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NEW VARIETY OF *OXYTROPIS CAMPESTRIS* (FABACEAE)
FROM THE COLUMBIA BASIN, WASHINGTON

Elaine Joyal¹

In 1984 I found an *Oxytropis* in central Washington that I was unable to identify. Collection was made and sent for determination to Rupert Barneby, who puzzled over it for some time before concluding that it lacked a published name. What follows is a description of that taxon. This is a rare taxon, presently known from a single population on an isolated mountain. Habitat and ecological notes are included, therefore, to facilitate understanding of the taxon's conservation status.

Oxytropis campestris (L.) DC.
var. *wanapum* Joyal, var. nov.

Fig. 1

O. campestris (L.) DC. var. *gracili* (A. Nels.) Barneby affinis, plantis dense sericeo pilosis, robustis, foliolis 20–25, corollis lavandulis, carinis maculatis, differt.

Caespitose perennial, acaulescent, 17–30 cm tall; herbage silvery, densely silky-pilose to villous; stipules membranous, pilose to densely pilose, the blades free for half their length, (5) 6.5–9 (16) mm long, margins ciliate to densely ciliate; leaves (11) 14–18 (22) cm long, with (13) 19–26 (32) linear to narrowly oblong leaflets, (8) 15–25 (33) mm long, scattered, sub-opposite; scapes erect to spreading, (10) 17–21 (30) dm long, pubescence spreading-appressed; racemes in part exceeding the leaves, (5) 6–12 (17) flowered, congested in flower, (4) 6–8 (12) cm long in fruit; calyx sericeous-pilose, 7–9 mm long, greater than half the length of the corolla, with a few dark hairs, the tube 5–7 mm long, the teeth (1) 2–3 mm long, linear-lanceolate; corolla pale lavender with darker penciling, keel maculate, drying blue; banner obovate, 14–16 (23) mm long; wings 13–15 (19) mm long; keel (10) 11–14 (17) mm long; pod sessile

to short-stipitate, erect, 1-celled with the suture not or only slightly intruded, the wall membranous-leathery, 10–20 mm long, beak about 6 mm long.

TYPE: UNITED STATES: Washington, Grant County, Saddle Mountain, above Lower Crab Creek and E of Beverly, T15N, R24E, S2, N1/2, elev. ca 550 m, NNE aspect at crest of ridge, in sandy (volcanic ash) soils above steep basalt talus, 25 May 1987 (flower and early fruit), Joyal 1264 (Holotype: US; Isotypes: BRY, CAN, CAS, ISC, K, MO, MONTU, NY, OSC, S, UBC, WS, WTU).

PARATYPE: UNITED STATES: Washington, Grant County, Saddle Mountain, above Lower Crab Creek, T15N, R24E, S2, elev. ca 550 m, NNE aspect at crest of ridge, in sandy soil, 15 May 1984 (flower), Joyal 467 (BLM—Spokane, NY, OSC).

There are currently at least 10 varieties of *O. campestris* recognized in North America (Barneby 1952, Elisens and Packer 1980, Welsh, personal communication). Characters used to distinguish the infraspecific taxa are: length of leaves and of scapes, number of leaflets, numbers of flowers per raceme, length and density of flowers in raceme, color of corolla, habitat, and distribution. There are notable differences in these characters in variety *wanapum* when compared with other varieties of *O. campestris*. The three varieties that occur in eastern Washington with var. *wanapum* are compared below; a key also is provided to separate these four varieties (see Barneby 1952, Elisens and Packer 1980, Welsh, personal communication, for comparison with other *O. campestris* varieties). On the average, plants of var. *wanapum* are more robust and have a greater number of leaflets. The length of the leaves (16 cm) averages

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Fig. 1. *Oxytropis campestris* var. *wanapum*. Habit. Flower (bar = 1 cm). Composite drawing from Joyal 467, 1264, and photos of the Saddle Mountain population.

