



**Natural Heritage
& Endangered Species
Program**

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Massachusetts Division of Fisheries & Wildlife

**Small Whorled Pogonia
Isotria medeoloides
(Pursh) Ref.**

State Status: **Endangered**
Federal Status: **Threatened**

DESCRIPTION: The Small Whorled Pogonia is a slender orchid which grows up to 10 inches tall when flowering and up to 14 inches when fruiting. The stem ends in a whorl of 4 to 6 pale-green elliptic leaves that are 1 to 3.5 inches in length. One or two lime-green flowers (about $\frac{3}{4}$ in. long) grow from the center of the whorl on short stalks. The flowers are composed of three petals, the lowest of the three having a greenish lip at its tip. Surrounding the petals are three separate, narrow, pale green sepals (outer floral leaves) which grow between 0.5 to 0.75 inches long. Fruiting capsules are erect; the fruit stalk length is approximately equal to that of the capsule (0.7-1.2 in. long).

LIFE HISTORY/ECOLOGY: The Small Whorled Pogonia can remain dormant for two years or more, making its reproductive history difficult to study and its age difficult to determine. Growth is initiated by mid-May and flowering by the second week of June. The flowers last for 7 to 10 days. The leaves turn yellow and die in September and seeds are expelled from their capsules after October 15. The buds which indicate the following year's growth are visible in mid-September.

SIMILAR SPECIES: *Isotria verticillata*, the Large Whorled Orchid, is similar to *Isotria medeoloides* but can be distinguished from the latter by the shape of the sepals. Sepals of *Isotria verticillata* are over 1.5 inches long, purplish, and wide-spreading. The sepals of *Isotria medeoloides* are much shorter, greenish, and are situated more closely to one another. Another species, Indian Cucumber Root (*Medeola virginiana*), a plant of the Lily Family, is also similar in appearance to the Small Whorled Pogonia. However, Indian Cucumber Root stems are wiry and often covered by a white fuzzy material.



Photo by Jennifer Garret, NHESP

RANGE: The Small Whorled Orchid is found in Maine and Ontario in the north, west to Michigan, Illinois, and Missouri, and south along the eastern seaboard to Georgia. It is rare throughout its range, with the largest concentrations occurring in Maine and New Hampshire.

HABITAT IN NEW ENGLAND: Historically, the habitat supporting *Isotria medeoloides* was not well documented. In recent years, however, this species' habitat has been consistently reported as forested slopes

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

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composed of “Very Stony Fine Sandy Loam” soil types where water movement is restricted by a fragipan.

Fragipans are brittle loamy cement-like layers below the surface of the soil which are low in porosity and force the water to drain laterally instead of vertically. The soil above the fragipan is very acidic and very low in nutrients.

In Massachusetts, this plant is found on slightly sloping, previously logged forest land made up of extremely acidic and granitic soils. Like other sites known to support this orchid, the Massachusetts sites are composed of seasonally moist areas above a fragipan. Light conditions are usually filtered rather than shaded or open.

A significant number of plants are associated with this type of habitat and are considered indicator species for the rare orchid when they are found together in plentiful numbers. Associated forest species include: Red Maple (*Acer rubrum*), Hemlock (*Tsuga canadensis*), Canoe Birch (*Betula papyrifera*), Red Oak (*Quercus rubra*), White Pine (*Pinus strobus*), Beech (*Fagus grandifolia*), Large-toothed Aspen (*Populus grandidentata*). A natural community including Canoe Birch with dense fern undergrowth is often associated with *Isotria medeoloides*. Also, Witch-hazel (*Hamamelis virginiana*) is always abundant where *Isotria medeoloides* grows.

Associated herb species (when they are present) are woodland ferns such as *Dennstaedtia punctilobula*, *Thelypteris noveboracensis*, and *Osmunda* spp. Evergreen herbaceous species found are: Wintergreen (*Gaultheria procumbens*), Mayflower (*Epigaea repens*), Spotted Wintergreen (*Chimaphila maculata*), Partridge Berry (*Mitchella repens*), and Shinleaf species (*Pyrola* spp.). Other species of orchids which are often found with Small Whorled Pogonia are: Pink Lady’s-slipper, (*Cypripedium acaule*), Rattlesnake Plantain (*Goodyera pubescens*), coralroot species (*Corallorhiza maculata* and *C. odontorhiza*), and Three Birds Orchid (*Triphora trianthophora*).

POPULATION STATUS: The Small Whorled Pogonia is listed as Threatened by the U. S. Fish and Wildlife Service and as Endangered by the Massachusetts Division of Fisheries and Wildlife. This species is one of the rarest orchid species in northeastern North America. As of 2004, there were only 104 extant populations of *Isotria medeoloides* worldwide with fewer than 3,000 individuals total. Historically, this species was known in 22 states and Ontario. Today it is known from only 17 states and Ontario; Vermont, New York, Maryland, and Missouri are those states which formerly supported this orchid. Currently, there are only five populations known in Massachusetts. Historically, this plant was known from only two other sites in the state.

The lack of suitable habitat is the most significant factor contributing to this orchid’s rarity. Specifically, habitat destruction and alteration combined with vandalism and illegal plant collection threaten *Isotria medeoloides*. As this species is so rare, it is much sought after by collectors who have illegally uprooted and destroyed individual plants for specimen collections. There is no evidence that this species can be successfully transplanted, so any plants that are uprooted are lost forever.

This orchid requires very specific habitat to succeed and will not occur in other areas. Although the plant is found along vernal streams and in thick, highly acidic organic duff, the surrounding land is equally important to the success of this orchid. This species relies on water moving from upslope regions down to its populations. When these vital buffer zones are altered, water movement is disrupted and the microclimate of the area often changes, creating a different habitat in which *Isotria medeoloides* cannot grow. It is believed that it is as important to preserve these peripheral areas as it is to preserve the habitat on which the plants occur.

Updated 2015

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