Nesom, G.L. 2025. *Pyrrocoma lanceolata* (Asteraceae: Astereae) in Utah. Phytoneuron 2025-26: 1–57. Published 2 June 2025. ISSN 2153 733X

## PYRROCOMA LANCEOLATA (ASTERACEAE: ASTEREAE) IN UTAH

# GUY L. NESOM

Research Associate Academy of Natural Sciences of Drexel University Philadelphia, Pennsylvania guynesom@sbcglobal.net

### ABSTRACT

*Pyrrocoma lanceolata* and species mostly identified as such in Utah are considered here. Plants typical of the species occur only in Rich, Summit, and Utah counties. A species previously identified mostly as *P lanceolata* from north-central Utah is described here as **Pyrrocoma robertjohnsonii** Nesom, **sp. nov.** — it has glandular phyllaries and probably is not closely related to *P. lanceolata*. A population system in northwestern Utah and adjacent Nevada is similar in aspect to *P. lanceolata* but differs in its spicate inflorescence and prominently fimbriate-margined phyllaries — it is described here as **Pyrrocoma stellaris** Nesom, **sp. nov.** The species extending southward through central Utah, previously identified mostly as *P. lanceolata*, is identified here as *P. cheiranthifolia* Greene. *Pyrrocoma lapathifolia* Greene is known only from collections in 1875 (by L.F. Ward, Wayne Co.) and 1894 (by M.E. Jones, Piute Co.) and two more recent ones (in 1990 and 1996). **Pyrrocoma duchesnia** Nesom, **sp. nov.**, from Duchesne Co., has been identified as *P. lanceolata* and may be closely related to it.

The name *Pyrrocoma lanceolata* has been used to identify a number of species distinct from it. These Utah plants covered here were identified as *Haplopappus lanceolatus*, *H. racemosus*, and *H. uniflorus* in Cronquist (1984) and Welsh et al. (2015). Some of these species have been previously described but subsequently treated in synonymy and some have never been named. Taxonomy of *Pyrrocoma lanceolata* is covered in detail in a separate manuscript (Nesom in prep.) but the Utah entities are treated here.

 PYRROCOMA LANCEOLATA (Hook.) Greene, Erythea 2: 69. 1894. Donia lanceolata Hook., Fl. Bor. Amer. 2: 25. 1834. Haplopappus lanceolatus (Hook.) Torr. & Gray, Fl. N. Amer. 2: 241. 1842. Hoorebekia lanceolata (Hook.) M.E. Jones, Bull. Univ. Mont. Biol. 15: 49. 1910. TYPE: CANADA. Saskatchewan. Between Carleton House and Edmonton House, [1825], T. Drummond s.n. (holotype: K?; probable isotypes: GH, NY).

**Stems** erect to ascending-erect, 5–40 cm, sparsely pubescent to glabrate or glabrous. **Leaves**: basal oblanceolate to lanceolate-spatulate, 3.5-22 cm long, basally attenuate to a petiole or petiolar region 1/4-1/3 the leaf length, with cottony tufts at the petiole bases, fibrous remnants of petiole bases persistent, blades 3-11(-16) mm wide, glabrous, thickened, margins entire to sparsely serrulate to denticulate or minutely spinulose usually not subclasping but sometime the medial subclasping-sheathing, not auriculate. **Heads** (rarely 1-) 2-15(-20), loosely racemoid-paniculate to racemoid-corymboid, without immediately subtending bracts. **Involucres** 5-8(-9) mm wide (pressed); phyllaries oblong to oblong-lanceolate with a deltate-ovate to deltate-acuminate apex, in (2-)3-4 series of unequal length, inner (4-)5 mm long, green patch usually sharply delimited in the distal 1/3-1/2 or only in the deltate apex, stramineous proximally with a green midline, glabrous or usually sparsely villous-pubescent, margins pubescent or less commonly fringed-ciliate. **Ray florets** 10-15(-20), corollas 8-10 mm long, 1.5-2 mm wide, coiling. **Disc corollas** 5 mm long. **Achenes** sericeous-strigose. Figures 1-3 for representative Utah specimens.

This description pertains to the populations in the eastern part of the range (Colorado, Wyoming, Montana, eastern Idaho, and Canada).

