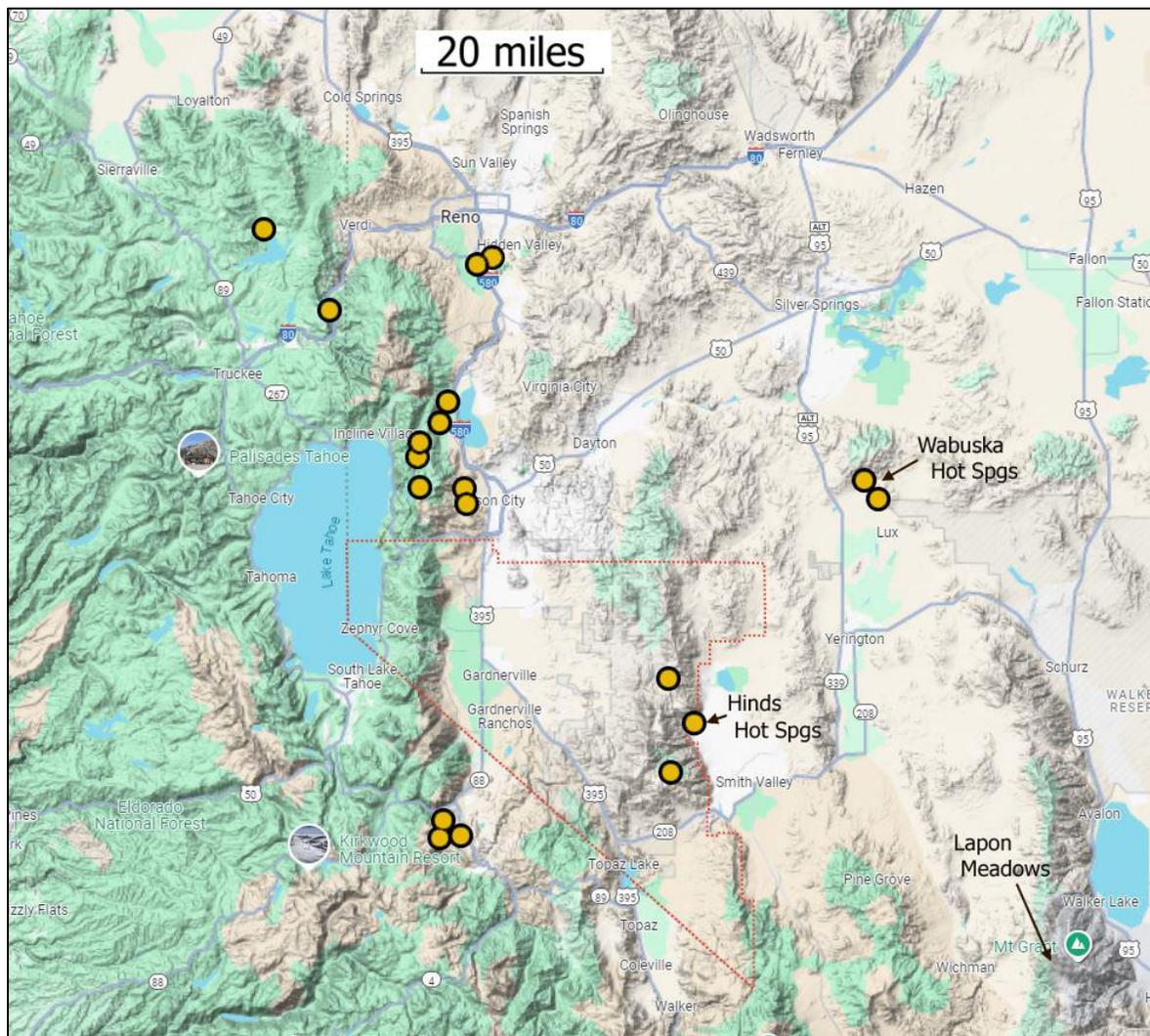
36.4467° N, 118.1598° W, moist soil, with *Castilleja*, *Gentiana*, and *Poa*, 14 Aug 1968, Wilken 4249 (UCSB). **Tulare Co.:** Kaweah Peaks region, Funston's Meadows, 10,000-11,000 ft, 21 July 1897, Dudley 2166 (DS); ca. 1.5 air mi SW of Olancho, Summit Meadows, NW of Olancho Pass, 36.2214° N, 118.1008° W, wetter part of meadow, now dried, full of yampah, 9200 ft, 8 Aug 1986, Ertter 6677 (NY, RSA, SD, TEX, UC); Sequoia Natl Forest, Ground Hog Meadow, 22 July 1942, Ferris 10761 (DS, WTU); basin of the Upper Kern River, Volcano Creek, meadows, 8000 ft, Jul 1904, Hall & Babcock 5464 (DS, UC); Crabtree Meadows, [36.55177° N, 118.354836° W], 10,350 ft, 26 Jul 1908, Hall 8450 (UC); Chagoopa Plateau, Sky Parlor Meadow, 1 Aug 1942, Howell 17524 (CAS, UC); near Primrose Lake, 11,300 ft, 24 Jul 1949, Howell 25692 (CAS); Siberian Pass Creek, 11,000 ft, 25 Jul 1949, Howell 25732 (CAS); Whitney Meadows, 9700 ft, 26 Jul 1949, Howell 25775 (CAS, WS); South Fork Kern River, Bakeoven Meadows, near mineral springs, 8100 ft, 18 Jul 1950, Howell 27052 (CAS); floodplain of South Fork Kern River, Kennedy Meadows Campground, 6100 ft, 19 Sep 1967, Howell 43856 (CAS, TEX); Sky Parlor Meadow, 1 Aug 1942, Leschke s.n. (SFSU); Golden Trout Wilderness, Mulkey Creek, Riparian Survey Plot 3007, 9320 ft, 2 Sep 1992, Linton s.n. (INF); Bakeoven Meadows near South Fork Kern River, semi-alkaline meadow, wet banks with grasses and sedges, 8100 ft, common, 15 Jul 1950, Munz 15088 (COLO, LL, RSA); N end of Whitney Meadows, dry flats in meadow, with sedges, common, 27 Jul 1949, Munz 14276 (WTU); Soda Creek meadow, below USFS Monache cabin, 36.214° N, 118.192° W, 7900 ft, 11 Jun 1997, Nelson 623 (INF); Templeton Meadow, 36.324° N, 118.227° W, alkali area, 8600 ft, with *Juncus balticus*, *Potentilla anserina*, *Muhlenbergia richardsonis*, 22 Jul 1998, Nelson 679 (INF); Volcano Creek, [36.364° N, 118.372° W], 13 Jul 1908, Peirson 1236 (RSA); South Fork Kern River at the N end of Kennedy Meadows, pinyon-sagebrush association, moist sunny sandy soil, 6200 ft, occasional, 27 Jun 1967, Twisselmann 13489 (CAS, JEPS, KRRD); Monache Meadow, gravel and sand in a broad very long meadow in a Jeffrey pine forest, 8000 ft, stems procumbent, common, 12 Aug 1968, Twisselmann 14770 (CAS, MO) and Twisselmann 14825 (CAS, JEPS); Tunnel Meadow, moist to dryish soil in a meadow in a lodgepole and foxtail pine forest, 9100 ft, occasional, 25 Jul 1970, Twisselmann 16963 (CAS, JEPS, MO); Ramshaw Meadow, damp soil in a broad meadow in a foxtail pine forest, 8700 ft, occasional, 29 Jul 1970, Twisselmann 17299 (CAS, JEPS); Tunnel Meadow Air Strip, loamy soil in a meadow in a foxtail and lodgepole pine forest, 9100 ft, occasional, 1 Aug 1970, Twisselmann 17442 (CAS, TEX); Soda Flat, moist highly mineralized soil in a small flat in the bottom of a canyon in a Jeffrey pine forest, 5480 ft, 31 Aug 1971, Twisselmann 18267 (CAS, JEPS); Tunnel Meadow, dry soil in a meadow in a foxtail pine forest, 9100 ft, 11 Aug 1972, Twisselmann 19118 (MO).

