Species: Cranefly orchid (*Tipularia discolor*)
Global Rank: G4G5
State Rank: S3
Climate Change Vulnerability Index: Moderately Vulnerable
Confidence: Very High

Habitat:

The range of the cranefly orchid extends south from New York to Florida and Texas and west from the east coast to Illinois, Missouri and Oklahoma (NatureServe 2010). It occurs at the northern tier of its range in Pennsylvania/New York but is restricted to calcareous mesic forests in the southern third of Pennsylvania.

Threats:

The cranefly orchid is threatened by deforestation, displacement by exotic plant species, changes in soil chemistry, loss of associated soil mycorrhizae, and deer herbivory (Whigham 1990, 2004).

Main Factors Contributing to Vulnerability Rank:

Predicted impact of land use changes designed to mitigate against climate change:
The rich soils where the species occurs may be attractive for plantation development for bio-diesel farms.

Dispersal ability: Cranefly orchids produce wind dispersed dust seeds (Rasmussen and Whigham 1993) and are capable of clonal reproduction. However, both are short distance dispersal mechanisms.

Predicted macro sensitivity to changes in precipitation, hydrology, or moisture regime:
Considering the range of the mean annual precipitation across the species' range in Pennsylvania, the species has experienced a small precipitation variation in the past 50 years.

Forms of mutualism: A mycorrhizal association is required for seed germination and additional mycorrhizal associations may be required during other life stages of the plant (Rasmussen and Whigham 1998).

Literature Cited:

NatureServe. 2010. NatureServe Central Databases. Arlington, Virginia. USA.

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Whigham, D.F. 1990. The effect of experimental defoliation on the growth and reproduction of a woodland orchid, *Tipularia discolor*. Canadian Journal of Botany 68: 1812-1816.

Whigham, D.F. 2004. Ecology of woodland herbs in temperate deciduous forests. Annual Review of Ecology, Evolution, and Systematics 35: 583-561.