**Pyrrocoma lanceolata in Utah.** Rich Co.: 1 mi E of Sage Creek Jct, N of Randolph, 41.768817° N, 111.1205° W, very moist meadow bottom, 6500 ft, 7 Aug 1983, Atwood 9516 (NY); E of Woodruff, meadows, 6350 ft, 19 Aug 1933, Flowers 6548 (UT); 1 mi S of Home Canyon. 41.4139° N, 111.2181° W, sedge-rush-grass association, alkaline-sandy soil, 6500 ft, 27 Jul 1984, Franklin 1024 (NY); 1 mi S of Randolf along Hwy 30, meadow, 8 Aug 1973, Mayes 99 (OBI, TAES, TEX); 1 mi SE of Home Canyon, W side of Saleratus Creek, 41.3994° N, 111.2181° W, wet meadow, alkaline clay soil, 6440 ft, 27 Jul 1984. Thorne 3253 (NY). Summit Co.: Parley's Park, 6500 ft, Jul 1869, Watson 575 (US); Echo Canyon, 7000 ft, Jul 1868, Watson 577 (US). Utah Co.: N end of Powell Slough on the E shore of Utah Lake, ca. 1 mi S of the Geneva Steel Plant, disturbed grazed field, 14 Jul 1981, Albee 5124 (UT); 1/4 mi S of the town of Benjamin along Beer Creek, T8S R2E, sec 33, fallow field with salt grass, with Suaeda calveoliformis, Grindelia squarrosa, Kochia scoparia, 12 Aug 1981, Albee 5154 (MO, NY, UT); White Lake, 40.03274° N 111.87078° W, drying mud flats, salt marsh with Distichlis, Rumex, Scirpus, 4500 ft, 8 Sep 1984, Baird 1522 (BRY, NY); Provo, Powells Slough, meadow land, 25 Jul 1925, Cottam 256 (BRY); Utah Lake, Powells Slough, salt grass flat, 4500 ft, 4 Aug 1925, Decker 256X (BRY); near Geneva Resort, dry alkaline meadow, 4500 ft, 16 Sep 1934, Garrett 6856G (BRY); 1 mi S of Lehi, heavy clay alkaline meadow, Distichlis-Triglochin assoc., 4500 ft, 18 Jul 1944, Harrison 10860 (BRY); 4 mi S of Provo, fields, RR embankment, with Muhlenbergia asperifolia, 4500 ft, 8 Aug 1945, Harrison 10871 (BRY, US); ca 2 mi NE of downtown Payson, agricultural land between Arrowhead Trail Rd and Hwy 198, 40.05794° N. 111.71339° W, alkaline meadow community in Russian olive woodland, with Juncus, Distichlis, Elaeagnus, Almutaster, 4495 ft, 19 Aug 2015, Johnson 4100 (BRY); ca. 2 mi E of Utah Lake, 40.16025° N, 111.7° W, saline meadow and irrigated pasture, 4515 ft, 6 Jun 1996, Kass 4553 (BRY); ca. 0.4 mi W of Geneva Rd. 400 South, site of proposed Orem Golf Course, cattail-hardstem bulrush marsh, 4145 ft, 14 Sep 1997, Kass 5048 (BRY, NY); ca 1 mi N of Goshen, iodine bush/inkweed playa, 4519 ft, 27 Aug 1998, Kass 5094 (BRY); ca. 3/4 mi E of Goshen, 39.95497° N, 111.88396° W, around salt playa, 27 Jul 1971, Skougard 9 (BRY); Goshen Valley, 39.96004° N, 111.87091° W, wet salt meadow, Sarcobatus-Salicornia-Allenrolfea comm, 4500 ft, 4 Sep 1984, Thorne 3526 (BRY, NY); Goshen Bay, 39.96004 N, 111.87091 W, salt marsh, with Salicornia and Allenrolfea, 23 Aug 1994, Welsh 25801 (BRY, NY); ca. 1 mi E of Goshen, 39.96004 N, 111.87091 W, alkaline mud flats, 3 Sep 2002, Welsh 28701 (BRY).

2. PYRROCOMA ROBERTJOHNSONII Nesom, sp. nov. TYPE: Utah. <u>Utah Co.</u>: 0.5 mi W of town of Fairfield at Big Spring, 40.26525° N, 112.09651° W, dry site in *Sarcobatus vermiculatus-Distichlis spicata* association, 4900 ft, 18 Aug 1988, *L. Arnow 6539* (holotype: BRY; isotypes: COLO, NY, UT).

Distinct from eastern *Pyrrocoma lanceolata* in its prominently serrate basal leaves, consistently sheathing cauline leaves, longer involucres (inner phyllaries 7–9 mm long vs. 4–5 mm), and linear-oblong to linear-triangular, more strongly graduate phyllaries with a narrowly attenuate-acuminate apex and an elongate, swollen, glandular-resinous green patch.

**Stems** erect to ascending-erect, 15–42 cm, glabrous. **Leaves**: basal oblanceolate to linearlanceolate 5-10(-20) cm long, blade 6-10 mm wide, shallowly serrate with 3-10 pairs of teeth, glabrous, cauline 6-10, reduced in size from the basal but even-sized and evenly spaced up to the heads, narrowly oblong-oblanceolate to narrowly lanceolate, 2.5-5.5 cm long, nearly completely sheathing (clasping) the stem at insertion. **Heads** 5-10 in loose raceme (less commonly spicate to subspicate), without immediately subtending bracts. **Involucres** 8-10 mm wide (pressed); phyllaries oblonglanceolate with a narrowly attenuate-acuminate apex, in 4-5 series of unequal length, inner 7-9 mm long, green patch on the distal 1/5-1/4, viscid from imbedded glands and sometimes slightly swollen, indurate proximally, margins of at least the outer series fimbriate-ciliate. **Ray florets** 12-14, fertile, corollas 9-10 mm long, 1.5-2 mm wide. **Disc corollas** 5-6 mm long. **Achenes** loosely strigose. Figures 4-10.