**4. PYRROCOMA PRIONOPHYLLA** Greene, Leafl. Bot. Observ. Crit. 2: 12. 1909. *Haplopappus racemosus* subsp. *prionophyllus* (Greene) Hall, Publ. Carnegie Inst. Wash. 389: 131. 1928. *Haplopappus racemosus* var. *prionophyllus* (Greene) Welsh, Great Basin Nat. 43: 294. 1983. **TYPE: Nevada.** Ormsby Co.: Eagle Valley [now Carson City], 3760 feet, 11 Aug 1902, C.F. Baker 1450 (holotype: US 00127861; isotypes: CAS, GH, NY, POM, RM-2 sheets, RSA, TEX, UC, US, WS).

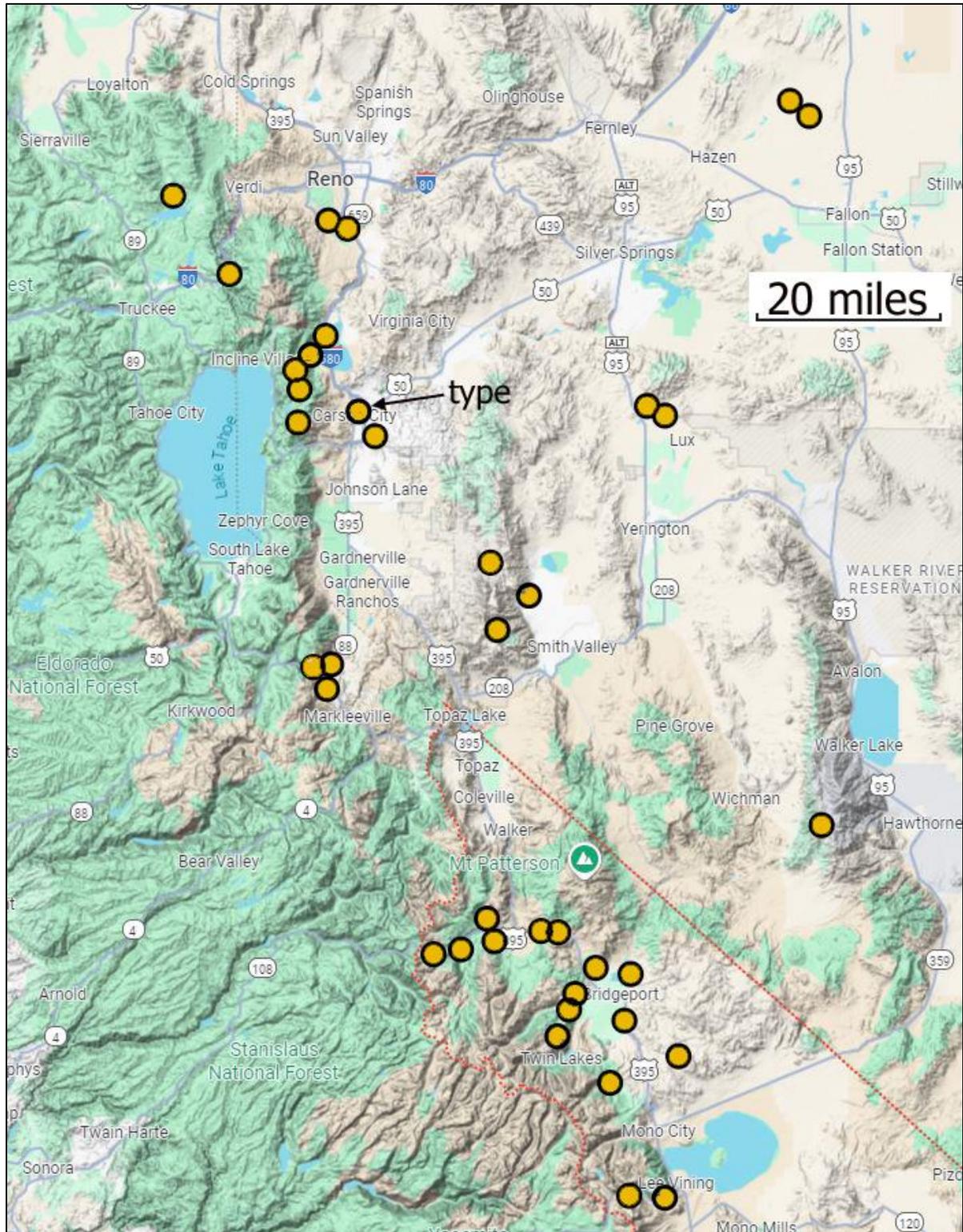
**Stems** erect to ascending-erect, 10–35 cm, glabrous, eglandular, often purplish. **Leaves:** basal persistent in a rosette, thickened, oblanceolate to linear-oblanceolate, 4–15(–25) cm long, sometimes with a short petiolar region, blades (4–)8–18 mm wide, glabrous, eglandular, venation often slightly raised adaxially, margins margins evenly and shallowly serrate with sharp, apiculate teeth, sometimes subentire to entire, ciliate, often with a narrow, white-indurate rim, fibrous remnants of petioles persistent, cauline 6–8, linear to linear-lanceolate (bractlike), closely appressed to closely ascending, proximal and medial clasping-sheathing, proximal with margins near the base short-ciliate, the cilia sometimes very short (scabrous-ciliate). **Heads** 1 or commonly 2–6(–12, –20<sup>+</sup>) in a subspicate to loosely racemoid or subcorymboid inflorescence on peduncles 3–10 cm long, without immediately subtending bracts. **Involucres** (12–)14–20 mm wide (pressed); phyllaries oblong with a ovate-lanceolate apex, closely appressed in 3–4 series of unequal length (strongly graduate), oblanceolate to narrowly oblong, green patch in the distal 1/2–1/3, inner 11–12 mm long, outer with a narrow, white-indurate border, inner with a narrow, scarious rim, eglandular. **Ray florets** 12–29, fertile, stigmatic branches short and barely exerted from the tube, corollas 10–12 mm long, 1.8–2 mm wide, coiling.

