Great Basin Naturalist

Volume 50 | Number 4 Article 10

12-31-1990

On the typification of *Oxytropis borealis* DC.

Stanley L. Welsh
Brigham Young University

Great Basin Naturalist 50(4), 1990, pp. 355–360

ON THE TYPIFICATION OF *OXYTROPIS BOREALIS* DC.

Stanley L. Welsh[1]

ABSTRACT.—The status of the name *Oxytropis borealis* DC. is reviewed as it applies to North American plants. A summary of the infraspecific taxa is presented, and several nomenclatural combinations are proposed: *Oxytropis borealis* DC. var. *hudsonica* (Greene) Welsh; *O. borealis* var. *sulphurea* (Pors.) Welsh; *O. borealis* DC. var. *viscida* (Nutt.) Welsh. One new taxon, *Oxytropis borealis* DC. var. *australis* Welsh, is described from Utah and Nevada, USA.

Preparation of a revisionary summary of the genus *Oxytropis* DC. for the Flora North America Project necessitates that nomenclatural changes and new taxa be presented prior to publication in that project. The principal reason for this paper involves the nomenclature of *O. borealis*, a name that has figured in various taxonomic treatments of the genus in North America and elsewhere for more than a century (Barneby 1952, Bunge 1874, Gray 1884, Jurtsev 1986, Torrey and Gray 1838, Vasil'chenko, Fedchenko, and Shishkin 1948). The American phases of *Oxytropis* section *Gloeocephala* have passed under a series of names centering on *Oxytropis viscida* Nutt. ex Torr. & Gray (1838). Since the section *Gloeocephala* has circumboreal or at least amphiberingian representation, American workers were almost certain that there was an older name in the Old World literature. Indeed, Barneby (1952) in his revision of the North American species of *Oxytropis* cited two specific epithets older than that of *O. viscida*. And Boivin (1967), in his attempt at summarizing the Canadian portion of the section, transferred the infraspecific taxa to *O. leucantha* (Pallas) Pers. An examination of the type of that species demonstrated that it lacked glands typical of members of the section *Gloeocephala;* it was indeed a portion of the *O. campestris* (L.) DC. sensu lato (Welsh 1972). The transfers to that entity, thus, are incorrect and are merely nomenclatural baggage that accompanies the genus in perpetuity.

Welsh (1967, 1974) and Welsh et al. (1987) essentially followed the lead of Barneby (1952), who chose a wait-and-see attitude with regard to the earliest name for the North American complex. Examination of the types was necessary prior to a final determination of the question of an earlier name for the North American materials.

Bunge (1874) treated two main sections of glandular oxytropes, *Gloeocephala* and *Polyadenia*. The main diagnostic feature used in segregation of members of these sections is the arrangement of the leaflets—*Gloeocephala* having opposite, subopposite, or scattered leaflets and *Polyadenia* having pseudofaciculate leaflets. Since North American viscid oxytropes have both leaflet arrangements, but mainly opposite, subopposite, or scattered, it is necessary to review the names of Old World representatives of both *Gloeocephala* and *Polyadenia*. The names *O. muricata* (Pallas) DC. (*Phaca muricata* Pallas, Reise 3: 318. 1776) and *O. microphylla* (Pallas) DC. (*Phaca microphylla* Pallas, Reise 3: 744. 1776) were both published prior to the next available name in *Gloeocephala*, i.e., *O. borealis* DC. Authentic (probable type) specimens of these and others of the *Polyadenia* were obtained on loan from the herbarium of the Komarov Botanical Institute herbarium (LE). Neither *O. muricata* nor *O. microphylla* seems to be within the concept of the glandular phases of *O. borealis* with pseudofaciculate leaflets as they occur in North America.

Thus, the earliest name available in section *Gloeocephala* in North America is *O. borealis* DC., which is based on a specimen (Fig. 1) deposited in the Prodromus herbarium at

[1]Life Science Museum and Department of Botany and Range Science, Brigham Young University, Provo, Utah 84602.