Flowering August-September. Wet and drying saline meadows, with *Juncus balticus*, *Distichlis spicata*, *Lysimachia maritima*, sometimes with shrubs; 4200-4500 feet.

Plants of *Pyrrocoma robertjohnsonii* are similar in aspect to those of *P. lanceolata* (Figs. 1-3), which occurs in north-central Utah, but they are distinct in morphology (diagnosis) and the two entities do not overlap in geography (Map 1). Phyllaries of *P. robertjohnsonii* are glandular and narrowly attenuate-acuminate at the apex — similar features occur in a group of species from western Nevada and California (i.e., *P. eriopoda, P. isabellae P. lucida, P. sicula, and P. tiehmi*; Nesom 2025).

Collections of *Pyrrocoma robertjohnsonii* have been made in the greater Salt Lake City area (e.g., Figs. 4, 6-7) — the collections from within the city apparently were made at small, park-like wetland areas that still show on maps as extant. There perhaps also is remaining habitat in the Franklin and Lehi areas (Utah County) and around Promontory/Bear River Bay (Box Elder), and the Great Salt Lake Shorelands Preserve (Davis County) seems a promising area to find extant populations.



Map 1. Distribution of *Pyrrocoma lanceolata* and *P. robertjohnsonii* in Utah (Rich, Summit, and Utah counties). The Salt Lake County boundary is outlined in red.

Additional collections. Utah. Box Elder Co.: East Promontory, moist soil, 4200 ft, 12 Aug 1929, Garrett s.n. (UT); Bear River Bay, Great Salt Lake, dry clayey soil, 4225 ft, 14 Aug 1929, Garrett 5392 (LL, UT). Cache Co.: Just W of Logan airport, 1.5 mi W of Hwy 91, moist loamy soil of ungrazed meadow beside Benson road, 4450 ft, frequent, some with racemose inflorescence, others paniculate, 4 Sep 1980, Anderson 5125 (NY); Logan, 1/6 mi W of RR crossing on Hwy 7N, low marsh land, frequent, 3 Aug 1949, McClellan 16 (UNM). Davis Co.: [Great Salt Lake Shorelands Preserve, SW side of Layton], 41.039313 N, 112.003724 W, low elevation wet meadow, [7510 ft], 26 Aug 2014, Weber 087-5 (UTC). Salt Lake Co.: Salt Lake City, 1 block W of 900 E at ca. 5400 S, mesic-wet lowland meadow with scattered Eleagnus angustifolia, Scirpus sp., Agropyron repens, Juncus balticus, Distichlis spicata, 4340 ft, 17 Aug 1975, Arnow 4609 (UT); Salt Lake City, 1 block W of 9th East at ca. 5400 South, mesic-wet lowland meadow with scattered Eleagnus angustifolia, Juncus balticus, Glaux maritima, 4340 ft, 23 Aug 1975, Arnow 4632 (UT); Copper Lake Area, 6700 W and ca. 2500 S, T1S, R2W, Sec 27 NE 1/4 [40.70376 N, 112.05355 W], Chrysothamnus-Distichlis dominated, heavily grazed area, 4250 ft, 26 Jul 1981, Arnow 5819 (NY, UT-2 sheets). Tooele Co.: 1 mi E of St. John, saline wet meadows, 5000 ft, 28 Aug 1977, Albee 3799 (BRY, UT-2 sheets); ca. 27.5 air mi SW of Tooele, spring on Orr Ranch in Skull Valley, 40.29172 N, 112.73019 W, moist soils with Flaveria, 4740 ft, 1 Sep 1980, Anderson 5115 (BRY, NY). Utah Co.: Along Rte 73 just E of Jordan River bridge, 2 mi W of Lehi, wet meadows with Bidens cernua, 1 Sep 1980, Anderson 5121 (BRY, LSU, MO); 0.5 mi W of town of Fairfield at Big Spring, dry site, Sarcobatus verniculatus-Distichlis spicata association, 1490 m, 18 Aug 1988, Arnow 6539 (BRY, LSU, NY, UT); 1.8 mi W of Lehi, wet meadow N of hwy, abundant especially in drier parts of meadow, heavy clay soil, with Juncus, Carex, 5300 ft, 14 Sep 1948, Harrison 11337 (US).

**3. PYRROCOMA STELLARIS** Nesom, **sp. nov. TYPE**: **Utah**. <u>Tooele Co.</u>: Great Salt Lake Desert, ca 15 air mi N of Wendover, E side of Pilot Range, 40.95336° N, 114.01412° W, Halls Meadow, saline meadow, spring bordering playa, 4265 ft, with *Distichlis, Ericameria albida*, 17 Aug 2018, *R.L. Johnson 5911* (holotype: BRY). Figure 11.