**Disc corollas** 5–7 mm long. **Achenes** 3.5–4 mm long, narrowly oblong, glabrous. **Chromosome number**,  $2n = 24$  (Carson City, *Mayes* 88, as reported by *Mayes* 1976).

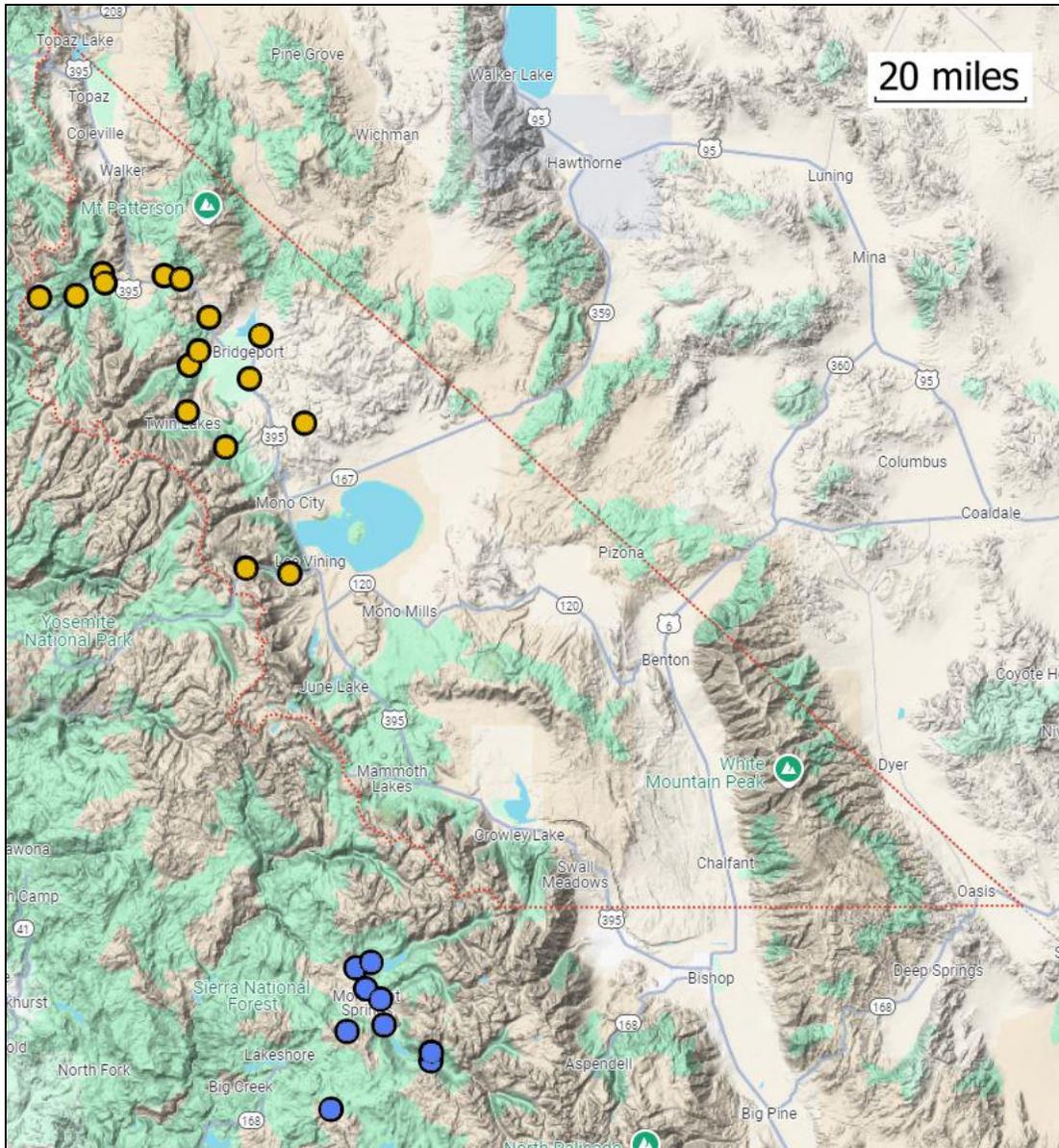
Flowering July-September (October). Meadows in mineral soil and alkaline spots, near seepage and springs, marsh edges, ephemeral lake edges, alkaline flats; (4800-)5100-7500 feet. Localities at Wabuska Hot Springs and Hinds Hot Springs are at 4300 and 4600 feet (see Map 6) and these plants should be studied for possible distinction.



Map 6. Distribution of *Pyrrocoma prionophylla* (northern range). The Douglas County boundary is outlined in red. Collections from Wabuska Hot Springs and Hinds Hot Springs are at lower elevations than characteristic for the species otherwise. A collection from Lapon Meadows in the Wassuk Range, Nevada (*Archer* 7082), was previously identified as *P. prionophylla* (Nesom 2025) but is here referred instead to multi-headed *P. apargioides*. Multi-headed plants also occur in Mono County in the White Mountains and Sweetwater Mountains (Figure 4) — see Map 1. The species in its southern range (Maps 7 and 8) appears to be geographically disjunct from the northern clusters.



Map 7. Distribution of *Pyrocoma prionophylla* (complete range). The Mono County boundary is outlined in red.