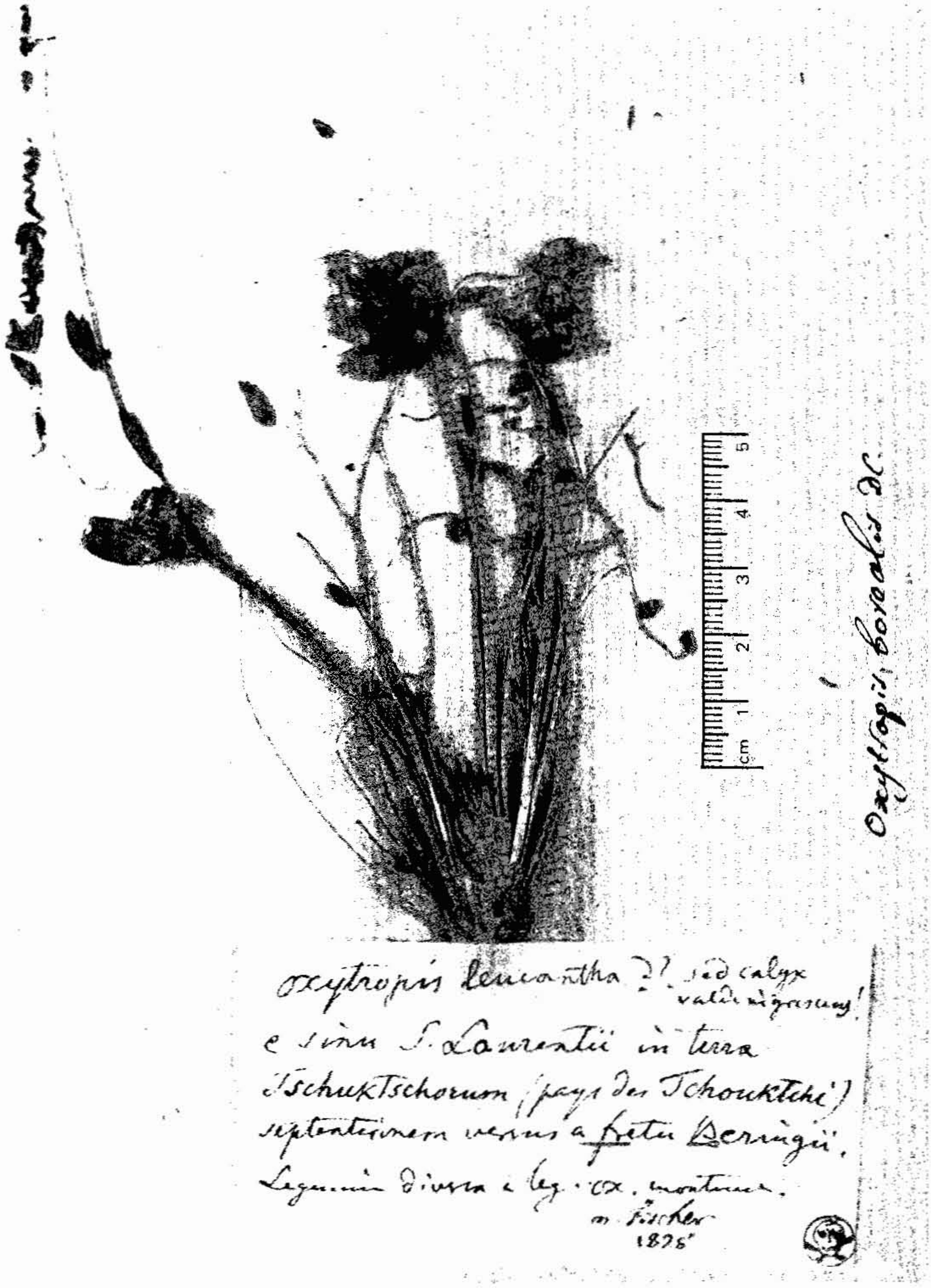

Fig. 1. Holotype of *Oxytropis borealis* DC. The specimen is at G-DC.

Geneva. The specimen is in poor, but not terrible, condition, essentially what is expected for many historical types. The specimen appears never to have been in good condition after its collection. The flowers are crumpled as though they had been wet following collection, or even following mounting. The question of glandularity was left unanswered in the description by de Candolle in Prodromus (see below). The need to examine portions of the material was critical as to its nomenclatural importance in North American taxonomy.

Detailed photos and fragments of the specimen were sent for examination through the generosity of Dr. A. Charpin, conservateur at Geneve (G-DC.). Of particular importance among the fragments loaned is a black, hairy bud with calyx teeth still connivent. The teeth are clearly glandular verrucose. Other fragments include a portion of a flower and part of a floral bract. The bract, a very long structure not unlike those of many Alaskan specimens, is definitely dorsally glandular also. The plant size and nature of other features, though shattered, are well within the morphological limits of the group as it occurs in North America. Clearly this material belongs to that portion of the *Gloeocephala* complex treated by Barneby in 1952 as *O. viscida* var. *subsucculenta*. Having priority, the name *O. borealis* must replace *O. viscida* for North American portions of the complex. The author hopes the transfers proposed below are not additional nomenclatural baggage.