Distinct from eastern *Pyrrocoma lanceolata* in its thickened leaves with prominent reticulate venation and serrulate margins, subspicate to compactly racemoid inflorescence, larger heads, and strongly graduate phyllaries with fimbriate-tomentose margins. The epithet alludes to the sky of stars over this species.

**Stems** erect to ascending-erect, 20–70 cm, sparsely pubescent to glabrous, eglandular. **Leaves**: basal numerous, persistent, oblanceolate or more commonly lanceolate to narrowly lanceolate, 5–20 cm long, gradually attenuate to a petiolar region 1/4–1/3 the leaf length, blades 5–16 mm wide, slightly thickened and often with slightly raised-reticulate venation, eglandular, sparsely tomentose but glabrescent, mostly glabrous, persistently flocculose at petiole base, with persistent fibrous remnants of petiole bases, margins evenly serrulate to spinulose-serrulate, cauline continuing into the inflorescence, subclasping or not, sometimes the medial subsheathing. **Heads** in a spike or compact raceme on peduncles 0.5–2 cm long, without immediately subtending bracts. **Involucres** 9–12 mm wide (pressed); phyllaries in 4–5 series of unequal length (strongly graduate), inner 7–8 mm long, oblong with an abruptly deltate apex, green patch mostly in the deltate apex, eglandular, margins fimbriate-tomentose with white hairs. **Ray florets** 14–20, fertile, corollas 8–10 mm long, 1.5–1 wide, apparently not coiling. **Disc corollas** 4–5 mm long. **Achenes** sericeous-strigose. Figures 11-17.

Additional collections. Nevada. <u>Elko Co.</u>: Tecoma Valley ca. 7.5 air mi NE of Montello, SW side of Dake Reservoir, 41.3392° N, 114.1087° W, in and about the seepages, 4800 ft, 27 Jul 1985, *A. Tiehm 10011* (BRY, COLO, ID, NY, OSC, RENO). Utah. <u>Juab Co.</u>: Fish Springs Natl Wildlife Refuge, roadside amid saltgrass, 1 Aug 1960, *Bolen s.n.* (NY); Fish Springs, 14 Sep 1938, *Jensen 230* (LL, NY).

Closest in aspect and geography to *Pyrrocoma stellaris* is *P. robertjohnsonii*, but the glandularity of the latter suggests it is related to a different species group. A close relationship to *P. lanceolata* is plausible but *P. stellaris* is amply distinct in morphology, as noted in the diagnosis, as well as geography.



*Pyrrocoma stellaris* might be expected to occur around the Deep Creek Range in Juab and Tooele counties and on the east side of the Goshute Mountains of Elko County.

Map 2. Distribution of Pyrrocoma stellaris. Elko, Tooele, and Juab cos.



Map 3. Distribution of *Pyrrocoma stellaris* around the Pilot Range. Google Earth map.

**Stems** erect to ascending-erect or decumbent-ascending, 15–40 cm, glabrous to sparsely pubescent. **Leaves**: basal oblanceolate to lanceolate, 3-10(-15) cm long, fibrous petiole remnants persistent, with cottony tufts at the petiole insertion of basal leaves, blades 5-15 mm wide, glabrous, margins shallowly serrate, cauline quickly to gradually reduced from the basal, diminishing upward, mostly linear-lanceolate, those of broader width subclasping. **Heads** 1 or 2-4(-5) in a loose raceme or corymb on minutely bracteate peduncles 2-6(-9) cm long, without immediately subtending bracts. **Involucres** 10–14 mm wide (pressed); phyllaries oblong-lanceolate to triangular with an acute apex, in 3(-4) series of subequal to unequal length, glabrous to sparsely floccose, eglandular, inner 4.5–6 mm long, green patch elongate and usually with a white-indurate border, on the distal 1/3-1/2, indurate proximally. **Ray florets** 16–30(–40), fertile, corollas 8–10 mm long, 1.5–2 mm wide, coiling. **Disc corollas** 3.5–5 mm long. **Achenes** 3–3.5 mm long, sericeous-strigose. Figures 18-32.

Flowering July-August. Wet and dry meadows, ephemeral wet areas, near springs, stream sides, playas with rabbitbrush, alkali bottoms, roadsides; 5000–8500(–9000) feet.

