Bayard's Adder's-mouth Orchid

Malaxis bayardii

Photo credits: *Tagliapietra-Scherbavaz*

Scientific Name *Malaxis bayardii* Fern.

Family Name Orchidaceae Orchid Family

Did you know?
This is one of the smallest of our native orchids and very difficult to find. The only known New York population has been in decline and may even no longer exist. There are only about a half dozen known populations of this plant worldwide.

Summary

Protection Endangered in New York State, not listed federally.

This level of state protection means: listed species are those with: 1) 5 or fewer extant sites, or 2) fewer than 1,000 individuals, or 3) restricted to fewer than 4 U.S.G.S. 7 ? minute topographical maps, or 4) species listed as endangered by U.S. Department of Interior.

Rarity G1G2, S1

A global rarity rank of G1G2 means: Critically Imperiled or Imperiled globally - At very high or high risk of extinction due to rarity or other factors; typically 20 or fewer populations or locations in the world, very few individuals, very restricted range, few remaining acres (or miles of stream), and/or steep declines. More information is needed to assign a single conservation status.
A state rarity rank of S1 means: This plant is endangered/critically imperiled in New York because of extreme rarity (typically 5 or fewer populations or very few remaining individuals) or is extremely vulnerable to extirpation from New York due to biological factors.

Conservation Status in New York

There are five historical populations plus a single population that is questionably still extant. This population was last observed with one plant in 1997 and has not been seen since despite multiple surveys and excellent boundary markings around the population. This population has had as many as 28 individuals. There remains questions as to whether or not this population may reappear. Active management is needed before we can hope to recover this population. In addition, surveys are needed on Long Island, the Hudson Highlands, and the Shawangunk Mountains as they hold potential for additional populations.

Short-term Trends

Plants of the only remaining population have not been seen in many years but it is unknown if the plants remain in a dormant state. Since this is such a difficult plant to locate, determining trend status with only one known population is nearly impossible.

Long-term Trends

There have only ever been five records of the plant in the state but the plants are very difficult to find so it is unknown whether these historical records are definitely extirpated. This globally rare plant has likely always been rare.

Conservation and Management

Threats

While this plant can do well under a full canopy, particularly if the canopy is of oak or pine species, it seems to have difficulties when shaded by aggressive herbs and vines. Based on the historical locations, development has had little impact on the previously known New York populations. The situation may be different for populations outside of New York. Within New York, the greatest threat most likely is habitat succession.

Conservation Strategies and Management Practices

Management needs are difficult to determine without additional research. Until that research is undertaken, we have to depend on anecdotal guesses. One of these includes removing aggressive herbs and vines from known habitat. This may best be accomplished by hand-pulling the herbs/vines. Paul Catling thinks that the soil disturbance may actually

help this plant. In areas where soil disturbance may only increase invasive species dominance, targeted herbicide application may be suitable.

Research Needs

Much more research needs to be done into the ecology of the species so more targeted surveys can be performed. The greatest challenge with this plant is simply finding it. If models were developed to predict potential habitat, survey efforts could be targeted at those locations. There is also a need for a better understanding of the ecological requirements needed by this plant, particularly if/how the landscape where populations occur should be managed.

Habitat

An orchid of dry chestnut oak forests with shallow soil and exposed bedrock, and pitch pine scrub oak barrens on sandy soils (New York Natural Heritage Program 2004). Dry, open woods, shale barrens and sandy pine barrens (Flora of North America 2002). Dry sandy woods and adjacent clearings; very dry, open woods on hilltops and on steep, dry shale barrens (Catling 1991). Dry sandy woods and clearings (Fernald 1970).

Associated Ecological Communities

Chestnut Oak Forest
A hardwood forest that occurs on well-drained sites in glaciated portions of the Appalachians, and on the coastal plain. This forest is similar to the Allegheny oak forest; it is distinguished by fewer canopy dominants and a less diverse shrublayer and groundlayer flora. Dominant trees are typically chestnut oak and red oak.

Pitch Pine-scrub Oak Barrens
A shrub-savanna community that occurs on well-drained, sandy soils that have developed on sand dunes, glacial till, and outwash plains.

Other Probable Associated Communities

Pitch pine-heath barrens
Pitch pine-oak-heath rocky summit
Red cedar rocky summit

Associated Species

Canada May-flower (*Maianthemum canadense*)
Pitch Pine (*Pinus rigida*)
Bigtooth Aspen (*Populus grandidentata*)
Wild Black Cherry (*Prunus serotina*)
Chestnut Oak (*Quercus montana*)
Black Locust (*Robinia pseudoacacia*)
European Red Raspberry (*Rubus idaeus*)

Identification Comments

This is a very small orchid only about 1 or 2 dm tall. There is one oval green clasping leaf

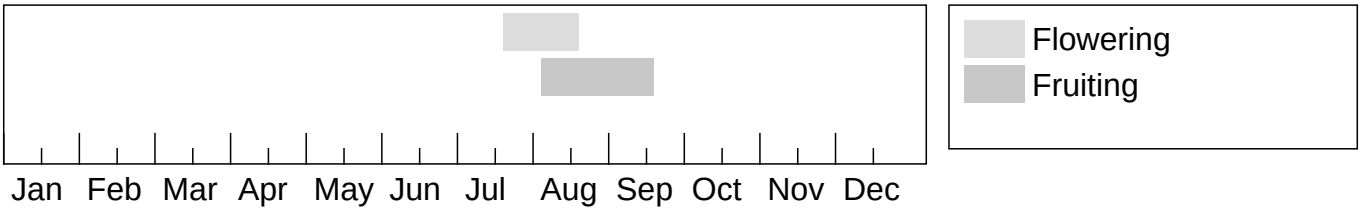
about one third to half the way up the stem. At the top of the stem is a cylindrical spike of up to 150 tiny, stalked, chartreuse-green flowers that wilt from the top down. The lip is divided into two lobes with another petal sticking out at the top between the lobes.

