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NEW COMBINATIONS FOR THE MONTANA FLORA

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ABSTRACT

Three new combinations are proposed. *Agoseris carnea* Rydb. and *A. lackschewitzii* Douglass M. Hend. & R.K. Moseley are considered the same entity and have been subsumed into *A. aurantiaca* (Hook.) Greene as a new infraspecific taxon. *Artemisia lindleyana* Besser has been treated as a distinct species, but a recent treatment subsumes it into *A. ludoviciana* Nutt. Similarities between the two entities are undeniable, but morphological and ecological differences lead me to believe that the former is best considered as a subspecies of the latter. Recent transfer of many New World asters into *Symphyotrichum* requires a new combination for *Aster cusickii* A. Gray if it is to be recognized as a subspecific taxon in *Symphyotrichum foliaceum* (Lindl. ex DC.) G.L. Nesom.

RESUMEN

Se proponen tres combinaciones nuevas. *Agoseris carnea* Rydb. y *A. lackschewitzii* Douglass M. Hend. & R.K. Moseley se consideran la misma entidad y se incluyen en *A. aurantiaca* (Hook.) Greene como un nuevo taxon infraespecífico. *Artemisia lindleyana* Besser ha sido tratada como una especie distinta, pero un tratamiento reciente la subsume en *A. ludoviciana* Nutt. Las semejanzas entre las dos entidades son innegables, pero las diferencias morfológicas y ecológicas me hacen creer que la primera está mejor considerada como una subespecie de la última. La reciente transferencia de muchas *Aster* del Nuevo Mundo a *Symphyotrichum* requieren una nueva combinación para *Aster cusickii* A. Gray si hay que reconocerla como un taxon subespecífico en *Symphyotrichum foliaceum* (Lindl. ex DC.) G.L. Nesom.

INTRODUCTION

Examination of herbarium material in preparation for a new floristic manual for Montana has convinced me that several new combinations are warranted.

SYSTEMATICS

Agoseris aurantiaca (Hook.) Greene var. **carnea** (Rydb.) P. Lesica, comb. nov. BASIONYM: *Agoseris carnea* Rydb., Mem. New York Bot. Gard. 1458. 1900. TYPE: CANADA. BRITISH COLUMBIA: Mount Queest, 23 Jul 1889, *Macoun* s.n. (HOLOTYPE: NY!).

Agoseris lackschewitzii Douglass M. Hend. & R.K. Moseley, Syst. Bot. 15:462–465. 1990.

Agoseris aurantiaca has traditionally been parsed into two varieties: var. *aurantiaca* has lanceolate phyllaries, ciliate and villous on the outer surface and achenes abruptly narrowed to the beak; var. *purpurea* (A. Gray) Cronquist has ovate-attenuate, outer phyllaries, ciliate but glabrous on the outer surface and achenes gradually tapered to the beak (Cronquist 1994; Baird 2006). *Agoseris carnea* Rydb. has traditionally been subsumed under *A. aurantiaca* var. *aurantiaca* because of its similar involucre (Hitchcock et al. 1955; Cronquist 1994; Baird 2006) although it has pink rather than orange rays in fresh material (Rydberg 1900). Henderson et al. (1990) described this pink-flowered *Agoseris* as *A. lackschewitzii* from material collected in east-central Idaho and adjacent Montana, U.S.A. and were unaware of the plant occurring in British Columbia, Canada, and having been previously described as *A. carnea* by Rydberg. However, they correctly pointed out that this pink-flowered form has narrow, villous phyllaries as in *A. aurantiaca* var. *aurantiaca* but achenes gradually tapered to the beak as in var. *purpurea*, and that it occurred in moist to wet meadows, an unusual habitat for either variety of *A. aurantiaca*. Though Henderson et al. (1990) believed these plants represented a distinct species, the close relationship to *A. aurantiaca* cannot be denied, and I believe it is better placed as a third variety of *A. aurantiaca* distinguished from the other two as follows:

1. Outer phyllaries ovate abruptly narrowed to the attenuate tip, glabrous on the outer face _____ var. **purpurea**
1. Outer phyllaries narrowly lanceolate, evenly tapered to the tip and villous on the outer face.
   2. Rays pink at anthesis; achenes tapered to the beak _____ var. **carnea**
   2. Rays orange (sometimes drying pink); achenes abruptly tapered to the beak _____ var. **aurantiaca**

Agoseris aurantiaca var. *carnea* is found in upper montane to subalpine moist to wet meadows from British Columbia and Alberta south to Wyoming and Idaho. Rydberg (1900) gives the type locality as Mt. Queest, but "Mt. Avert" is given on the holotype.

Representative specimens examined: **CANADA. British Columbia:** Mt. Avert, 23 Jul 1889, J. M. Macoun *s.n.*(NY photo). **Alberta:** Banff National Park, Sunshine Meadows, 8 Sep 1991, *P. Achuff 6038* (MONTU). **U.S.A. MONTANA. Madison Co.:** Tobacco Root Mtns., Lily Lake, 7 Aug 1981, *Lackschewitz 10191* (MONTU); Noble Lake, 7 Aug 1994, *Vanderhorst 5300* (MONTU). **Park Co.:** Absaroka Mtns., Mount Wallace, 7 Aug 2001, *P. Lesica 8333* (MONTU).

Artemisia ludoviciana Nutt. ssp. **lindleyana** (Besser) P. Lesica, comb. nov. Basionym: *Artemisia lindleyana* Besser in Hook., Fl. Boreali-Amer. 1:322. 1833. Type: CANADA. British Columbia: NW coast of America, *s.d.*, *Douglas s.n.* (lectotype: CGE photo! (Herb. Lindl. No. 16)) (vide Keck 1946: 454).