greater than those of var. *columbiana* (St. John) Barneby, *cusickii* (Greenm.) Barneby, and *gracilis* (A. Nels.) Barneby (11, 6, and 11 cm, respectively); leaflet length (20 mm) likewise averages greater than those of the other three varieties, (14, 8, and 12 mm); scape length (20 cm) is also greater than the other three (17, 7, and 16 cm); the mean number of leaflets (22) is greater than the first two varieties (each = 15) and within the range of the third variety (17); the average number of flowers per raceme (8.5) is within the range of three related taxa (8–12), with *columbiana* and *gracilis* occasionally having as many as 30 flowers/raceme; keel length (12 mm) is similar for all four taxa, with *gracilis* showing slightly larger dimensions; the pale lavender flower color, while not unique in the group, is unknown among northwest members of *O. campestris*. Some of these differences might be explained as a phenotypic response of a primarily montane taxon to a desert environment. Its desert habitat sets this taxon apart from its close relatives in nearby mountains; precipitation is about half that of the mountains (20 cm vs 40 cm/yr), the climate is warmer, the vegetation is shrub-steppe rather than forested, the geologic substrate is sedimentary and volcanic rather than intrusive with some volcanic rocks, and it lies south of the glaciated portions of the Okanogan Highlands and Cascade Range.

Key to closely related varieties of
Oxytropis campestris in the Pacific Northwest
(after Hitchcock and Cronquist 1973)

- 1 Corolla white with maculate keel; leaflets 12–17 (23); in wet gravel along the Columbia River in Washington (historically) and near Flathead Lake, Montana var. *columbiana*
- 1' Corolla other than white with maculate keel; leaflets often more than 17
- 2 Stipules glabrous or glabrate; scapes rarely greater than 15 cm; leaflets seldom greater than 17; range of var. *gracilis*, but not above 2000 m elevation and not west of the Cascades var. *cusickii*
- 2' Stipules very hairy; scapes mostly greater than 15 cm; leaflets generally greater than 17
- 3 Corolla ochroleucous or white, keel rarely maculate; leaflets 15–20; plants averaging smaller than the next, scapes averaging 16 cm; usually montane plants (in prairies east of the Rocky Mountains); western Washington to Alberta and South Dakota, south in Rocky Mountains to Colorado var. *gracilis*

- 3' Corolla pale lavender with darker penciling, maculate keel, drying blue; leaflets 20–25; plants larger than the preceding, scapes averaging 20 cm; desert plants; at low elevation in the Columbia Basin of central Washington var. *wanapum*

Elisens and Packer (1980) most recently treated the *O. campestris* complex in northwestern North America. They introduced new cytological information for several of the taxa in this difficult complex; on the basis of these data they reelevated several taxa, including the eastern Washington var. *columbiana*, to full species status. While accepting their findings, I do not see that it necessarily follows that taxa such as *O. campestris* var. "*columbiana*" should be given specific status based on Elisens and Packer's new data. More importantly, Barneby (personal communication) and I agree that it is preferable to treat the undescribed taxon in a conservative fashion and place it at what we consider the appropriate rank as a variety of *O. campestris*, near var. *gracilis*. It may well be that future studies (Welsh, personal communication) in the *O. campestris* complex will result in this entity being raised to a higher rank. However, until that work is completed, varietal status under *O. campestris* seems more appropriate.