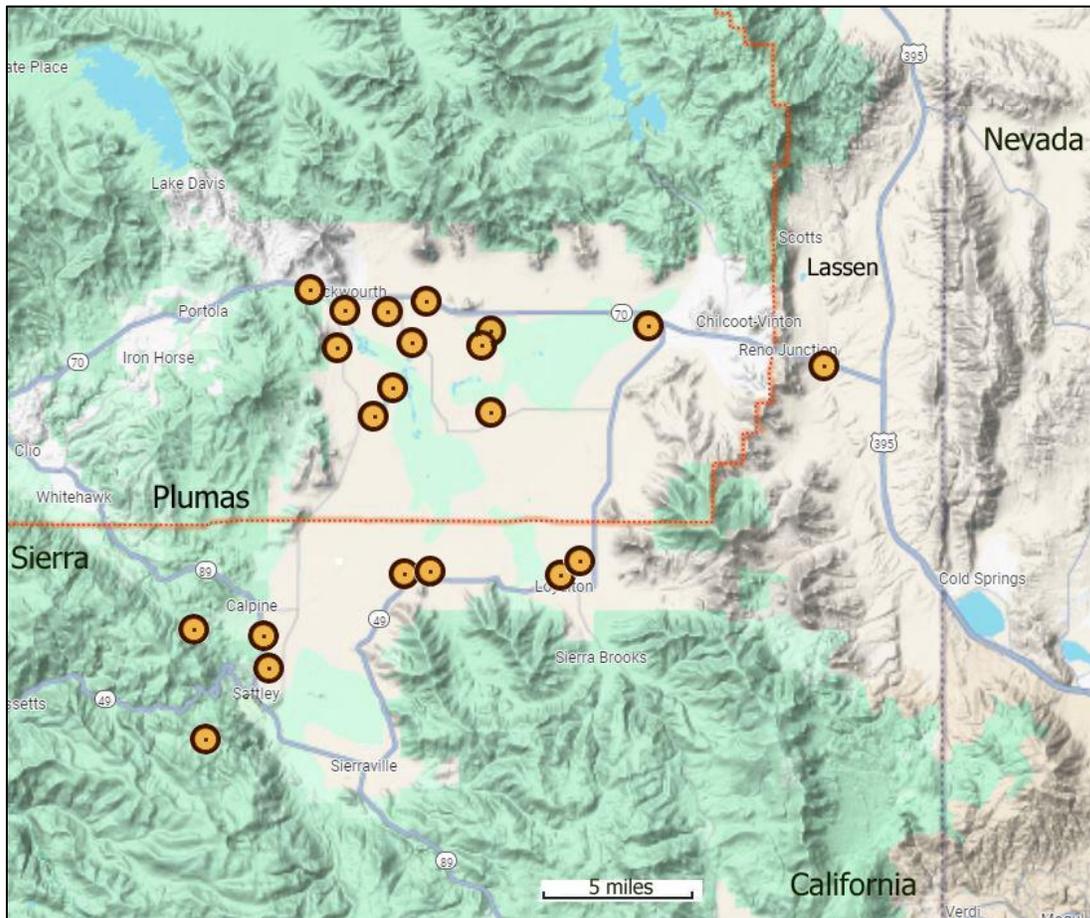


Map 8. Distribution of *Pyrocoma prionophylla* (southern range, gold) and *P. fresnoa* (blue). The Mono County boundary is outlined in red.

*Pyrocoma prionophylla* is recognized by its persistent basal leaves with saw-toothed margins ciliate at least near the base, strongly reduced cauline leaves, the proximal to medial often with a clasping-sheathing base, heads in a subspicate to loosely racemoid inflorescence, often reduced to 1 or few, involucre with glabrous, stiffly erect phyllaries in 3-4(-5) strongly graduate series, and glabrous achenes. The inflorescence is highly variable, in the interpretation here, as is the involucre size. *Pyrocoma prionophylla* is distinct from typical *P. apargioides* in its taller, erect to ascending-erect stems, linear-oblongate basal leaves with sharply and shallowly serrate to entire or subentire margins, cauline leaves reduced to few and scattered bracts, common production of more than a single head, and its larger involucre with more numerous, stiffly erect, and strongly graduate phyllaries. Their habitats differ significantly in elevation (though slightly overlapping, *P. prionophylla* lower) and apparently the two rarely if ever grow in close sympatry.