Oxytropis borealis DC., Prodr. 2: 275. 1825.

> O. borealis, subacaulis, pilis scaporum stipularumque setosis patulis, petiolorum paucis, foliolis ellipticolanceolatis subtus glabris superne pilosis scapi folii longitudine, floribus capitatis, bracteis calycis nigrohispidissimi longitudine. In terra Tschuktschorum ad Sinum Sancti-Laurentii. Stipulae pallidae. (v.s. Comm. a cl. Fisch.) (l.c.).

TYPE LOCALITY.—"In terra Tschuktschorum ad sinum Sancti-Laurentii," collector not stated.

TYPE.—"e sinu S. Laurentii in terra Tschuktschorum (pays des Tchouktchi) septentrionem versus a fretu Beringii. Legumina diversa a leg. ox. montana. m. [Messien] Fischer 1825" G-DC.!. The specimen cited above is the only one bearing the name *O. borealis* in the Prodromus herbarium, and it is regarded as the holotype (Fig. 1).

The species, as it occurs in North America, consists of a series of mainly intergrading varieties as indicated below. They differ in compactness of inflorescence, size of flowers, length of floral bracts, and other features that tend to grade individually and collectively into each other. As intergradation occurs, the taxa within the *boreale* complex match those of infraspecific taxa in other specific complexes in this genus.

Presented below is a summary of the infraspecific taxa as they occur in North America. The writer has examined herbarium materials from all regions of distribution in the continent. Additionally, he has examined the species in the field from the arctic regions of Alaska, Yukon, and Northwest Territories south to its southern limits in Utah and Nevada. Variation is huge in the species as a whole and in the infraspecific taxa. The group has received several interpretations in the past and will undoubtedly be interpreted differently in the future.

Oxytropis borealis DC. var. *borealis*

Distribution: N.W.T. and Alaska; Chukotsk.

Oxytropis uralensis β *subsucculenta* Hook., Fl. Bor.-Amer. 1: 146. 1831. *Oxytropis viscida* var. *subsucculenta* (Hook.) Barneby, Proc. Calif. Acad. IV, 27: 246. 1952. Type: "Arctic seashore, to the east of the Mackenzie River," Dr. Richardson s.n.; holotype K.

Oxytropis borealis β Hook. & Arnott, Bot. Beechey Bot. 122. 1832.

Oxytropis campestris var. *verrucosa* Ledebour, Fl. Ross. 1: 591. 1842. Type: "in terra Tschuktschorum ad sinum Sancti-Laurentii," the collector not stated.

The relatively few leaflets, ample flowers, and condensed, copiously hirsute inflorescence in combination allow this entity to be rather readily identified. It consists, at least in part, of what has passed under the name of *O. glutinosa* Pors., who excluded the type of "*subsucculenta*" from consideration in treatment of the genus in "Vascular Plants of Continental Northwest Territories, Canada" (Porsild and Cody 1980). Included within the concept of var. *borealis* is the *O. uralensis* β *subsucculenta* Hook., the basis of *O. viscida* var. *subsucculenta* (Hook.) Barneby.

Oxytropis borealis var. *hudsonica* (Greene) Welsh, comb. nov.

Aragallus hudsonicus Greene, Proc. Biol. Soc. Wash. 18: 17. 1905. *Oxytropis viscida* var. *hudsonica* (Greene) Barneby, Proc. Calif. Acad. IV, 27: 245.

1952. *O. viscida* ssp. *hudsonica* (Greene) Love & Love, Taxon 31: 347. 1982. *O. leucantha* var. *hudsonica* (Greene) Boivin, Naturaliste Canad. 94: 76. 1967. Type: Whale River, Hudson Bay; A. P. Low 14272, 24 June 1896; holotype NDG!.

Oxytropis leucantha var. *hudsonica* f. *galactantha* Boivin, Naturaliste Canad. 94: 76. 1967. Type: Canada: Franklin District, Melville Peninsula, Repulse Bay, along Nauja River, 27 July 1950, P. F. Bruggeman 52; holotype DAO!.

Oxytropis leucantha var. *leuchippiana* Boivin, Naturaliste Canad. 94: 76. 1967. Type: Yukon: Whitehorse, airport area, steep slope, flowers varying in color from yellow to purple, abundant, Gillette & Calder 3181; lectotype here selected DAO!.