Oxytropis campestris var. *wanapum* is presently known only from Saddle Mountain in the Columbia Basin of central Washington (Fig. 2). Saddle Mountain is an isolated east-west trending ridge formed from a partly faulted anticline that stretches approximately 50 km, being cut by the Columbia River at Beverly. Several ranges to the southwest conceivably may contain habitat suitable for var. *wanapum*. Whereas the north slope is steep basalt talus, the south slope is gentle and sandy and dominated by *Artemisia tridentata*. The *Oxytropis* grows in a narrow band of deep sand, derived from volcanic ash, slightly below the crest of the north-facing ridge. The community is very open, as is typical of many sandy habitats. It is dominated by *Chrysothamnus nauseosus*, *Salvia dorrii*, *Monardella odoratissima*, *Agropyron spicatum*, and *Bromus tectorum*. Other species present include *Achillea millefolium*, *Arenaria franklinii*, *Astragalus caricinus*, *A. purshii*, *Castilleja* cf. *thompsonii*, *Chaenactis douglasii*, *Comandra umbellata*, *Crepis modocensis*, *Cryptantha pterocarya*, *Erigeron linearis*,

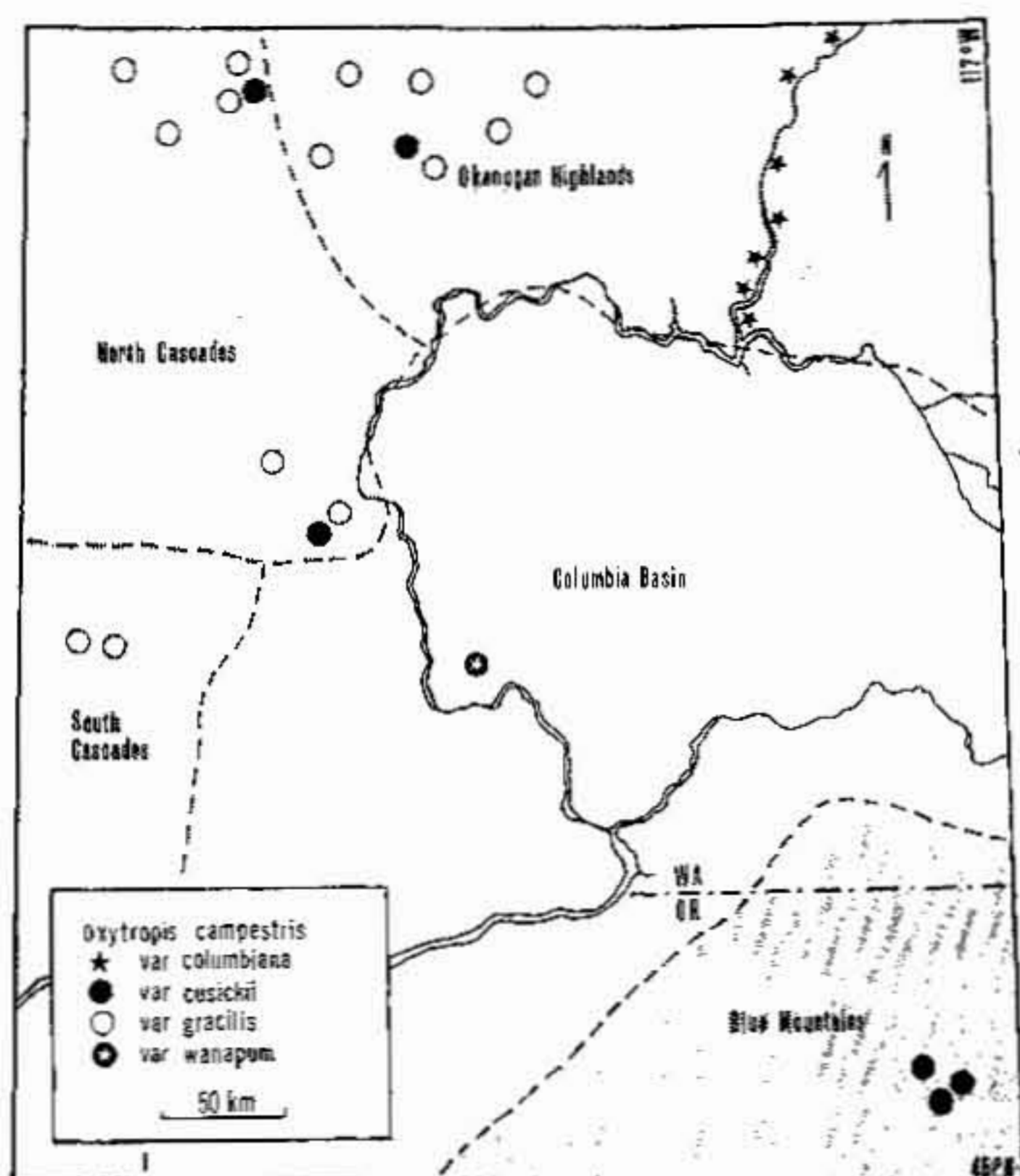


Fig. 2. Distribution of *Oxytropis campestris* varieties in eastern Washington and adjacent Oregon. Data points are of representative specimens from MO, OSC, US and WTU. Elevations in the Columbia Basin physiographic province average less than 500 m (unshaded); those in the Blue Mountain, North and South Cascade, and Okanogan Highland physiographic provinces average greater than 500 m (shaded).

Eriogonum microthecum, *E. ovalifolium*, *Eriophyllum lanatum*, *Galium multiflorum*, *Gilia sinuata*, *Hackelia arida*, *Lupinus* sp., *Penstemon richardsonii*, and *Poa* sp. (taxonomy follows Hitchcock and Cronquist 1973). No other *Oxytropis* spp. were noted in the immediate vicinity.

Plants of this taxon are frequent (several hundred individuals) in this restricted area, and there is a good size-class distribution of individuals. I observed seedlings, which I presumed to be from the previous year, small vegetative individuals, and flowering plants. The largest plants had many flowering stems (as many as 48 stems per plant observed) and covered areas up to 0.5 meter across. This *Oxytropis* flowers profusely. My first collection of the taxon was made at peak flowering, in the middle of May 1984, an average season with respect to temperature and precipitation. During my second visit in late May 1987, an early and dry spring, I found the plants mostly past flower and well into fruit. The flowers of this *Oxytropis* are held at