**Additional collections. CALIFORNIA. Alpine Co.:** Grover Hot Springs State Park, W part of park, NW of hot springs on S side of Hot Springs Creek near S end of bridge, uplands with dry granitic soil, boulders, and *Artemisia* transitioning to dry meadow, in trail leading back to parking lot, 5876 ft, 17 Jul 2010, *Dean 6683* (DAV); Grover Hot Springs State Park, W side of park directly N of hot springs near culvert where hot spring effluent emerges on N side of road, edge of marshy area, alkaline soil with saltgrass, *Schoenoplectus americanus*, and *Oenothera* transitioning into wet meadow with *Juncus* and *Carex*, 5923 ft, 2 Aug 2010, *Dean 6767* (DAV); Grover Hot Springs State Park, W side of park, S of Hot Springs Creek and NW of hot springs, meadow just N of parking area, dry uplands with Jeffrey pine, *Artemisia tridentata*, *Poa pratensis*, and *Juncus arcticus*, 5894 ft, several at this spot, 2 Aug 2010, *Dean 6777* (DAV); Grover Hot Springs, mineral soil in meadow below hot springs, 5900 ft, 9 Aug 1964, *Howell 40907* (CAS). **Mono Co.:** Horse Creek, above Twin Lakes, Jul 1952, *Chesterman s.n.* (CAS); near Fales Hot Springs on Hwy 395, 4 Sep 1952, *Ferris 12566* (CAS); Bridgeport (2 mi S of town), 12 Aug 1925, *Hall 12128* (CAS, DS, UC); 13 mi from Bridgeport, just over pass on head of West Fork Walker River, 38.350081° N, 119.390164° W, open grassland with *Iris missouriensis*, surrounding slopes with *Artemisia tridentata*, *Cercocarpus led.*, *Purshia*, etc., but in the pass are also Jeffrey pines, 7500 ft, ray fls 23-24-23-34-30-22-22-18, 13 Aug 1925, *Hall 12140* (CAS, UC); Bridgeport, 2.5 mi W and 0.5 mi N of town, meadow-land, moist, the grass thick and tall, no alkaline weeds but *Iris missouriensis*, *Crepis*, *Potentilla gracilis*, 6 Sep 1925, *Hall 12224* (UC); E side of Sonora Pass, 25 Jul 1960, *Hardham 6436* (CAS); Buckeye Creek, very damp meadows, 7500 ft, 16 Aug 1980, *Hardham 23732* (CAS); Bodie Hills, Mormon Meadow, Hwy 207, 3.8 mi E of intersection with Hwy 395, near Clearwater Creek, 38° 09' 43.8" N, 119° 08' 8.7" W, wet meadow edges and roadsides, *Juncus* spp., *Carex* spp., *Eleocharis* spp., *Iris missouriensis*, *Triglochin* spp., grasses, etc., common, 10 Jul 2017, *Howald 4285* (CAS, UCR); E end of Upper Summers Meadow, N of Upper Summers Meadow Road, ca 5.4 mi W of its intersection with Green Creek Road, 38° 9' 41.8" N 119° 17' 20.0" W, gravelly soil of large sagebrush meadow along Summers Creek, 7407 ft, with *Symphyotrichum* spp., *Carex* spp., grasses, etc., scattered, 28 Aug 2018, *A. Howald 4811* - Label note: "This meadow form is larger, with erect peduncles, compared with the smaller subalpine-alpine form with prostrate peduncles" (CAS, RENO); Tule Lake, on Sonora Pass Road (Hwy 108), 38.352° N, 119.475° W, boggy meadow, 6900 ft, 22 Jul 1980, *Lavin SW90* (RENO); 6 mi NW of Bridgeport on Hwy 395, Huntoon Valley Public Campground, 21 July 1973, *Mayes 87* (CAS, DAV, SD, TEX); Buckeye Hot Springs, Rte 017, 38.239 N, 119.325 W, saline area next to spring, 5 Jul 1979, *Mozingo 79-01* (RENO); near Sonora Junction Campground, moist meadow, with *Aster*, *Epilobium*, *Mimulus*, *Juncus* spp., *Carex* spp., 7000 ft, 8 Aug 1963, *Thorne 32900* (CAS-2 sheets, RSA); ca. 23 mi W of Bridgeport, Leavitt Meadow on the West Walker River, throughout meadow, 7200 ft, common, 8 Aug 1972, *True 7345* (CAS); Warren [Fork] Creek [of Lee Vining Creek], *Vale s.n.* (CAS); between Fales Hot Springs and Mono Lake, 28 Jul 1938, *Winblad s.n.* (CAS-3 sheets). **Nevada Co.:** Truckee River Canyon at Farad Powerhouse [39° 25' 11" N, 120° 01' 30" W], alkaline seep, damp soil, 5200 ft, 5 Oct 1964, *True 1735* (CAS). **Sierra Co.:** Sardine Valley [39.51306° N, 120.10889° W, ca. 6050 ft], moist ground near running water, 10 Jul 1892, *Sonne 7* (UC). **Nevada. Carson City:** Carson City, 4 blocks W of Capitol, N side of road, rays 22-13-17-20-18-19-19-13-20-18, 5 Sep 1925, *Hall 12218* (CAS, DS); 1 mi S of the Carson City northern city limits and 1 block E of Hwy 395, 22 Jul 1973, *Mayes 88* (NY, TEX). **Douglas Co.:** Pine Nut Mts, SE side of the range, head of the north fork of Red Canyon, 38.825267° N, 119.488821° W, in drying meadow with *Ivesia pityocharis* and *Muhlenbergia*, 18 Aug 1997, *Bair 265* (NY, RENO); Pine Nut Mts, 2 air mi NE of Mt. Siegel Peak, 38.9032° N, 119.4643° W, ephemeral lake, at the edge of the wet areas, 7150 ft, 11 Jul 1984, *Tiehm 8908* (NSMC, NY); [Pine Nut Mts], 1.2 air mi S of Slaters Mine on NE side of Mt. Siegel, meadow area, 7499 ft, locally common, 22 Jul 1985, *Tiehm 9989* (COLO, NSMC, NY, UTC). **Lyon Co.:** Wabuska Hot Springs, 0.5 mi N of town of Wabuska on a dirt road off US Hwy Alt-95, 39.158836° N, 119.184526° W, 19 Aug 1978, *Broome 2379* (RENO); Wabuska Hot Springs, 1.5 mi N of Wabuska, 4300 ft, 10 Sep 1976, *Tiehm 2993* (NY, RENO); [E base of Pine Nut Mts, ca. 0.5 mi E of Douglas Co. line], Smith Valley, Hinds Hot Springs along the road from Wellington to Mason Pass, W side of the valley, 38.903° N, 119.409° W, common at the edge of meadow areas near the seepages [ca. 4600 ft], 28 Aug 1985, *Tiehm 10240* (NY, UNLV). **Washoe Co.:** 17 air mi SSW of Reno, Little Valley, Franktown Creek, 39.149° N, 119.889° W, drying soil of open meadows along the creek, 6500 ft, locally common, 10 Jul 1974, *Anderson 3713* (MO), *Anderson 3718* (LSU-2 sheets, NY), *Anderson 3720* (MO); W of Washoe Lake, slightly alkaline, spicate plants in packed alkaline sand, open racemes in better soil close by, 14 Aug

1925, *Hall 12143* (UC); Bowers, E side of road, opposite mansion, moist, sandy, moderately saline soil, rays 60-46-58-62-45-51-56-48-48, 15 Aug 1925, *Hall 12145* (UC); Bowers [ca. 39° 17' N, 119° 50' W], 5100 ft, 31 Aug 1912, *Heller 10658* (NY, RENO, US); Hunter Creek Cañon, Jul 1907, *Kennedy s.n.* (CAS); Franktown [ca. Bowers], 5100 ft, 1 Sep 1912, *Kennedy 1936* (LA, UC, as cited by Hall); S of Reno, Walsh ranch, [possibly in the former wetlands on the SE side of Truckee Meadows], 10 Aug 1918, *Petersen 428* (RENO-2 sheets); Carson Range, Little Valley, George Whittell Forest & Wildlife Area, 39.245° N, 119.879° W, near fence line, ACR-Grid2, 8 Aug 1973, *Risser s.n.* (RENO); [southeastern Reno], Truckee Meadow, Double Diamond Ranch, off Hwy 395 and Virginia Street, grazed, dry meadow, heavy clay soils, 4750 feet, 1 Aug 1987, *Roberts & Jones 3562* (IRVC); Carson Range, S end of Little Valley, George Whittell Forest & Wildlife Area, near fence line, 6400 ft, 39.245° N, 119.878° W, 18 Jul 1973, *Williams 73-51-5* (RENO).



