

## ***SOLIDAGO PALLIDA* (ASTERACEAE: ASTEREA) NEW TO ONTARIO AND CANADA**

**JOHN C. SEMPLE\*, LAN TONG,**

Department of Biology, University of Waterloo  
Waterloo, Ontario Canada N2L 3G1

\*author for correspondence: jcsemple@uwaterloo.ca

**MICHAEL J. OLDHAM and WASYL D. BAKOWSKY**

Natural Heritage Information Centre  
Ontario Ministry of Natural Resources  
Peterborough, Ontario Canada K9J 8M5  
michael.oldham@ontario.ca  
wasyl.bakowsky@ontario.ca

### **ABSTRACT**

The presence of *Solidago pallida* is reported for the first time in Canada, from northwestern Ontario. The species is known in Canada from a single population in the Lake of the Woods region near Manitoba. Initially thought to be an unusual marginal population collection of *S. speciosa* with hairy fruit, the true identify was confirmed by comparing many collections of the two species with those of *S. jejunifolia* and *S. rigidiuscula*. The Canadian collections of *S. pallida* are the northeastern most known population of the species, which is frequent in the Black Hills of South Dakota and occasional in the lower foothills of the Frontal Range of the Rocky Mountains in Wyoming, Colorado, and northern New Mexico. Collections from North Dakota have not yet been seen, but the presence of the species in that state seems likely.

**KEY WORDS:** *Solidago pallida*, *Solidago speciosa*, *Solidago rigidiuscula*, *Solidago jejunifolia*, Ontario, Canada, rare plants

A collection of what was thought to possibly be *Solidago speciosa* Nutt. subsp. *speciosa* was made by M.J.O. and W.D.B. on 6 September 2005 from along the Winnipeg River north of Kenora, Kenora District, Ontario, Canada (49.78° N, 94.52° W; Fig. 1). A duplicate of the collection Oldham & Bakowsky 32123 (MICH, NHIC, WAT; Fig. 2) was sent to J.C.S. for confirmation of identification. The specimen had large lower stem leaves like *S. speciosa* but had sparsely hairy fruits. In 2011, L.T. included the WAT duplicate in her Senior Year Honors Project (Biol499), a multivariate morphometric analysis of the *Solidago speciosa* complex. The details of the expanded study on all taxa in *Solidago* subsect. *Squarrosae* was completed in the fall of 2012 and will be reported elsewhere. A significant conclusion of the preliminary study was that *S. speciosa* as treated in Flora of North America (Semple & Cook 2006) should be split into four separate species: *S. speciosa*, *S. jejunifolia* Steele, *S. pallida* (Porter) Rydb., and *S. rigidiuscula* (Torr. & A. Gray) Porter. Unexpectedly, Oldham & Bakowsky 32123 (WAT) was placed a posteriori in the multivariate study into the *S. pallida* a priori group with high probability rather than in the *S. speciosa* group. Either placement would have been significant because neither taxon was previously known from Ontario (Semple et al. 1999).

*Solidago pallida* in Ontario grows in an open Bur Oak (*Quercus macrocarpa*) – Jack Pine (*Pinus banksiana*) woodland on a south-facing slope with Porcupine Grass (*Hesperostipa spartea*) and Big Bluestem (*Andropogon gerardii*) in the understory. The site occupied by *S. pallida* has shallow soil interspersed with rocks and is steep, sloping down to Palmerston's Channel of the Winnipeg River. Other common associated species include Pennsylvania Sedge (*Carex pensylvanica*), Poverty Grass (*Danthonia spicata*), Prairie Onion (*Allium stellatum*), and Beard





Figure 1. *Solidago pallida* in the field north of Kenora, Ontario, growing on a *Hesperostipa spartea* dominated slope above the English River.





Figure 2. *Solidago pallida* voucher: Oldham & Bakowsky 32123 (WAT).

tongue (*Penstemon gracilis*). Less abundant associated species include Tickle Grass (*Agrostis scabra*), Bastard Toadflax (*Commandra umbellata*), Rusty Woodsia (*Woodsia ilvensis*), vetch (*Vicia* sp.), and Thyme-leaved Spurge (*Chamaesyce serpyllifolia*). On 15 September 2009 the population was surveyed by M.J.O. and Jane M. Bowles, resulting in a count (with the occasional estimate of plants in larger patches) of 830 vegetative plants and 280 flowering plants totalling ~1110 mature individuals. The population is not near a road or any human habitations and introduced species are rare at the site. There is no evidence to suggest the population is not native.

*Solidago rigidiuscula* has been reported from Ontario under the synonym *S. speciosa* var. *rigidiuscula* Torr. & A. Gray (Semple et al. 1999; Committee on the Status of Species at Risk in Ontario 2011). It occurs on Walpole Island in southwestern Ontario some 1200 km from the Kenora District site. *Solidago rigidiuscula* loses its lower stem leaves by the time shoots flower. Rosette leaves and basal stem leaves are similar to those of *S. speciosa*. Basal rosette and stem leaves of *S. jejunifolia* have long narrow petioles and persist into flowering. Rosette leaves and lower stem leaves of *S. pallida* are petiolate but with more tapering winged petioles like those of *S. speciosa* and *S. rigidiuscula*.

Specimens of *S. pallida* are more likely to be confused with specimens of *S. jejunifolia* and *S. rigidiuscula* than with specimens of *S. speciosa*, at least in terms of upper leaf and floral traits. *Solidago speciosa* is an east-of-the-Appalachian-Mountains species whose range is extended from the Appalachians to the eastern edge of the Great Plains by tetraploids. The other three species are diploids found in the Great Lakes area and in prairie and savannah habits as far west of the Rocky Mountains. *Solidago pallida* is the westernmost of the three species. *Solidago jejunifolia* is restricted to northern Michigan, Wisconsin, and northern and eastern Minnesota and possibly adjacent areas. *Solidago rigidiuscula* is the most widely distributed of the three prairie-forest ecotone taxa extending its range from the eastern prairies into the midwestern states in prairie-like and savannah habitats with scattered disjunct populations reaching southwestern Ontario in the north and Tennessee and the Carolinas further to the south and east.

In November 2010 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2010) assessed the status of Showy Goldenrod, and the northwestern Ontario *Solidago pallida* population was assessed as Threatened in Canada (under the name “Showy Goldenrod - Boreal population”). The population has also been assessed by the Committee on the Status of Species at Risk in Ontario (2011) as Threatened in Ontario and it is protected under the Ontario Endangered Species Act, 2007.

#### ACKNOWLEDGMENTS

This work was supported by a Natural Sciences and Engineering Research Council of Canada Discovery Grant to J.C.S. Joan Venn is thanked for her curatorial assistance with loans. The following herbaria are thanked for loaning specimens of subsect. *Squarrosae*: COLO, GH, MO, MINN, NCU, NMC, NY, and MT (Thiers, continuously updated). Fieldwork by M.J.O. and W.D.B. was supported by the Natural Heritage Information Centre, Ontario Ministry of Natural Resources (OMNR). Jane M. Bowles, Samuel R. Brinker, and Bruce Ranta assisted with fieldwork. Logistical support from the OMNR, Kenora District Office, is much appreciated.

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