

***ARTEMISIA WOODII* (ASTERACEAE), A NEW RANK FOR A
NARROW ENDEMIC OF THE YUKON TERRITORY, CANADA**

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ABSTRACT

Results from molecular phylogenetic investigations of Old and New World *Artemisia* species, and Beringian species in particular, have led to the reevaluation of certain taxa with broad disjunctions. One such taxon, *Artemisia rupestris* ssp. *woodii* Neilson, is endemic to the southwestern Yukon Territory, Canada and represents the only North American occurrence of the Eurasian species *A. rupestris*. Based on a reexamination of specimens, molecular evidence, and geographic considerations, subspecies *woodii* is judged to be distinct from its Eurasian congeners and is elevated to specific rank as: ***Artemisia woodii*** (Neilson) C. Riggins, **stat. nov.** *Phytologia* 94(3): 301-304 (December 1, 2012).

KEY WORDS: *Artemisia*, Asteraceae, Anthemideae, Yukon Territory, Canada

The Eurasian species *A. rupestris* L. is represented in North America by a single taxon, *A. rupestris* ssp. *woodii* Neilson, which is only found in two highly localized areas of southwestern Yukon Territory, Canada (Hoefs et al., 1983). As part of ongoing investigations of New and Old World *Artemisia* species, the status of this taxon was reevaluated in light of molecular nrITS and plastid DNA evidence (Riggins and Seigler, in press) and a detailed assessment of morphological characters. During the course of these studies it became apparent that this subspecies is distinct from the Eurasian *A. rupestris* and associated North American taxa within *Artemisia* (sensu Shultz, 2006) and so is here elevated to specific status as follows:

***Artemisia woodii* (Neilson) C. Riggins, stat. nov.**

BASIONYM: *Artemisia rupestris* ssp. *woodii* Neilson, Canadian Field-Naturalist 82: 114-119. 1968. Type: CANADA. YUKON: Sheep Mountain, Kluane Range, vicinity of Kluane Lake, 20 August, 1967, *Neilson 1242* (holotype US, digital image!; isotypes CAN, DS, GH, S, UC).

Neilson (1968) originally described *A. rupestris* ssp. *woodii* from a collection made in the Kluane Lake area of the Yukon Territory, stating that "This plant has no morphologically similar relative in North America." He distinguished ssp. *woodii* from the typical Eurasian *A. rupestris* primarily by having broader, rounder phyllaries with scarious, iridescent margins and a reduced number of bracts subtending the capitula. Neilson also noted that the leaf lobes of ssp. *woodii* tended to be more blunt or obtuse in comparison to the acute tips common in the Eurasian material. While acknowledging a superficial resemblance to *A. frigida* Willd. in habit, he further commented that ssp. *woodii* differed from the former by consistently having coarse hairs on the receptacle (sometimes absent in populations of *A. frigida*) and dark green, sticky-glandular leaves.

Almost simultaneous with Neilson's publication, Welsh (1968) described *A. frigida* var. *williamsae* Welsh from a collection on the lakeshore at Kluane Lake that featured near glabrous receptacles and larger capitula than typical *A. frigida*. Welsh (1974) later considered *A. rupestris* ssp. *woodii* as a synonym for *A. frigida* var. *williamsae*, but Cody (2000) correctly pointed out that the two taxa are not one and the same and that "a form [of *A. frigida*] with glabrous receptacles found in the Kluane Lake area (var. *williamsae* Welsh) should not be confused with the densely glandular-dotted *A. rupestris* ssp. *woodii*, which is endemic to alpine areas in southwestern Yukon Territory." Comparisons of the holotype (BRY; *Williams 1369*) and an isotype (OSU) of var. *williamsae* support Cody's observations. In addition to the presence of viscous glands, *A. woodii* is further distinguished from *A. frigida* by its bright to dark green appearance, its narrow racemiform or spiciform synflorescences (usually paniculiform in *A. frigida*), and slightly larger involucre (5-6 x 6-8 mm) subtended by short linear green bracts. Although both taxa do share a general area

of sympatry in the Yukon Territory, there are no apparent signs of intergradation in the material I have examined.