Representative collections. Utah. Beaver Co.: Escalante Valley, ca. 14.5 mi WSW of Minersville, ca. 3 mi S of Thermo siding, spring area, saline soil, 5050 ft, 27 Aug 1980, Welsh et al. 20137 (NY). Carbon Co.: Emma Park, dry soil, 7600 ft, 19 Aug 1924, Garrett 1112 (BRY, UT); beyond Cotton on Duchesne Road, Emma Park, waste places, roadside, 19 Aug 1929, Garrett 5454 (UT); CC Range Creek, ca 6 mi due NE of Castle Gate, 39.8127° N, 110.7887° W, gravelly meadow along Willow Creek, 7400 ft, 10 Aug 1977, Welsh 15959 (BRY, NY, WTS); Emma Park, 4.2 mi W of Hwy 191 on Emma Park road, roadside and ephemeral wet area, clay soils, 7215 ft, 2 Aug 2002, Atwood & Welsh 28850 (BRY). Garfield Co.: 15 mi SW of Escalante, Upper Valley, open meadow, drier places in meadow, 8000 ft, rare, 16 Aug 1950, Hall s.n. (UT); Panguitch Lake, 7000 ft, 5 Sep 1894, Jones 5996m (US); Bryce Jct, dry meadow, 30 Aug 1980, Welsh et al. 20214 (NY); ca 1.5 m of Bryce Canyon airport., John's Valley, 37.6458 N, 112.1042 W, rabbitbrush community, on playa Claron clay-silts, 7500 ft, 29 Jul 1999, Welsh 27614 (MO, NY). Iron Co.: 4 mi up Bear Creek from Rte 20, 7225 ft, streamside, 26 Jul 1977, Foster 4709 (NY). Juab Co.: 5.5 mi SW of Levan, E side of Hwy 91 at Juab train stop, wet meadow, 5080 ft, 30 Aug 1984, Baird et al. 1469 (NY); 9.25 mi NE of Scipio, along Sevier River just below Yuba Dam, saline bottomland meadow, 4950 ft, 25 Sep 1981, Goodrich 16405 (NY). Piute Co.: Marysvale, 6500 ft, 30 Aug 1894, Jones 5965d (US); 4 mi due S of Greenwich, streamside meadow, muddy soil, 6800 ft, 27 Jul 1977, Neese 3780 (NY). Sanpete Co.: W of Ephraim, pastures, moist alkaline soil, frequent, 15 Sep 1944, Holmgren 3820 (NY); 1 mi NW of Fountain Green, saline meadow, abundant, 12 Aug 1940, Maguire 20076 (COLO, MO, NY, US); W of Ephraim, alkali bottoms, 5600 ft, 21 Aug 1942, Plummer 260 (IND). Sevier Co.: Ca. 27 mi E of Salina, upper end of Mud Hollow Spring, dry edge of wet meadow, 8540 ft, 24 Jul 1979, Albee 4634 (UT); Burrville, 7000 ft, 17 Jul 1894, Jones 5640 (NY, US); ca. 5.5 mi NW of Emery, Juncus-Hordeum meadow, in alluvium, 8380 ft, 17 Jul 1989, Welsh 24351 (NY, SJNM). Wayne Co.: Fish Lake, 9000 ft, 9 Aug 1894, Jones 5790h (US); creek near Fish Lake, 9000 ft, 11 Aug 1894, Jones 5826 (US); S end of Fish Lake, 10 Aug 1905, Rydberg & Carlton 7535 (NY, RENO, US) and 7604 (NY, US); Rabbit Valley, 6790 ft, 21 Aug 1875, Ward 634 (US-2 sheets); ca. 4 mi S of Panguitch Lake, 8500 ft, 22 Aug 1982, Welsh 21343 (NY).

*Pyrrocoma cheiranthifolia* has been identified as *P. lanceolata*, presumably because of its branching habit and multiple heads, but the range of typical *P. lanceolata* in Utah is only in north-central counties. *Pyrrocoma lanceolata* has longer stems with distal branches, smaller involucres (5–8[–9] mm vs. 10–14 mm), and fewer rays (10–15[–20] vs. 16–30[–40]).

Stems of *Pyrrocoma cheiranthifolia* usually are branched, but unbranched ones occur throughout the range, perhaps most commonly in the Fish Lake area of Wayne County (e.g., Figs. 25, 26), and these sometimes have been identified as as *P. uniflora* — such variants are interpreted here as

within the morphological range of the species. Typical *P. uniflora* in Utah occurs in the Uinta Mountains (Nesom in prep.).

The range of *Pyrrocoma cheiranthifolia* is sympatric with that of *P. clementis*, which sometimes is similar in habit, but hybrids apparently occur rarely if at all (e.g., Fig. 0). In Wayne County (Rabbit Valley), *P. cheiranthifolia* occurs in close proximity to *P. lapathifolia* but higher on dry slopes.



Map 4. Distribution of *Pyrrocoma cheiranthifolia*. Arrows point to the type locality, Sanpete County. Red stars are *Pyrrocoma lapathifolia* in Piute and Wayne counties (see Maps 5-6). The Sanpete County boundary is outlined in red. The distribution of *P. duchesnia* (blue, insert) is shown by a triangle (Maps 8 and 9 for details).

