NEW PLANTS FROM MOFFAT AND RIO BLANCO COUNTIES, COLORADO

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ABSTRACT.—Described as new from Moffat and adjacent Rio Blanco counties, Colorado, are 4 taxa: *Chrysothamnus nauseosus* (Pallas) Britton var. *linearifolius* S.L. Welsh & S. Goodrich, var. nov.; *Erigeron nematophylloides* S.L. Welsh & A. Huber, sp. nov.; *Lepidium montanum* Nuttall var. *diffusum* S.L. Welsh & S. Goodrich, var. nov.; and *Iva axillaris* Pursh var. *parvifolia* S.L. Welsh & A. Huber, var. nov.

RESUMEN.—Se describen cuatro nuevos taxa del condado de Moffat y del condado adyacente de Rio Blanco, en Colorado: *Chrysothamnus nauseosus* (Pallas) Britton var. *linearifolius* S.L. Welsh & S. Goodrich, var. nov.; *Erigeron nematophylloides* S.L. Welsh & A. Huber, sp. nov.; *Lepidium montanum* Nuttall var. *diffusum* S.L. Welsh & S. Goodrich, var. nov.; e *Iva axillaris* Pursh var. *parvifolia* S. L. Welsh & A. Huber, var. nov.

The following previously undescribed entities are from geologically unique areas in Moffat and adjacent Rio Blanco counties, Colorado. We describe these 4 taxa herein and in so doing call attention to areas in this portion of Colorado that have been and still are in need of further floristic investigation. Plants adapt to the substrates on which they grow and through time become morphologically dissimilar to their close relatives, whether distant or nearby, on other substrates (Welsh and Atwood 2012). Occurrences of local endemic species are plentiful in the Uinta Basin, in both Utah and Colorado. Thus, it is expected that still other entities with local distribution on the array of geological formations will be found as future investigations are carried out.

***Chrysothamnus nauseosus* (Pallas) Britton
var. *linearifolius* S.L. Welsh &
S. Goodrich, var. nov.**

(Fig. 1)

DESCRIPTION.—*Similis Chrysothamno nauseoso* var. *uintahensi* in staturis sed in foliis linearibus viridibus et parse pubescentibus differt.

TYPE.—Colorado, Rio Blanco Co., Tertiary Wasatch Formation, ca. 18 mi slightly N of due W of Meeker; 40°09'52.7"N, 108°23'57.61"W. White River drainage, 0.2 mi NE of Rio Blanco Lake, 5900 ft elevation; with greasewood; S. Goodrich 28345, 8 September 2011,

holotype BRY, isotype USUUB, others to be distributed.

PARATYPES.—Tertiary Wasatch Formation, ca. 18 mi slightly N of due W of Meeker; 40°06'08.6"N, 108°14'02.3"W. White River drainage, N of Rio Blanco Lake, 5864 ft elevation; with mat-saltbush and Salina wildrye; S. Goodrich 28337, 8 September 2011; 40°08'54.8"N, 108°09'18.8"W. White River drainage, 0.8 mi E of Rio Blanco Lake, 5850 ft elevation; semibarrens with snakeweed; S. Goodrich 28344, 8 September 2011; do, 40°09'52.7"N, 108°23'57.61"W. White River drainage, 3.4 mi NNE of Rio Blanco Lake, 6000 ft elevation; semibarrens with scattered greasewood and Wyoming big sagebrush; S. Goodrich 28342, 8 September 2011; 40°08'00.0"N, 108°08'43.2"W. White River drainage, 3.2 mi N of Rio Blanco Lake, at 5960 ft elevation; semibarrens with scattered depauperate greasewood; S. Goodrich 28339, 8 September 2011; 40°06'24.6"N, 108°12'22.0"W. Colorado, Rio Blanco Co., 20 mi east of Rangely, near the mouth of Yellow Creek, 5650 ft elevation; with scattered greasewood on Green River Formation; S. Goodrich 28352, 8 September 2011; 40°09'52.7"N, 108°23'57.6"W.

COMMENTS.—Shrubs 0.7–2.5 (3) dm tall; branches erect or ascending from a sprawling base, the bark obscured by a grayish resinous-glandular impregnated tomentum; leaves 0.8–4 cm long, 0.5–1.2 mm wide, 1- or weakly 3-nerved, sparingly villous, flat or channeled,

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Fig. 1. *Chrysothamnus nauseosus* (Pursh) Britton & Rusby var. *linearifolius* S.L. Welsh & Goodrich: upper left, flower heads ca. 1X; upper right, achene with pappus, on mm grid; bottom, habit.

apiculate; heads numerous in terminal paniculate cymes; involucre 7.5–10 mm long, 3.3–4 mm wide, the bracts obscurely if at all ranked, the inner glabrous, the outer sparingly villous, rather abruptly acute; corollas yellow, 7–7.7 mm long, the lobes 0.7–0.8 mm long; achenes 2.8–5 mm long, hairy.