Map 9. Distribution of *Pyrocoma sierravallis*. Plumas, Sierra, and Lassen cos., California.

**5. PYROCOMA SIERRAVALLIS** Nesom, **sp. nov.** TYPE: **California**. Plumas Co.: Vinton, low alkaline area among sagebrush, 4940 ft, 19 Jul 1955, *L.S. Rose 55147* (holotype: DS; isotypes: CAS, JEPS, RSA, UC, US). Figure 33.

Similar to *Pyrocoma prionophylla* in its often multi-flowered inflorescence, leaves with ciliate proximal margins, involucre with glabrous, stiffly erect phyllaries in strongly graduate series, and glabrous achenes; distinct in its smaller leaves with marginal teeth absent or reduced, shorter phyllaries with prominent hyaline-flanged margins and a more restricted green patch, shorter achenes, and geography and ecology. A tetraploid chromosome number has been reported for *P. prionophylla*, diploid for *P. sierravallis*. The two species perhaps are evolutionary sisters.

**Stems** decumbent-ascending to ascending-erect, 11–30 cm, glabrous, sometimes purplish, eglandular. **Leaves:** basal narrowly oblanceolate to narrowly lanceolate, (3–)5–12 cm long, blades 3–8 mm wide, glabrous except for proximalmost portion of petioles prominently long-ciliate, eciliate distally, margins entire to shallowly serrate or apiculate, fibrous remnants of petiole bases persistent, cauline 6–10, linear to narrowly oblong, appressed to closely ascending, proximal subclasping, sometimes slightly subsheathing. **Heads** 1 or usually 2–6(–20), without immediately subtending bracts, loosely corymboid or racemoid, peduncles 0.5–8 cm long. **Involucres** (9–)10–15 mm wide (pressed); phyllaries in (3–)4–5 series of unequal length (strongly graduate), inner 5–6 mm long, oblong with a deltate (sometimes apiculate) apex, green area sharply delimited, eglandular, margins with a prominent hyaline flange. **Ray florets** 15–20, fertile, corollas 10–12 mm long, ca. 1 mm wide, coiling. **Disc corollas** 4–6 mm long. **Achenes** 2.5–3 mm long, glabrous. **Chromosome number**,  $2n = 12$  (*Semple 9315*). Figures 33–40.

Flowering (June) July–September. Sagebrush scrub, alkali meadows, alkali flats, disturbed areas, grazed grassland, roadsides, roadside ditches; 4850–5000 (–6600) feet. In Sierra County, *Crampton 4414* and *Harnach 1126* are slightly outside of the valley "floor" (4850–5000 ft; see Harnach 2016) and at slightly higher elevation but are morphologically within the species.

**Additional collections. California. Lassen Co.:** 2 mi W of Hallelujah Jct, S of Hwy 70, 39.784° N, 120.074° W, 4900 ft, 29 Jul 1974, *Williams 74-1-65* (CAS, RENO). **Plumas Co.:** Beckville [Beckwourth], 2 Sep 1920, *Clemens s.n.* (CAS); Beckwourth–Calpine bridge on the Middle Fork Feather River, 39.817° N, 120.390° W, disturbed area next to the bridge pier, 4875 ft, 2 Sep 2002, *Clifton 38511* (RENO); northern Sierra Valley, ca. 6.3 air mi SE of Portola, ca. 4.3 air mi SSE of Beckwourth, ca. 0.2 air mi E of Beckwourth–Calpine road (A23), edge of Dyson, 39.769° N, 120.370° W, disturbed edge of road, sagebrush scrub-alkali meadow ecotone habitat; with *Grindelia nana*, *Chenopodium*, *Polygonum arenastrum*, *Lepidium virginicum*, 4880 ft, infrequently scattered patches, 8 Aug 2003, *Dittes 2003-90* (CHSC); Loyalton, 29 Jun 1918, *Eastwood 7836* (CAS); Sierra Valley, Marble Hot Wells, 39.756° N, 120.359° W, grasslands near dry hot well, area overgrazed by cattle, common, 4880 ft, 29 Jul 1990, *Harnach 485* (RENO, RSA); Sierra Valley, at the gate to the old "Pat Nobel" ranch, T22N R14E Sec 2, disturbed ground all along County Rd A-23, 4890 ft, 29 Jul 1990, *Harnach 487* (CAS); Sierra Valley, 0.75 mi E of A-23 on Marble Lane at the hot wells, 39.758° N, 120.358° W, edge of meadow, 4890 ft, scattered. 2 Aug 2000, *Harnach 974* (CAS, JEPS, RSA-2 sheets, RENO); Sierra Valley, on County Rd A-23, 0.5 mi S of Hwy 70, 39.810° N, 120.343° W, railroad access road, 4885 ft, 16 Jul 2001, *Harnach 1027* (RENO); Sierra Valley, on County Rd A-23, ca. 1.2 mi N of Marble Lane, 39.766° N, 120.372° W, roadside ditch, 4887 ft, 21 Aug 2001, *Harnach 1040* (RENO); Sierra Valley, on County Rd A-24, just S of the railroad tracks, then ca. 100 yards W of the road, 0.5 mi S of Hwy 70, 39.809° N, 120.346° W, sagebrush scrub, scattered, 16 Jul 2016, *Harnach 1501* (CAS, RENO, RSA); Sierra Valley, Marble Hot Springs Rd near Marble Hot Springs, 39.754° N, 120.2891° W, ca. 5000 ft, 30 Aug 1985, *Hopkins 1330* (SJSU); Sierra Valley, ca. 4 mi W of Loyalton, sagebrush grassland, 4900 ft, 9 Aug 1988, *Hopkins 1463* (SJSU); Sierra Valley, 3 mi E of Beckwourth, 5000 ft, 20 Aug 1951, *Howell 28234* (CAS, TEX); Sierra Valley, 5 mi E of Beckwourth, alkaline flats, 4900 ft, 25 Sep 1959, *Howell 35016* (CAS, TEX); Sierra Valley near Beckwourth, low place in now dry clay soil, 4900 ft, 22 Jul 1975, *Howell 51379A* (CAS, TEX); Chilcoot, dry clay soil, 5000 ft, 11 Aug 1977, *Howell 52717* (CAS); Vinton, dry fields, 5000 ft, 23 Jul 1934, *Rose 34408* (CAS); N end of Sierra Valley, 39.802549° N, 120.286663° W, alkaline soil, moist flat, 4800 ft, with silver sagebrush and saltgrass, 18 Aug 1982, *Schoolcraft 907* (ELH); N end of Sierra Valley, 39.802549° N, 120.286663° W, moist drying flat with silver sagebrush and saltgrass, 4800 ft, 5 Jul 1983, *Schoolcraft 1061* (ELH); ca. 5 mi E of Beckwourth on S side of Hwy 70, 39.803° N, 120.287° W, moist loamy flat, 4890 ft, with silver sagebrush, saltgrass, *Puccinellia*, 6 Jul 1990, *Schoolcraft 2072* (ELH); Sierra Valley, 8 km N of Loyalton, A-24 just W of CA-49, low point road (right of way), 13 Aug 1990, *Semple 9315*, chromosome count of  $2n=6II$  (MO, NCU and also WAT, DAO, MT, US as cited on the label); Sierra Valley, marsh between road and Marble Hot Springs, saltgrass flat with *Distichlis spicata* var. *stricta* and *Heleocharis* sp., 5000 ft, 27 Aug 1976, *Sommers 230* (CAS, SFSU); SW corner of jct in Vinton of Hwy 70 and road to Loyalton, sagebrush scrub with *Aster chilensis medius*, *Medicago sativa*, *Bromus*, 4900 ft, 27 Aug 1982, *Taylor 5044*