**Stems** erect, 23–60 cm, glabrous. **Leaves**: basal thickened, glabrous, oblanceolate to lanceolate, 10–21 cm long, attenuate to a petiole 1/3–2/5 the leaf length, blades 8–32 mm wide, margins entire or sparsely denticulate, fibrous remnants of basal leaf petioles persistent, cauline sheathing-clasping, linear-lanceolate to linear-oblanceolate, continuing to near the heads. **Heads** 1 or 2–5 in a spike or raceme with peduncles 2–5 cm long, without immediately subtending bracts. **Involucres** 15–18 mm wide (pressed), sometimes cottony at the base; phyllaries indurate, narrowly lanceolate-triangular with a narrowly acute or acute with a long-acuminate apex, glabrous, in 3–4 series of equal to subequal length, inner 10–11 mm long, elongate green area in the distal 1/3–1/2, stramineous proximally. **Ray florets** 20–33, fertile, corollas 11–15 mm long, 1.5–2 mm wide, apparently not coiling. **Disc corollas** 5 mm long. **Achenes** 3 mm long, sericeous-strigose. Figures 34-41.

Flowering August-September. Marshy areas, riparian; 6000-7400 ft. Maps 4, 5-7.

Additional collections. Utah. <u>Piute Co.</u>: Kingston, 6500 ft, 3 Sep 1894, *Jones 5983e* (US); Circle Valley, ca. 2.6 mi S of Junction [W side of Kingston], beside Hwy 89 and adjacent to Sevier River, 38.20138 N, 112.22434 W, *Shepherdia argentea-Juncus balticus* community, 6005 ft, 10 Aug 1990, *Taye 4950* (BRY, NY). <u>Wayne Co.</u>: 2.5 mi due S of Bicknell, Bicknell Bottoms, 38.302831 N, 111.551634 W, river riparian community, sedge/rush dominant, saturated soils, 2125 m [6970 ft], 9 Aug 1996, *Huber 3436* (CSCN, UNLV); Rabbit Valley, 6700, 6800 ft, 18 Aug 1875, *Ward 616* (MO, PH, US).

*Pyrrocoma lapathifolia* is recognized by its tall, erect stems, large, thickened, glabrous basal leaves with entire to subentire margins, and large heads with indurate, narrowly triangular-lanceolate phyllaries. A highly distinctive species. Typical *P. cheiranthifolia* also occurs in Rabbit Valley and elsewhere in Wayne County as well as in Piute County.

Hall (1928) considered *Pyrrocoma lapathifolia* an unusual form of *P. integrifolia*. Mayes (1976) followed and also cited it in synonymy of *P. integrifolia*, although he did not map it with that species (the Utah locality was far out of range). Welsh et al. (2015) placed it as a synonym of *P. lanceolata*. In view of their geography and the similarity of their narrowly triangular phyllaries with an elongate green patch, *P. lapathifolia* may be closely related to *P. cheiranthifolia*.

Lester Frank Ward was a botanist with the J.W. Powell Geological and Geographical Survey and made hundreds of collections from Utah (including numerous from Rabbit Valley) from June to August 1875. Rabbit Valley, with the Fremont River through it, extends from northeast of the town of Fremont south to Loa, Lyman, and southeast of Bicknell (Map 6). Bicknell Bottoms is now a Wildlife Management Area of marshy habitat along the Fremont River. Hundreds of relatively recent collections have been made in the Bicknell area (e.g., see BRY database) — the only collection of *Pyrrocoma lapathifolia* since 1875 (except for the one at Kingston in 1894) has been from Bicknell Bottoms. Ward also collected *P. cheiranthifolia* from Rabbit Valley in 1875 (*Ward 634*, PH, US-2 sheets).

Marcus Jones made a number of collections on August 3rd at Kingston (the label has no other data except elevation (6000 ft, 6500 ft) -- see NY, RSA, US. Among these are various wetland species, including *Bidens cernua*, *Epilobium leptophyllum*, *Juncus nodosus*, *Lemna minor*, and *Stachys palustris*. The *Epilobium* is numbered 5983a (NY, RSA), in contrast to the pyrrocoma's 5983e. The apparent disjunction between the Wayne and Piute localities is surprising, but the distance is only about 35 miles and the identity of the collections is unambiguous. Other botanists have collected in the Kingston area (e.g., Blauer, Fertig, Madsden, Welsh) but the only other specimen of *Pyrrocoma lapathifolia* is that of Taye in 1990.



Map 5. Distribution of *Pyrrocoma lapathifolia*. Piute and Wayne cos., Utah. Maps 6 and 7 show details of the two localities. The Piute County boundary is outlined in red.



Map 6. Type locality of *Pyrrocoma lapathifolia* — Bicknell Bottoms in Wayne Co., Utah. Rabbit Valley is an arc about 12 miles long, cut by the Fremont River.



Map 7. *Pyrrocoma lapathifolia* — west of Kingston in Piute Co., Utah. The symbol marks the locality of *Taye 4950*. The site of Marcus Jones's 1894 collection was described only as "Kingston" but presumably it was along the Sevier River.