This is the phase of the species that occurs in North America mainly east of the Yukon, but with some representation in that province, where it is transitional with both var. *viscida* and var. *sulphurea*. The main diagnostic feature involves the short calyx teeth.

Oxytropis borealis var. *sulphurea* (Pors.) Welsh, comb. nov.

O. viscidula ssp. *sulphurea* Pors., Bull. Nat. Mus. Canad. 121: 247. 1951. Type: Yukon, Rose-Lapie Pass, shaly cliffs by waterfall E of Lapie Lake, mile 105 [Canol Road], Pors. & Breitung 10198, 19 July 1944; holotype CAN; isotypes ISC!, S!.

Oxytropis sheldonensis Pors., Bull. Nat. Mus. Canad. 121: 246. 1951. Type: Mount Sheldon, on rocky granite ledges at or near the summit, opposite mile 122 [Canol Road], Pors. & Breitung 11750, 11 August 1944; holotype CAN!; isotypes ISC!, US!.

Oxytropis verruculosa Pors., Bull. Nat. Mus. Canad. 121: 246, 1951. Type: Yukon: Rose-Lapie Pass, rocky ledges on dry slope W of mile 116 [Canol Road], Pors. 10072, 1944; holotype CAN!; isotype S!.

These are the pallid-flowered plants of the Yukon and Alaska. In their most typical condition the racemes are compactly and uniformly small flowered. They vary from that norm to elongate racemes with small to large flowers. The bracts are mainly small, but in some they are very long and conspicuous in the inflorescence. On the one side the plants seem to grade with var. *hudsonica* and on the other with both var. *viscida* and var. *borealis*.

Oxytropis borealis var. *viscida* (Nutt.) Welsh, comb. nov.

Oxytropis viscida Nutt., ex Torr. & Gray, Flora N. Amer. 1: 341. 1838. *Aragallus viscidus* (Nutt.) Greene, Pittonia 3: 211. 1897. *Astragalus viscidus* (Nutt.) Tidestrom, Proc. Biol. Soc. Wash. 50: 19. 1937. *O. campestris* var. *viscida* (Nutt.) S. Watson, U.S. Geol. Expl. 40th Parallel, Bot. 5: 55. 1871. *Spiesia viscida* (Nutt.) Kuntze, Rev. Gen. 206. 1891. *O. leucantha* var. *viscida* (Nutt.) Boivin, Naturaliste Canad. 94: 77. 1967. Type: Rocky Mountains, near the sources of the Oregon [SW Wyoming], Nuttall s.n. 1834; syntypes NY!, PH.

Aragallus viscidulus Rydb., Mem. N.Y. Bot. Gard. 1: 253. 1900. *O. viscidula* (Rydb.) Tidestrom, Contr. U.S. Nat. Herb. 25: 332. 1925. Type: Montana, Melrose, Silver Bow County, Rydberg 2716; holotype NY! (type specified by Barneby 1952).

Aragallus viscidula var. *depressus* Rydb., Mem. N.Y. Bot. Gard. 1: 523. 1900. *Oxytropis leucantha* var. *depressa* (Rydb.) Boivin, Naturaliste Canad. 94: 77. 1967. Type: Haystack Mt., Stillwater County, Montana, Tweedy 120; holotype NY!.

Oxytropis gaspensis Fern. & Kelsey, Rhodora 30: 123. 1928. *Astragalus gaspensis* (Fern. & Kelsey) Tidestrom, Proc. Biol. Soc. Wash. 50: 19. 1937. *O. leucantha* var. *gaspensis* (Fern. & Kelsey) Boivin, Naturaliste Canad. 94: 76. 1967. Type: Quebec, Mont St. Pierre, Gaspe County, Fernald & Smith 25874, 14 August 1933; holotype GH; isotypes CAS!, NY!.

Oxytropis ixodes Butters & Abbe, Rhodora 45: 2, tab. 745, figs. 1–6. 1943. *O. leucantha* var. *ixodes* (Butters & Abbe) Boivin, Naturaliste Canad. 94: 76. 1967. Type: Minnesota, South Fowl Lake, Cook County, Butters, Abbe, & Burns 611, 27 June 1940; holotype MINN; isotypes GH, NY!, PH!, US!.

Oxytropis leucantha var. *magnifica* Boivin, Naturaliste Canad. 94: 77. 1967. Type: Alberta, Macloed, High River, 27 June 1902, J. Fletcher s. n.; holotype DAO!.