Best Life Stage for Identifying This Species

For proper identification, this orchid must be observed with flowers or fruit. Due to the extreme rarity of this plant, only take pictures and possibly pinch off a single flower to allow for verification of the species..

The Best Time to See

This orchid flowers mid-July to August with fruits persisting into September. This small plant is difficult to find at any time during the year, but surveys from July to mid-August have a great chance of locating this plant while in flower.



The time of year you would expect to find Bayard's Adder's-mouth Orchid in New York.

Similar Species

The basal lobes of the lip on *Malaxis unifolia* are not prominent, 0.4-1.1 mm long, mostly less than 1.5 times as long as the apical lateral lobes and less than 0.6 times as long as the length from the base to the tip of the mid-lobe. The inflorescence has pedicels that are (3.8) 5-10 (13) mm long (and more than 15 mm long in plants with inflorescences over 45 mm long). These inflorescenses are densely-flowered above with the lower flowers soon wilting. This is a plant of swamps, bogs and wet habitats.

Conservation Comments

This was once considered part of Malaxis unifolia, but a systematic study by Paul Catling (1991) supported Fernald's (1950) recognition of this terrestrial orchid. Malaxis unifolia is typically found at wetter locations while Malaxis bayardii is found at drier sites.

Taxonomy

Kingdom Plantae
└─ **Phylum** Anthophyta
  └─ **Class** Monocots (Monocotyledoneae)
    └─ **Order** Orchidales
      └─

Family Orchidaceae (Orchid Family)

Additional Common Names

Adder's-mouth
Adder's-mouth Orchid
Appalachian Adder's-mouth Orchid
Bayard's Malaxis

Synonyms

Malaxis unifolia (Michx.)

Additional Resources

Links

Flora of North America
http://efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101762
USDA Plants Database
http://plants.usda.gov/java/nameSearch?mode=sciname&keywordquery=MALAXIS+BAYARDII
New York Flora Atlas
http://www.newyork.plantatlas.usf.edu/Plant.aspx?id=2011
NatureServe Explorer
http://natureserve.org/explorer/servlet/NatureServe?searchName=MALAXIS+BAYARDII
Google Images
http://images.google.com/images?q=MALAXIS+BAYARDII

Best Identification Reference

Gleason, Henry A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden, Bronx, New York. 910 pp.

References

Catling, P. M. 1991. Systematics of Malaxis bayardii and Malaxis unifolia. Lindleyana 6(1):3-23.

Fernald, M.L. 1950 Gray's Manual of Botany, 8th ed. American Book Company, New York. 1632 pp.

Fernald, M.L. 1950. Gray's manual of botany. 8th edition. D. Van Nostrand, New York. 1632 pp.

Flora of North America Editorial Committee. 2002. Flora of North America, North of Mexico. Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, New York. 723 pp.

Gleason, Henry A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden, Bronx, New York. 910 pp.

Holmgren, Noel. 1998. The Illustrated Companion to Gleason and Cronquist's Manual. Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden, Bronx, New York.

Keys, Jr.,J.; Carpenter, C.; Hooks, S.; Koenig, F.; McNab, W.H.; Russell, W.;Smith, M.L. 1995.

Ecological units of the eastern United States - first approximation (cd-rom), Atlanta, GA: U.S. Department of Agriculture, Forest Service. GIS coverage in ARCINFO format, selected imagery, and map unit tables.

Mitchell, Richard S. and Gordon C. Tucker. 1997. Revised Checklist of New York State Plants. Contributions to a Flora of New York State. Checklist IV. Bulletin No. 490. New York State Museum. Albany, NY. 400 pp.

NatureServe. 2005. NatureServe Central Databases. Arlington, Virginia. USA

New York Natural Heritage Program, New York State Department of Enviromental Conservation. March 1998. Element Occurrence Record Database. Latham, NY.

Reschke, Carol. 1990. Ecological communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation. Latham, NY. 96 pp. plus xi.

Weldy, T. and D. Werier. 2010. New York flora atlas. [S.M. Landry, K.N. Campbell, and L.D. Mabe (original application development), Florida Center for Community Design and Research http://www.fccdr.usf.edu/. University of South Florida http://www.usf.edu/

New York Natural Heritage Program
625 Broadway, 5th Floor,
Albany, NY 12233-4757
Phone: (518) 402-8935
acris@nynhp.org

This project is made possible with funding from:

- New York State Department of Environmental Conservation Hudson River Estuary Program
- Division of Lands & Forests, Department of Environmental Conservation
- New York State Office of Parks, Recreation and Historic Preservation

Information for this guide was last updated on Mar 19, 2013

This guide was authored by