**6. PYRROCOMA DUCHESNIA** Nesom, **sp. nov. Type**: **Utah**. Duchesne Co.: 3 mi SE (136°) of Tabonia, jct of Hwy 208 and Duchesne River, 40.3229° N, 110.6805° W, riparian community with willows, grasses, sedges, 6400 ft, 20 Jul 1981 *S. Goodrich 15877* (holotype: NY; isotype: SSLP). Figure 42.

Different from *Pyrrocoma lanceolata* in its non-clasping cauline leaves, more distinctly racemoid inflorescence, larger involucres. more rays, and phyllaries with a narrower green patch.

**Stems** ascending-erect to erect, (10-)15-35 cm, glabrous or very lightly tomentose and glabrescent, caudex apex lightly tomentose, eglandular. **Leaves**: basal lanceolate, 8–12 cm long, attenuate to a petiolar region 1/3(-1/2) the leaf length, fibrous remnants of petiole bases persistent, blades 6–15 mm wide, glabrous (lightly tomentose, quickly glabrescent), sometimes persistently tomentose at petiole base, eglandular, not clasping or subclasping, margins serrulate to shallow serrate. **Heads** 3–9 in a loose but distinct raceme, peduncles 1–4 cm long, without immediately subtending bracts. **Involucres** 12–15 mm wide; phyllaries in (2–)3–4 series of subequal to unequal length, inner 8–9 mm long, linear-oblong with a lanceolate apex, green patch linear-lanceolate, in the distal 2/3, eglandular, with a narrow whitish rim and whitish midline. **Ray flowers** 16–26, corollas 9–10 mm long, 1.5–2.5 mm wide, coiling. **Disc corollas** 5 mm long. **Achenes** not seen. Figures 42-45.

Flowering July-September. Riparian vegetation, saline playas, near canals and swampy areas, gravelly meadows, dry clay, roadsides; 5200–7400 feet.

Additional collections. Utah. <u>Duchesne Co.</u>: Uinta Basin, Hancock Cove, ca. 2 mi SSW (310°) from Roosevelt, 40.15° N, 110.02° W, dry clay soil of Duchesne River Formation adjacent to a swampy area and irrigation canal, 5190 ft, 3 Aug 1979, *Goodrich 13605* (BRY); 3 mi SE (136°) of Tabonia, jct of Hwy 208 and Duchesne River, 40.3229° N, 110.6805° W, riparian community with willows, grasses, sedges, 6400 ft, 20 Jul 1981 *Goodrich 15877* (NY, SSLP); Ashley Natl Forest, West Tavaputs Plateau, Sowers Canyon, 39.936433° N, 110.523247° W, wet meadow with long history of grazing, 7180 ft, 27 Aug 1992, *Goodrich 24025* (RENO, TAES); 0.8 mi NW of Dry Gulch Creek and Sand Wash confluence, 40.27722° N, 110.07716° W, moist salty lowlands, irrigated by natural aquifers, 5210 ft, 16 Aug 2011, *Huber 5179* (BRY, UT); ca. 1 mi W of Roosevelt Airport, 40.27774° N, 110.07456° W, saline playa, wet soil (saturated), 6422 ft, with *Juncus balticus, Triglochin maritima, Distichlis spicata*, 8 Aug 2011, *Spencer 1623* (BRY).



Map 8. Distribution of *Pyrrocoma duchesnia* (gold) and *P. cheiranthifolia* (blue). Duchesne and Carbon counties, Utah.



Map 0. Distribution of *Pyrrocoma duchesnia* (gold) and *P. cheiranthifolia* (blue) in relation to the Duchesne River drainage.

*Pyrrocoma duchesnia* is not strongly differentiated from *P. lanceolata* (Figs. 2-4) in morphology but it differs especially in its racemoid inflorescence, larger involucres, and more elongate green patch of the phyllaries and in its geography. The closest populations of typical *P. lanceolata* are in Rich, Summit, and Utah cos., Utah, and in southwestern Wyoming, where separated by the Uinta Mountains from the Duchesne River valley.

### **ACKNOWLEDGEMENTS**

Many thanks to Robert Johnson (BRY) for observations on specimens there.

#### LITERATURE CITED

- Cronquist, A. 1994. Asterales. Intermountain Flora: Vascular FLora of the Intermountain West, U.S.A. Vol. 5. The New York Botanical Garden, Bronx. *Pyrrocoma* (as *Haplopappus*), pp. 205–212.
- Nesom, G.L. 2025. Glandular species of *Pyrrocoma* (Asteraceae: Astereae) from Nevada, California, and Oregon. Phytoneuron 2025-15: 1–54.
- Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. 2015. A Utah Flora (ed. 5, revised). Monte L. Bean Life Science Museum, Brigham Young University, Provo.

13



Figure 1. Pyrrocoma lanceolata. Rich Co., Utah, Thorne 1253 (NY).