Oxytropis ixodes var. *ecaudata* Butters & Abbe, Rhodora 45: 4. 1943. Type: Ontario, Thunder Bay District, Butters, Abbe, & Burns 682; holotype MINN.

DISTRIBUTION.—Alaska, Yukon, N.W.T., Quebec, British Columbia, Alberta, Minnesota, Oregon, Idaho, Wyoming, Nevada, Utah, Colorado, and California.

This variety includes almost as much diversity as the species as a whole. The numerous subunits are held together by tenuous characteristics that are difficult to define or place in a key. Variation is often great in subpopulations from adjacent hillsides or even on a single gravel bar, especially in the arctic. One is reminded of the conditions of morphological variation occurring in the boreal *O. nigrescens* var. *nigrescens*, as regarded by this author. Unless one is willing to support a taxonomy wherein the purported taxa are largely sympatric and consist of morphological subunits whose genetic continuity is questionable, made up of a series of similar plants held together by that similarity and not by genetic linkage, there seems to be no reasonable way to segregate the morphological variants as taxa. The rather large number of synonyms, often at specific or varietal levels, reflects the attempts at segregation.

Oxytropis borealis var. *australis*
Welsh, var. nov.

Similis *O. boreali* var. *viscida* (Nutt.) Welsh sed in floribus pallidis et inflorescentia vulgo foliis saepe subaequalis distinguitur.

Caespitose, acaulescent, 6–19 cm tall; pubescence basifixed; stipules glabrous to glandular or sparingly so; leaves 4–15.5 cm long; leaflets 15–33, 1.5–20 mm long, 1–5 mm wide, oblong to lanceolate or elliptic, sparingly pilose to glabrate or glabrous on both sides, sometimes also glandular; scapes 2–16.5 cm long, spreading-hairy; racemes 2- to 11-flowered, the flowers spreading-ascending, the axis 1–3 cm long in fruit; bracts glabrous dorsally, glandular; flowers 11–19 mm long, whitish or rarely suffused with pink; calyx 5–11 mm long, the shortly cylindric tube 4–7 mm long, the teeth 1.5–3.5 mm long, triangular-subulate, commonly glandular; pods erect, sessile, ovoid to subcylindric, 8–16 mm long, 4–6 mm thick, glandular.

DISTRIBUTION.—Utah and Nevada, USA.

TYPE.—Utah: Sevier Co., open hillside, E of Hogan Pass, along Utah Hwy 72, at 8300 ft. elevation. Flowers white. T25S, R4E, 23 July 1967, S. L. Welsh, D. Isely, & G. Moore 6452; holotype BRY!, isotype ISC!, NY! (a total of 17 duplicates distributed earlier as *O. viscida* Nutt.). Other collections: Utah: Emery Co., 10 km due W of Ferron, 2 June 1977, E. Neese & S. White 3022; do, E end of Bald Ridge, T16S, R8E, S10, 11 July 1979, R. Foster. Sanpete Co., 20 km up Ferron Canyon, T19S, R5E, S36, 9 June 1977, S. Clark & K. Taylor 2473; do, Ferron Mt., T20S, R5E, S33, 11 July 1989, M. A. Franklin 6794. Sevier Co., Aspen Spring, Salina Canyon, 18 June 1943, W. P. Cottam 9191; do, 1 km SE of Mt. Hilgard, 25 August 1965, R. Stevens 110; do, Desert View, ca 1.5 km S of Fremont, T25S, R4W, 10 May 1969, S. L. Welsh, D. Atwood, L. Higgins 8971; do, 21 km due SSW of Fremont Jct., T26S, R4E, S4, 8 July 1977, S. L. Welsh 15359; do, head of Clear Creek below Hilgard Mt., T24S, R4E, S26, 30 June 1977, S. Clark 2662; do, Clear Creek ca 3 km SE of Clear Creek Guard Station, T24S, R4E, 10 June 1981, D. Atwood 7947; do, milepost 18 on Utah Hwy 72, T25S, R4E, S22, 31 May 1986, R. Kass, E. Neese, B. Neely 2345; do, milepost 18 on Utah Hwy 72, T26S, R4E, S4, 31 May 1986, E. Neese, B. Neely, R. Kass 17521; do, ca 13 km N of Fish Lake, T24S, R3E, S33, 25 July 1987, B. Franklin & J. & J. Chandler 4999. Wayne Co., Elk Horn Guard Station, T27S, R4E, S15, 17 June 1977, S. Welsh 14982; do, Paradise Valley, T25S, R4E, 24 July 1978, D. Atwood 6922; do, Elkhorn Campground, T24S, R4E, S15, 16 June 1986, J. M. Porter 3918; do, on the slopes overlooking Deep Creek, T27N, R4E, S25, 17 June 1986, J. M. Porter 3863. Nevada: Elko Co., Ruby Mountains, S of Harrison Pass, T28N, R57E, ca S25, 7 August 1967, J. L. Gentry & G. Davidse 1823. Nye Co., Toquima Range, Pine Creek drainage, T11N, R45E, 24 July 1964, J. L. Reveal 657; do, Toquima Mts. ca 110 km S of Austin, T11N, R45E, ca S28, 15 July 1973, A. Cronquist 11048; do, Toquima Range, Mt. Jefferson, head of South Fork Pine Creek, T11N, R45E, S29 & S32, 18 July 1978, K. R. Genz 8246; do, north side of Timber Mountain, Grant Range, T6N, R57E, 27 June 1979, M. J. Williams & A. Tiehm 79-109-4.