This variety stands apart from other phases of the morphologically diverse big rabbitbrush by being low-growing; by having linear or linear-filiform green, sparingly pubescent leaves; and specifically from the low-growing var. *uintahensis* by lacking the white tomentum of stems and having sparingly pubescent, definitely linear

leaves. This variety is evidently confined to the Tertiary Wasatch Formation, where it grows with snakeweed, greasewood, and big sagebrush.

***Erigeron nematophylloides* S.L. Welsh
& A. Huber, sp. nov.**

(Fig. 2)

DESCRIPTION.—Similis *Erigeron nematophyllus* sed in caulinis foliis supra foliis basalis et capitulis plus numerosis (1–5 nec 1) differt.

Linear-leaf daisy

TYPE.—Colorado, Moffat Co., Cold Spring Mountain, Limestone Ridge, 40°50'2.5" N,

Fig. 2. *Erigeron nematophylloides* S.L. Welsh & Huber: upper left, detail of flowering head; middle, ray flower with pappus and achene, on mm grid; upper right, habit; lower left, Mississippiian Madison Limestone ridge habitat.

108°45'26.9"W, ca. 35 mi NW of Sunbeam, Colorado, 8550 ft (ca. 2606 m) elevation. East-facing slope, in limestone rubble and cracks of parent material, with tufted rockmat, rock goldenrod, and stemless hymenoxys, A. Huber & S. Goodrich 5137, 27 July 2011; holotype BRY, isotypes USUUB, and others.

PARATYPES.—Colorado, Moffat Co., Brown's Park, T10N, R104W, S13, Green River Ford, at ca. 5300 ft, S.L. Welsh 23001, 15 August 1984; Mid-Blind Canyon, T6N, R101W, NW/NW of NE, at 5600 ft, on small sandy ledge of E exposure with *Fendlera*, Weber Formation, S. O'Kane 2828, 19 May 1987; Yampa River, E end of Cross Mountain Canyon, T6N, R97W, S18, 5800 ft, frequent on rock outcrops, J.C. Parks et al. 706, 15 July 1982; ca. 14 mi due west of Maybell, SE bank of Yampa River, Cross Mountains, Elizabeth Neese et al. 12053, 25 July 1982; Irish Canyon, E exposure of vertical cliffs, N.D. Atwood 20532, 29 August 1995; Cold Spring Mountain, Limestone Ridge, 40°49'47.2"N, 108°45'19.4"W, west-facing limestone cliffs and rocky debris with curl-leaf mountain mahogany and tufted rockmat, 8560 ft (2609 m), A. Huber & Sherel Goodrich 5144,

27 July 2011; Irish Canyon, 40°47'58.7"N, 108°43'19.4"W, 6430 ft (ca. 1962 m), on limestone cliffs and colluvial debris at the base of cliffs, with pinyon and juniper, S. Goodrich & A. Huber 28170, 7 July 2011. Utah, Uintah Co., Yampa Plateau, Docs Valley (N above Daniels Canyon), T4S, R25E, S31, NE/NW, 7380 ft, slickrock of Weber Formation, with ponderosa pine, pinyon, and *Ivesia gordonii*, M.A. Franklin 7414, 16 July 1991, all at BRY!

COMMENTS.—Evidently long-lived perennial herbs from a branching caudex, the caudex branches clothed with fibrous ashy to brown marcescent leaf bases; herbage sparingly strigose to subglabrous; stems 8–17 cm tall; basal leaves 2–6 cm long, (0.5), 1–2.3 mm wide, linear to linear-oblongate, ciliate near the enlarged sheathing base; cauline leaves 7 or 8, reduced upward, much exceeding the basal cluster; heads 1–3 (5), when more than one, the others arising from axils of uppermost foliose bracts and sometimes evident as mere flower buds; involucre 4.5–10 mm wide, when pressed, (3.5) 4–5.3 mm high; bracts more or less imbricate, moderately strigulose and sparingly if at all glandular, green or brown, the inner often with

Fig. 3. *Lepidium montanum* Nuttall var. *diffusum* S.L. Welsh & Goodrich, var. nov.: upper left, silicle, on mm grid; upper right, flower, on mm grid; bottom, habit of plant in flower.

scarious margins and purplish tips; rays 15–30, white (less commonly pink), 4–5 mm long, 1.2–1.6 (2.3) mm wide; pappus of ca. 15–25 bristles; achenes 2-nerved, shortly hairy.

