

Small Whorled Pogonia (*Isotria medeoloides*) Survey Protocols for Maine

Introduction: Small whorled pogonia is a rare native orchid of eastern North America that is listed as Threatened under the federal Endangered Species Act, and as Endangered by the state of Maine. For additional guidance on conducting surveys, on the biology of the species, or for field assistance for completing a survey contact the Maine Natural Areas Program (MNAP, contact Eric Doucette, eric.doucette@maine.gov, 207-287-8041).

Species Description: Small whorled pogonia plants appear in the late spring (late May to early June) from a perennial underground rootstock. Stems usually grow singly, though sometimes in pairs, and are typically 3-8" (8-20 cm) tall. Under normal conditions plants produce a single whorl of 5 elliptical leaves 1-3" (2.5-8 cm) long at the top of the stem. Occasionally, a single small leaf will also grow under the whorl along the stem. Note that the plants are often the target of small herbivores and may lose one or more of their leaves. The stem itself is moderately stout, about 1/8" (2-3 mm) wide, and glaucous pale green. Half or more of the plants in any given population will grow vegetatively in any given year, bearing no flowers or fruit. On reproductive plants, 1 to 2 flowers appear soon after emergence. They are greenish yellow, about 1" (2.5 cm) long, and born on top of the whorl of leaves. Pollinated flowers will produce an upright, cylindrical fruit (a capsule) about 1" (2.5 cm) long by 1/4" wide (0.6 cm), which turns from pale green to light brown by the fall when it splits open to release thousands of dust-like seeds. Refer to pictures included on the last page of this document and search online for additional images that capture the variety of plant conditions.



Lookalikes: Other common whorled-leaved herbs that grow in small whorled pogonia habitat in Maine include starflower (*Lysimachia borealis*), bunchberry (*Chamaepericlymenum canadense*), and Indian cucumber root (*Medeola virginiana*). Of these three species, vegetative Indian cucumber root plants are most similar to small whorled pogonia but can be readily distinguished from it by their narrow, darkened, pubescent stems. Anyone unfamiliar with small whorled pogonia should brush up on the identification of these three lookalikes.

Population and Habitat Characteristics: Plants within a population are generally thinly scattered and widely spaced, though occasionally several will occur in a local group. In Maine, small whorled pogonia typically occurs in mid-successional, mixed wood, mesic forests with a sparse shrub layer and thick leaf litter. Herb cover may vary ranging from high cover of ferns and other herbs to very little cover. The plants often occur near intermittent streamlets or where a hardpan impedes water percolation into the soil. Some common associated understory plants include Indian cucumber root (*Medeola virginiana*), New York fern (*Parathelypteris novaboracensis*), cinnamon fern (*Osmundastrum cinnamomeum*), partridge-berry (*Mitchella repens*), and downy rattlesnake-plantain (*Goodyera pubescens*).

Survey Guidance: Due to the inconspicuous nature of the plants, relatively small population sizes, and the thin distribution of plants within supporting habitat, small whorled pogonia populations can be difficult to detect. A survey of a given area should be methodical and completed with concentration and

focus. Ideally surveys for this species should be conducted by botanically trained individuals who have previously seen the species and its preferred habitat.

Time of Year: Surveys should be conducted between June 8 and September 30, the period of the growing season when plants have emerged and have leaves. If there was an unusually cool spring, plant emergence may be delayed by one to two weeks. Plants may sometimes be found with leaves and capsules as late as early October, at which time leaves will be turning yellow and will otherwise show signs of wear. Plants may sometimes be found outside of this calendar window, but negative surveys outside of the calendar window cannot be considered conclusive.

Recommended Survey Methods: Start by assessing the habitat types at the site. Identify areas with conditions that may support the species. The species only grows under a forest canopy. The canopy may be closed or have gaps. The species does not grow in habitats that lack a forest canopy (open fields, shrub dominated areas, early successional cover), nor does it grow in wetlands, though it does sometimes grow in low-lying areas near the edges of wetlands or along small streams. Once potential habitat areas are identified, they should be surveyed methodically by dividing them up into visual units. Visual units can be delimited by local topography (ravines, slopes, benches), by landmarks (boulders, downed or otherwise conspicuous trees, old woods roads, stone walls), and/or by hanging survey ribbon or placing wire flags. The surveyor should slowly walk back and forth progressing through a given visual unit. A stick or pole is helpful for nudging ferns clumps or low hemlock branches aside. Squatting and peering under tall ferns is also a good way to spot plants. As small whorled pogonia plants are relatively small and blend in well with surrounding vegetation, it is very important to keep attention focused in the area immediately around yourself (0-10' radius). In areas with very thin ground cover such as what occurs under mature hemlocks, it is possible to spot plants as much as 25' feet away, but most plants are found within 10' of an observer. MNAP recommends surveying areas within 250' of any proposed development. Maintaining a track with a GPS unit is very useful for documenting survey effort and identifying survey gaps.

Small whorled pogonia plants may grow anywhere within a site where a population is located but it favors certain micro-habitats such as:

- vernal or ephemeral runoff courses (leaf piles)
- terraces or benches and base-of-slope areas.
- small canopy openings, fern patches

Documenting a Population: If one or more small whorled pogonia plants are found, tie brightly colored surveyor ribbon adjacent to each plant and collect GPS coordinates at the respective locations. Take close up digital images of the plants to be used for subsequent confirmation of the species by MNAP. Minimize impacts by limiting foot traffic and any other potential disturbances in and around areas where they are growing. Avoid touching plants with fingers as handling can attract herbivores. Once plants have been found, spend additional time searching the areas within a 20' radius of each plant, as there is a comparatively high probability of finding additional plants within this area. Upon completion of the survey, make sure there is an easy and obvious way to relocate any plants that were found.

If plants are found, please contact the Maine Natural Areas Program for recommendations regarding any proposed land uses (207-287-8044, maine.nap@maine.gov).

Small whorled pogonia (*Isotria medeoloides*) Images:



Ideal flowering specimen (early June)



Late season, vegetative plants



Hidden in ferns, a not uncommon location



Plants with capsules