Artemisia woodii is a low mat-forming perennial found on dry well-drained slopes with a southern exposure ca. 800-1900 m in the mountains around Kluane Lake and in one other locality in southwestern Yukon Territory (Hoefs et al., 1983; Cody, 2000). These populations are approximately 5200 km from the nearest easternmost Eurasian populations of *A. rupestris* from the Vilyuy River tributary of the Lena River (see range maps in Hultén, 1968 and Jäger, 1987). *Artemisia rupestris* has its main range centered in the steppe and alpine zones of central Siberia (Altai) with extensions from Kazakstan to Mongolia and northern Afghanistan, but disjunct populations are also found in the Baltic Region of Northern Europe (where the type was first described), central Germany, and in the Ural Mountains. While the ploidy of *A. woodii* is unknown at present, the diploid ($2n=18$) condition seems to predominate in Eurasian populations of *A. rupestris*, although there is one count from the Russian Altai that appears to be hypotetraploid ($2n=34$) (Ehrendorfer, 1964; Goldblatt and Johnson, 2010). It is in the Altai and Lake Baikal areas that plants of *A. rupestris* tend to display the greatest variation in morphology and ecological preference, but there are consistent differences in habit, leaf morphology, and floral bract number in comparison to specimens of *A. woodii*.

In summary, the aforementioned distinctions coupled with molecular evidence that places the Eurasian *A. rupestris* and the North American *A. woodii* in separate clades (Riggins and Seigler, in press) warrant their recognition as distinct species.

ACKNOWLEDGMENTS

I thank Dr. Bruce Bennett, of the Yukon Conservation Data Centre in Whitehorse, Yukon, for reviewing the manuscript and generously sharing his field notes and images of this species. Dr. Lee Crane, Illinois Natural History Survey, is also acknowledged for kindly reviewing the manuscript. Thanks also to the curators of ALA, ALTA, CAN, ILLS, and UBC for the loan of specimens for study.

LITERATURE CITED

- Cody, W. J. 2000. Flora of the Yukon Territory, 2nd ed. NRC Research Press, Ottawa.
- Ehrendorfer, F. 1964. Notizen zur Cytotaxonomie und Evolution der Gattung *Artemisia*. *Osterr. Bot. Z.* 111: 84-142.
- Goldblatt, P. and D. E. Johnson. 2010. Index to plant chromosome numbers 2004-2006. *Regnum Veg.* 152: i-x, 1-246.
- Hoefs, M., Russell, D., and B. Ereaux. 1983. Range extension of the sage, *Artemisia rupestris* ssp. *woodii*, in southwestern Yukon. *Can. Field Nat.* 97: 449-450.
- Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford.
- Jäger, E. J. 1987. Biologie, Chorologie und Ursachen des Reliktcharakters von *Artemisia laciniata* Willd. und *Artemisia rupestris* L. im herzynischen Gebiet. *Hercynia* 24: 425-436.
- Neilson, J. A. 1968. New and important additions to the flora of the southwestern Yukon Territory, Canada. *Can. Field Nat.* 82: 114-119.
- Riggins, C. W. and D. S. Seigler. In press. The genus *Artemisia* (Asteraceae: Anthemideae) at a continental crossroads: molecular insights into migrations, disjunctions, and reticulations among Old and New World species from a Beringian perspective. *Mol. Phylogenet. Evol.*
- Shultz, L. M. 2006. *Artemisia*. Pp. 503-534, Vol. 19. In *Flora of North America* Editorial Committee (eds.). *Flora of North America North of Mexico*. Oxford University Press, New York.
- Welsh, S. L. 1968. Nomenclature changes in the Alaskan Flora. *Great Basin Nat.* 28: 147-156.
- Welsh, S. L. 1974. *Anderson's Flora of Alaska and adjacent parts of Canada*. Brigham Young University Press, Provo.