Figure 2. Pyrrocoma lanceolata. Rich Co., Atwood 9516 (NY).





Figure 3. Pyrrocoma lanceolata. Rich Co., Franklin 1024 (NY).



Figure 4. Pyrrocoma robertjohnsonii. Salt Lake Co., Arnow 4632 (UT).

17



Figure 5. Pyrrocoma robertjohnsonii. Utah Co., Arnow 6539 (BRY).



Figure 6. Pyrrocoma robertjohnsonii. Salt Lake Co., Arnow 5819 (NY).



Figure 7. Pyrrocoma robertjohnsonii. Salt Lake Co., Arnow 5819 (UT).



Figure 8. Pyrrocoma robertjohnsonii. Utah Co., Anderson 5121 (BRY).



Figure 9. Pyrrocoma robertjohnsonii. Utah Co., Baird 1522 (BRY).





Figure 10. Pyrrocoma robertjohnsonii. Cache Co., Anderson 5125 (BRY).



Figure 11. Pyrrocoma stellaris. Tooele Co., Johnson 5911 (BRY). Holotype.



Figure 12. Pyrrocoma stellaris. Tooele Co., detail from Johnson 5911, Figure 11.



Figure 13. Pyrrocoma stellaris. Juab Co., Bolen s.n. (NY).



Figure 14. Pyrrocoma stellaris. Elko Co., Tiehm 10011 (NY).



Figure 15. Pyrrocoma stellaris. Elko Co., Tiehm 10011 (BRY).





Figure 16. Pyrrocoma stellaris. Elko Co., Tiehm 10011 (OSC).



Figure 17. Pyrrocoma stellaris. Elko Co., Tiehm 10011 (RENO).



Figure 18. *Pyrrocoma cheiranthifolia*. Sanpete Co., *Tidestrom 534* (US). Holotype. Arrows point to branch nodes.



Figure 19. Pyrrocoma cheiranthifolia. Detail from Tidestrom 534, Figure 18.





Figure 20. Pyrrocoma cheiranthifolia. Garfield Co., Ertter 5129 (NY).



Figure 21. Pyrrocoma cheiranthifolia. Piute Co., Neese 5780 (NY).



Figure 22. Pyrrocoma cheiranthifolia. Garfield Co., Hall s.n. (UT).





Figure 23. Pyrrocoma cheiranthifolia. Sevier Co., Welsh 24351 (NY).



Figure 24. Pyrrocoma cheiranthifolia. Sevier Co., Albee 5146 (UT).



Figure 25. Pyrrocoma cheiranthifolia. Sevier Co., Jones 5826c (left), Jones 5790h (right), both US.



Figure 26. Pyrrocoma cheiranthifolia. Sevier Co., Rydberg & Garrett 7535 (RENO). Stems unbranched.





Figure 27. Pyrrocoma cheiranthifolia. Garfield Co., Huber 3389 (CSCN). Stems branched and unbranched.





Figure 28. Pyrrocoma cheiranthifolia. Piute Co., Neese 17626 (NY). Stems unbranched and branched.



Figure 29. *Pyrrocoma cheiranthifolia*. Beaver Co., *Welsh 20137* (NY). Phyllaries are ciliate-fringed, suggesting influence by *P. clementis*.



Figure 30. Pyrrocoma cheiranthifolia. Carbon Co., Atwood & Welsh 28850 (BRY).





Figure 31. Pyrrocoma cheiranthifolia. Detail from Atwood & Welsh 28850 (Fig. 30).



Figure 32. Pyrrocoma cheiranthifolia. Carbon Co., Garrett 5454 (UT).





Figure 33. Pyrrocoma cheiranthifolia. Carbon Co., Welsh 15959 (NY).



Figure 34. Pyrrocoma lapathifolia, Wayne Co., holotype, Ward 596 (US).



Figure 35. Pyrrocoma lapathifolia, heads from the holotype.



Figure 36. Pyrrocoma lapathifolia, Wayne Co., isotype, Ward 596 (PH).



Figure 37. Pyrrocoma lapathifolia, Wayne Co., isotype, Ward 596 (MO).



Figure 38. Pyrrocoma lapathifolia, Wayne Co., isotype, Ward 596 (US)



Figure 39. Pyrrocoma lapathifolia, Wayne Co., Rabbit Valley, Ward 616 (US).





Figure 40. Pyrrocoma lapathifolia. Wayne Co., Huber 3436 (CSCN).



Figure 41. Pyrrocoma lapathifolia. Piute Co., Kingston, Jones 5983e (US).



Figure 42. Pyrrocoma duchesnia. Duchesne Co., Goodrich 15877 (NY).

55



Figure 43. Pyrrocoma duchesnia. Duchesne Co., Goodrich 24025 (RENO).



Figure 44. Pyrrocoma duchesnia. Duchesne Co., Goodrich 13605 (BRY).



Figure 45. Pyrrocoma duchesnia. Duchesne Co., Spencer 1623 (BRY).