Artemisia lindleyana has been treated as a distinct species (Hitchcock & Cronquist 1973; Dorn 1984) or a subspecies of the European *A. vulgaris* L. (ssp. *lindleyana* H.M. Hall & Clements). The most recent treatment of *Artemisia* for North America (Shultz 2006) considers *A. lindleyana* conspecific with *A. ludoviciana* Nutt. Shultz (2006) recognized six subspecies within *A. ludoviciana*, and *A. lindleyana* was reduced to synonymy under ssp. *incompta* (Nutt.) Keck. Similar suffrutescent habit, flowers and involucre indicate a close relationship between *A. lindleyana* and *A. ludoviciana*. Within this complex both *A. ludoviciana* ssp. *incompta* and *A. lindleyana* have leaves that are glabrate above. However, the former has glabrate phyllaries, a paniculate inflorescence and deeply lobed leaves, while the latter has racemes of heads with tomentose involucres and leaves that are entire or nearly so. I agree with Shultz that *A. lindleyana* should be placed within *A. ludoviciana*, but believe that differences between *A. lindleyana* and *A. ludoviciana* ssp. *incompta* preclude subsuming the former in the latter. Shultz (2006) suggested that *A. lindleyana* may warrant infraspecific status under *A. ludoviciana*, and Cronquist stated that he had observed *A. lindleyana* growing adjacent to *A. ludoviciana* sensu stricto without intermediates (Hitchcock et al. 1955). For these reasons I propose *lindleyana* as a seventh subspecies of *A. ludoviciana*.

Artemisia ludoviciana ssp. *lindleyana* is found on sandy, gravelly or rocky banks of rivers from southern British Columbia to Oregon and east to Idaho and Montana west of the Continental Divide (Hitchcock et al 1955). The other three subspecies of *A. ludoviciana* in Montana generally occur in different habitats than ssp. *lindleyana*; ssp. *ludoviciana* occurs in grasslands, sagebrush steppe and meadows; ssp. *candicans* (Rydb.) Keck is found in grasslands, streambanks and roadsides; ssp. *incompta* (Nutt.) Keck occurs in stony soil of talus slopes, rock outcrops and sagebrush steppe. Montana's four subspecies have different combinations of a few variable characters and can be differentiated with the following key:

1. Leaves glabrate and greenish above.
   2. Phyllaries glabrate; inflorescence paniculate; leaves deeply lobed _____ ssp. **incompta**
   2. Phyllaries tomentose; inflorescence racemose; leaves entire to shallowly lobed _____ ssp. **lindleyana**
1. Leaves gray-tomentose on both surfaces.
   3. Leaves oblanceolate to obovate, at least the lower lobed ½-way to the midvein _____ ssp. **candicans**
   3. Leaves lanceolate, entire or shallowly lobed <½-way to midvein _____ ssp. **ludoviciana**

Representative specimens examined: **U.S.A. Montana. Flathead Co.:** Middle Fork Flathead River, 13 Aug 2004, *P. Lesica 8936* (MONTU). **Lake Co.:** Flathead Indian Reservation, Lower Flathead River, 22 Aug 1984, *S. Gregory 2894* (MONTU). **Mineral Co.:** Clark Fork River, 26 Oct 1978, *K. Lackschewitz 8799* (MONTU). **Missoula Co.:** Blackfoot River, Johnsrud Park, 19 Sep 1967, *M. Mooar 5559* (MONTU). **Sanders Co.:** Thompson Falls, 6 Aug 1901, *J. Blankenship 409* (MONT); sandy riverbanks, Thompson Falls, 2 Aug 1957, *W. Booth 571198* (MONT).

Symphyotrichum foliaceum (Lindl. ex DC.) G.L. Nesom var. **cusickii** (A. Gray) P. Lesica, comb. nov. Basionym: *Aster cusickii* A. Gray, Proc. Amer. Acad. Arts Sci. 16:99. 1880. Type: U.S.A. Oregon. Union Co.: mountains of Union Co., Jul–Aug 1878, *W.C. Cusick s.n.* (lectotype: GH photo!). *Aster foliaceus* Lindl. ex DC var. *cusickii* (A. Gray) Cronq., Amer. Midl. Naturalist 29:429–468. 1943. *Symphyotrichum cusickii* (A. Gray) G.L. Nesom, Phytologia 77:141–297. 1994.

Aster cusickii was first described by Asa Gray based on a Cusick collection from northeastern Oregon (Gray 1880). Sixty years later Cronquist argued that the plant graded into other forms of *A. foliaceus* and was best

treated as a variety of that species (Cronquist 1943). Nesom moved the taxon into the genus *Symphyotrichum* and recognized it at the species level (Nesom 1994). In the most recent treatment of the group, Brouillet et al. (2006) also recognized the taxon at the species rather than at the infraspecific level. My review of mainly Montana material suggests that low-elevation segregates of *Symphyotrichum foliaceum* sensu lato from the Northern Rocky Mountains often cannot always be confidently distinguished from each other based on the plastic, continuous, vegetative characters purported to separate them (Cronquist 1943). Thus, I prefer to recognize this plant as a variety of *Symphyotrichum foliaceum* rather than at the species level; however, the desired combination had not been previously made. *Symphyotrichum foliaceum* var. *cusickii* can be distinguished from other varieties of *S. foliaceum* using keys presented by Cronquist (1943) and Hitchcock and Cronquist (1973).

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