a 45-degree angle from the rachis, or higher, becoming erect in fruit. The only floral visitors I observed were several iridescent blue-green metallic-leafcutter bees (*Osmia integra* Cresson, Hymenoptera: Megachilidae), working *Oxytropis* flowers on the upper slope. The pods have a short pubescence and redden as they mature. Seed set appeared to be good, but predation of seed pods was high. Some pods had their sides chewed out in a pattern typical of departing larvae with not a single seed remaining within; more often the upper one-half or one-third of the pod had been eaten away entirely, along with all developing seeds. No larvae were observed, but several small weevils collected from the pods were identified as species of *Tychius* (Coleoptera: Tychiinae).

Oxytropis campestris var. *wanapum* occurs on land that is a "checkerboard" of Bureau of Land Management (BLM) and private lands. The primary land use is grazing; some recreational vehicle use occurs on the mountain as does natural gas exploration. The area in which the *Oxytropis* grows is isolated by low rimrock from the bulk of the grazing activity to the south. The BLM's Spokane District is treating the taxon as a "sensitive" species.

The varietal epithet honors the Wanapum tribe, who originally called Saddle Mountain and the desert surrounding it home. The Wanapum, except for one small community on the south side of the mountain, have mostly disappeared from the landscape.

ACKNOWLEDGMENTS

The original discovery of this taxon was made while I was employed by the Spokane District Office of the Bureau of Land Management, U.S. Department of Interior. Gary Parsons identified insects; Richard Rust provided the specific epithet for *Osmia*; Kay Thorne did the illustration; Kenton Chambers of Oregon State University provided work space and herbarium support on a regular basis during my western tenure; the Smithsonian Institution staff has generously allowed me use of their herbarium; and Rupert Barneby and Stan Welsh provided valuable comments on the manuscript. I am especially indebted to Rupert Barneby, for whom I first thought of collecting this taxon. It was he who later confirmed why I was unable to put a name on it, and who encouraged me to write this paper.

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