This southern phase of *O. borealis*, though mainly montane in distribution, occurs mostly on xeric sites in sagebrush, black sagebrush, grass, ponderosa pine, and aspen parkland communities, often on exposed ridges or outcrops. Main substrate types are of igneous origin, either granitic- or basaltic-derived soils, but limestone also serves as a substrate. Elevational range varies from 2135 to 3355 m.

The differences cited in the diagnosis are not absolute, as is usual for infraspecific and even specific taxa in this genus. Flower color is typically white or ochroleucous, but some are occasionally tinged with pink; and some that appear to be white when fresh fade slightly lavender on drying. Inflorescences tend to be only slightly longer than the leaves, or even slightly shorter, but some have inflorescences much surpassing what appear to be juvenile leaves with tiny leaflets. The herbage is often conspicuously glandular, with sand grains and plant fragments adhering. The stipules are occasionally quite glandless, however. In spite of the variation in morphology, these plants appear to represent a xeric southern phase related to the typically more mesic var. *viscida*. That variety, shorn of var. *australis*, is not much less polymorphic. There are individual plants, and possibly even subpopulations, within var. *viscida* that simulate

var. *australis*. Plants from the Wallowa Mountains of northeastern Oregon are almost as variable as var. *viscida* as a whole.

LITERATURE CITED

BARNEBY, R. C. 1952. A revision of the North American species of *Oxytropis* DC. Proceedings of the California Academy of Science IV, 27: 177–312.

BOIVIN, B. 1967. Etudes sur les *Oxytropis* DC. II. Naturaliste Canadienne 94: 73–78.

BUNGE, A. 1874. Species Generis *Oxytropis*, DC. Memoirs of the Academy of Science, St. Petersburg VII, 22: 1–166.

GRAY, A. 1884. A revision of the North American species of *Oxytropis* DC. Proceedings of the American Academy of Science 20: 1–7.

JURTSEV, B. A. 1986. *Oxytropis* DC. Arctic flora S.S.S.R. 9: 61–146, 178–182.

PORSILD, A. E., AND W. J. CODY. 1980. *Oxytropis* DC. Pages 438–442 *in* Vascular plants of the continental Northwest Territories, Canada. National Museum of Natural Sciences, National Museums of Canada. 667 pp.

TORREY, J., AND A. GRAY. 1838. Flora of North America. Vol. 1. G. C. Carvill & Co., New York.

VASIL'CHENKO, I. T., B. A. FEDCHENKO, AND B. K. SHISHKIN. 1948. *Oxytropis* DC. *In* Flora U.S.S.R. 13: 1–229.

WELSH, S. L. 1967. Legumes of Alaska II: *Oxytropis* DC. Iowa State Journal of Science 41: 277–303.

———. 1972. On the typification of *Oxytropis leucantha* (Pallas) Pers. Taxon 21: 155–157.

———. 1974. *Oxytropis*, DC. Pages 275–282 *in* Anderson's flora of Alaska and adjacent parts of Canada. Brigham Young University Press, Provo, Utah. 724 pp.

———. 1987. *Oxytropis* DC. Pages 396–398 *in* S. L. Welsh, N. D. Atwood, S. Goodrich, and L. C. Higgins, A Utah flora. Great Basin Naturalist Memoir 9: 1–984.

Received 5 February 1991
Accepted 25 February 1991