(CAS, DAV, FSC, SHSC); Vinton, "Weed sent in for identification to June McCaskill. Ranch owner says that the plant is taking over one corner of his property," 21 Aug 1973, *Wemken s.n.* (DAV). **Sierra Co.:** Sierra Valley, along road to Beckwourth, from Calpine, 4800 ft, 8 Jul 1953, *Bacigalupi 4298* (WTU); 4 mi NE of Sattley, Van Vleck Ranch, marginal lands of peat meadows, 24 Jul 1957, *Crompton 4414* (DAV-2 sheets); Loyalton, 29 Jun 1918, *Eastwood 7836* (CAS); 1.8 miles SE of Yuba Pass, 39.603° N, 120.457° W, 6600 ft, in old logging road, 11 Aug 2002, *Harnach 1126* (RENO); Sierra Valley, ca. 4 mi W of Loyalton, sagebrush grassland, 4900 ft, 9 Aug 1988, *Hopkins 1463* (SJSU); ca. 5 mi E of Beckwourth on S side of Hwy 70, 39.803° N, 120.287° W, moist loamy flat, with silver sagebrush, saltgrass, *Puccinellia*, 4890 ft, 7 Jun 1990, *Schoolcraft 2072* (ELH-BLM, UC); Sierra Valley, ca. 1 mi N of Sattley, 4900 ft, alkaline spots in dry meadow, 21 Jul 1966, *True 3091* (CAS).

In addition to the five species treated above, two others complete the "apargioides group." These were described and discussed in a previous publication (Nesom 2025).

**7. PYRROCOMA MINERALIS** Nesom, *Phytoneuron* 17: 33. 2025. **TYPE: Nevada.** Mineral Co.: Huntoon Mts, SW end of Truman Meadows, 37° 57' 09.9" N, 118° 26' 41.4" W, with *Chrysothamnus nauseosus* at edge of meadows, 7200 ft, 11 Sep 2006, *A. Tiehm 15354* (holotype: RENO; isotypes: ASC, BRY, COLO, KANU, NY, UTC).

**8. PYRROCOMA THERMOLIBES** Nesom, *Phytoneuron* 17: 6. 2025. **TYPE: California.** Mono Co.: Long Valley, Hot Creek, moist alkali soil, grass meadow, aspen belt, 6700 ft, 23 May 1937, *P. Train s.n.* (holotype: NY; isotypes: CAS, DS, MO, NEB, RSA).

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Figure 1. *Pyrocoma apargioides*. Inyo Co., André 32554 (INF).



Figure 2. *Pyrrocomma apargioides*. Inyo Co., DeDecker 1528 (RSA).



Figure 3. *Pyrocoma apargioides*. Inyo Co., André 13628 (INF).



Figure 4. *Pyrocoma apargioides*. Mono Co., Tiehm 10231 (CAS). Arrows show nodes (see text).



Figure 5. *Pyrocoma apargioides*. Tuolumne Co., Neisess 86 (OBI).



Figure 6. *Pyrocoma apargioides*. Tuolumne Co., Hall 11874 (DS).



Figure 7. *Pyrrcoma apargioides*. Tuolumne Co., Pawek 496 (DS).



Figure 8. *Pyrrcoma apargioides*. Tuolumne Co., Field 013 (FSC).





Figure 10. *Pyrocoma apargioides*. Sierra Co., above Summit Valley, Pringle s.n. (US).



Figure 11. *Pyrocoma fresnoa*. Fresno Co., Kruckeberg 3451 (CAS).



Figure 12. *Pyrocoma fresnoa*. Fresno Co., Kruckeberg 3451 (DS).



Figure 13. *Pyrocoma fresnoa*. Fresno Co., Kruckeberg 34451 (UT).



Figure 14. *Pyrocoma fresnoa*. Fresno Co., Quibell 2596 (CAS).



Figure 15. *Pyrrcoma fresnoa*. Fresno Co., Taylor 8709 (CAS).



Figure 16. *Pyrocoma fresnoa*. Fresno Co., Taylor 20373 (JEPS).



Figure 17. *Pyrrcoma fresnoa*. Fresno Co., Robinson b69 (FSC).



Figure 18. *Pyrocoma fresnoa*. Heads from *Robinson b69*, Figure 17.



Figure 19. *Pyrocoma apargioides*, possibly a hybrid with *P. fresnoa*. Fresno Co., Everett & Johnson 7381 (DS). Involucral morphology of typical *P. apargioides* but branched stems.



Figure 20. *Pyrocoma tularia*. Tulare Co., Howell 26876 (CAS).

