

Species: Goldthread (*Coptis trifolia*)

Global Rank: G5

State Rank: SNR

Climate Change Vulnerability Index: Highly Vulnerable

Confidence: Very High

#### Habitat:

Goldthread occupies a circumboreal range for Greenland across North America to Alaska, including most of Canada and the eastern United States. Goldthread also occurs in northeast Asia to northern Japan. There are also two disjunct populations in the western United States, in Washington and Oregon (Stein 1998; NatureServe 2011). In Pennsylvania, goldthread is common in rich, damp, mossy woods, bogs, and swamps found in the northern tier of the state and at higher elevations along the Allegheny Front (Rhoads and Klein 1993; Rhoads and Block 2007).

#### Current Threats:

Many activities pose a threat this understory species, such as logging, hydrologic change, soil disturbance, reductions in downed woody debris, and possibly high intensity fires (Stein 1998; NatureServe 2011).

#### Main Factors Contributing to Vulnerability Rank:

*Distribution relative to natural topographic or geographic habitat barriers:* Goldthread is limited to rich, moist woods, bogs, and swamps along the Allegheny Front and northern tier of Pennsylvania. The drier forests that surround and isolate goldthread habitat may serve as barriers against movement to new locations.

*Dispersal and movement:* Little is known about the seed dispersal mechanisms of this species, however, dispersal is likely limited to only a short distance within a site.

*Predicted micro sensitivity changes in temperature:* In Pennsylvania, goldthread occurs mostly in the cooler portions of the state. The species is found in the northern tier and at higher elevations along the Allegheny Front (Rhoads and Block 2007).

*Predicted sensitivity to changes in precipitation, hydrology, or moisture regime:* As a facultative wetland species, goldthread is dependent on a moisture regime that is most likely vulnerable to alteration as a result of climate change and the expected direction of moisture change is likely to reduce the species' distribution, abundance, or habitat quality.

*Interspecific interactions:* Reliance of a mycorrhizal symbiont (Malloch and Malloch 1981; Hossler 2010) somewhat increases the vulnerability of goldthread to climate change effects.

References:

Hossler, K. 2010. Nutrient cycling and the role of arbuscular mycorrhizae in created and natural wetlands of central Ohio. Ph.D. dissertation, The Ohio State University.

Malloch, D. and B. Malloch. 1981. The mycorrhizal status of boreal plants: species from northeastern Ontario. *Canadian Journal of Botany* 59: 2167-2172.

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Rhoads, A. and T. Block. 2007. *The plants of Pennsylvania*. 2nd Edition. Philadelphia. University of Pennsylvania Press.

Rhoads, A. and W.M. Klein. 1993. *The vascular flora of Pennsylvania annotated checklist and atlas*. American Philosophical Society, Philadelphia, PA.

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