Pinyon-juniper communities, Weber Sandstone, in the vicinity of Brown's Park, Mississippian Madison Limestone, 5300–7380 ft (1620–2250 m) elevation, in Uintah Co., Utah, Moffat County, Colorado, and Wyoming?.

This linear-leaf daisy stands apart from the evidently closely allied needleleaf daisy in being definitely caulescent and in having 2 or 3, less commonly 5, heads borne on each stem. Even many of those that appear to bear only a solitary head have flower buds evident in the uppermost bracteate leaf axils. Most slender leaves are 0.5–1 mm wide, with only a few exceeding 1 mm by as much as 0.2 mm; it is a rare plant indeed with leaves as broad as 2.3 mm.

***Lepidium montanum* Nuttall var. *diffusum*
S.L. Welsh & S. Goodrich, var. nov.**

(Fig. 3)

DESCRIPTION.—Similis *Lepidium montanum* sensu latissimo in characteribus generalis sed in siliculis brevioribus et angustioribus et similis *L. alyssoides* in perennis (nec biennis) et in siliculis minoribus plerumque inter alia differt.

TYPE.—Colorado, Moffat Co., Irish Canyon, 40°47'58.7" N, 108°43'19.4" W, 6430 ft (ca. 1962 m) elevation. On limestone cliffs and colluvial debris at the base of cliffs, with pinyon and Utah juniper. Sherel Goodrich & A. Huber 28171, 7 July 2011; holotype BRY!, isotypes to be distributed.

COMMENTS.—Perennial from a branching (or simple) caudex and taproot; stems 17–32 cm tall, glabrous; leaves basal (withered by anthesis) and cauline 2–12 cm long, 1.8–2.5 mm wide (from lobe-tip to lobe-tip), pinnatifid (with lobes toothed or entire) becoming entire upward, in outline oblong-ob lanceolate to narrowly elliptic; bracts subtending flowering branches 1.7–2.5 cm long; pedicels 3–5 mm long, spreading-ascending, straight or nearly so, glabrous; sepals 1.2–1.3 mm long, green with white margins, glabrous; petals 2–2.8 mm long, clawed, white, obovate to spatulate; stamens 6; silicles 2.2–2.4 mm long, 1.8–2.1 mm wide, ovate, very shallowly notched apically, glabrous; style 0.7–0.8 mm long.

Pinyon-juniper community on limestone cliffs and colluvial debris, ca. 1962 m elevation, in Moffat Co., Colorado; 1 (I).

Besides differing in silicle size from *L. montanum* in sensu lato, the var. *diffusum*, as noted above, differs also from the closely allied *L. alyssoides* in silicles that are smaller on average and in the obvious perennial habit. This variety is evidently a local endemic on limestone of the Madison Formation at Irish Canyon. The type collection consists of at least 5 entire individuals and 2 others. The above description is aggregated from all specimens in the type collection.

***Iva axillaris* Pursh var. *parvifolia* S.L. Welsh
& A. Huber, var. nov.**

(No figure)

DESCRIPTION.—Similis *Iva axillaris* sensu latissimo in characteribus generalis sed in foliis uniformiter parvioribus ubique differt.

TYPE.—Colorado, Moffat Co., Blue Hill, 40°51'10.3.7"N, 108°43'03.2"W, 6775 ft (ca. 2076 m) elevation. Desert shrub community, on light colored clay soil. Sherel Goodrich & A. Huber 28183, 7 July 2011, holotype BRY!

COMMENTS.—Perennial herbs from deeply set rhizomes, perennating from elongate, subterranean caudex branches to 10 cm long or more; caudex branches with leaves (mainly lacking at anthesis), clasping (almost perfoliate, connected by a ridge) at the bases; cauline leaves dimorphic, the lowermost ovate to obovate, opposite, clasping, the others alternate, attenuate to a slightly clasping base, the blades (4) 9–19 mm long, (2) 2.5–5 mm wide, elliptic to oblong, obtuse apically, sparingly but sharply strigulose; heads axillary, nodding, several to numerous in bracteate clusters; bracts connate, shallowly 4- or 5-lobed; pistillate flowers 4–8, perfect; achenes 2–3 mm long, glandular.

The small-leaved poverty weed, as described above, is possibly only an ecotype of the broadly distributed species, whose range occupies much of the American West. The uniformly small leaves of the population encountered by the collectors raised questions as to the genetic integrity of the variant over the habitat of “light colored clay soil.” It is herein described to call attention to this population of evidently genetically similar individuals and perhaps genetically controlled morphology.

LITERATURE CITED

- WELSH, S.L., AND N.D. ATWOOD. 2012. Plant endemism and geoendemic areas of Utah. Revised edition. Published privately. 97 pp.

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