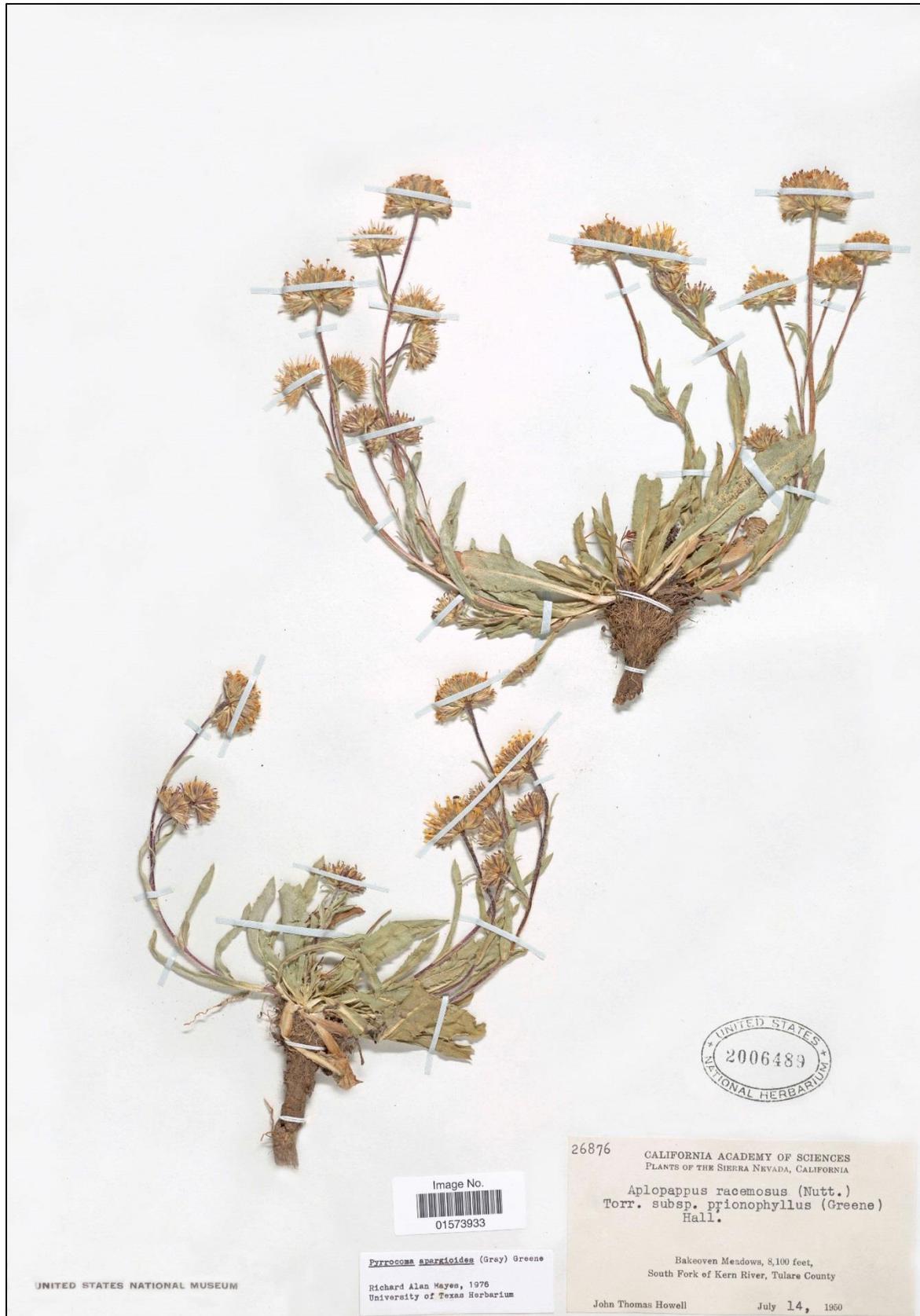


Figure 21. *Pyrrocoma tularia*. Tulare Co., Howell 26876 (US).



Figure 22. *Pyrocoma tularia*. Tulare Co., Twisselmann 18267 (CAS).



Figure 23. *Pyrocoma tularia*. Tulare Co., Twisselmann 18267 (JEPS).



Figure 24. *Pyrocoma tularia*. Tulare Co., Howell 17524 (CAS). Arrow points to a node.



Figure 25. *Pyrocoma tularia*. Tulare Co., Twisselmann 16963 (CAS). Arrows point to nodes.



Figure 26. *Pyrocoma tularia*. Tulare Co., Howell 43856 (CAS).



Figure 27. *Pyrrocomma tularia*. Tulare Co., Linton s.n. (INF).



Figure 28. *Pyrocoma tularia*. Tulare Co., Howell 27052 (CAS).



Figure 29. *Pyrocoma tularia*. Tulare Co., Dudley 2166 (DS).



Figure 30. *Pyrocoma tularia*. Tulare Co., Howell 25775 (CAS).



Figure 31. *Pyrocoma tularia*. Tulare Co., Ferris & Lorraine 10781 (DS).



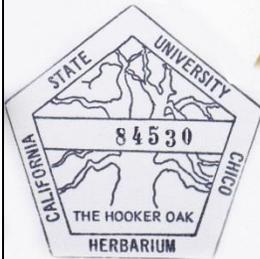
Figure 32. *Pyrocoma tularia*. Tulare Co., Howell 25692 (CAS).



Figure 33. *Pyrocoma sierravallis*. Plumas Co., Rose 34408 (CAS).



Figure 34. *Pyrocoma sierravallis*. Sierra Co., Hopkins 1463 (SJSU).



Plants of California  
Plumas County  
Herbarium of California State University, Chico

*Pyrrcoma lanceolata* (Hook.) E. Greene  
var. *lanceolata*

Asteraceae  
Latitude 39° 46' 8.89"; Longitude 120° 22' 12.98"  
(T22, R14E, southeast ¼ Section 13; Reconnaissance Peak 7.5' Quad.); northern **High Sierra Nevada**, northern Sierra Valley, ca. 6.3 air-mile southeast of Portola, ca. 4.3 air-mile south by southeast of Beckwourth, ca. 0.2 air-mile east of Beckwourth-Calpine Road (A23), at disturbed edge of Dyson Lane; **Sagebrush Scrub - Alkali-Meadow** ecotone habitat; infrequently scattered patches, with *Grindelia nana*, *Chenopodium*, *Polygonum arenastrum*, *Lepidium virginicum*; Elevation ca. 4,880 feet.

John Dittes 2003-90  
with Lowell Ahart

8 August, 2003

Figure 35. *Pyrrcoma sierravallis*. Plumas Co., Dittes 2003-90 (CHSC).



Figure 36. *Pyrocoma sierravallis*. Plumas Co., Harnach 487 (CAS).



Figure 37. *Pyrocoma sierravallis*. Plumas Co., Harnach 1027 (RSA).

Figure 38. *Pyrocoma sierravallis*. Plumas Co., Taylor 5044 (CHSC).



Figure 39. *Pyrrocoma sierravallis*. Plumas Co., Harnach 1027 (RENO).



Figure 40. *Pyrocoma sierravallis*. Plumas Co., Sommers 230 (CAS).