

Species Status Assessment

Common Name	southern twayblade	Date Updated:	2024-01-04
Scientific Name	<i>Neottia bifolia</i>	Updated By:	Rachael Renzi
Family	Orchidaceae		

Species Synopsis (*a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York*):

Southern twayblade, or *Neottia bifolia*, synonymous with *Listera australis*, is a perennial forb in the orchid family (Orchidaceae). There are two other species of *Neottia* of conservation concern in New York state: *N. auriculata* and *N. convallarioides*. *Neottia cordata* var. *cordata* is also uncommon in New York. True to its common name, *N. bifolia* is more common in southeastern states (NatureServe 2023). It ranges from southern Quebec and Ontario south to Texas and Florida. In New York, there are 13 extant populations, with 20 historical populations that should be revisited (NYNHP 2023). *Neottia bifolia* can be found in acidic peatlands of bogs, fens, or swamps (NYNHP 2023, 2024). It is thought that innumerable populations have been lost since European colonization, and likewise the number of plants in NY has decreased over the last 100 years (NYNHP 2023, 2024). However, active conservation has had a positive effect on *Neottia bifolia* in NY. Recent efforts to conserve the orchid's wetland habitat have slowed this decline, and new populations have been discovered.

I. Status

a. Current legal protected Status

i. Federal:		Candidate:	
ii. New York:	<u>Endangered</u>		

b. Natural Heritage Program

i. Global:	<u>G4</u>		
ii. New York:	<u>S2</u>	Tracked by NYNHP?	On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada

IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

Neottia bifolia is Endangered in New York (Ring 2023). There are currently 13 known populations in NY, and 20 historical populations (NYNHP 2023). Half of the extant populations have less than 10 plants, but the number of plants fluctuates greatly at each site from year to year (NYNHP 2023). One large site contains approximately 2000 plants, but in the past, 3 plants were recorded from the same site (NYNHP 2023). Likewise, at a population with 500 plants, none were found during a different year; or, at a site with 150 plants, only 15 were seen in another year (NYNHP 2023). Because of this fluctuation, it is difficult to determine the stability of the population by count alone. In addition to the small and unpredictable populations, there are 20 historical populations that should be surveyed. And, there may populations yet to be found, especially throughout the Adirondacks (NYNHP 2023). The extant populations have a split distribution throughout New York state, occurring in bogs, fens, and swamps in Long Island, central New York, and northern Adirondacks. Populations from western New York have not been seen since 1960 (NYNHP 2023).

II. Abundance and Distribution

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	T	
Connecticut	No	-	-	-		
Massachusetts	Yes	Unknown	Unknown	Unknown	S1	
New Jersey	Yes	Unknown	Unknown	Unknown	S4	
Pennsylvania	Yes	Unknown	Unknown	Unknown	S1	
Vermont	Yes	Unknown	Unknown	Unknown	S1	
Ontario	Yes	Unknown	Unknown	Unknown	S1	
Quebec	No	-	-	-		

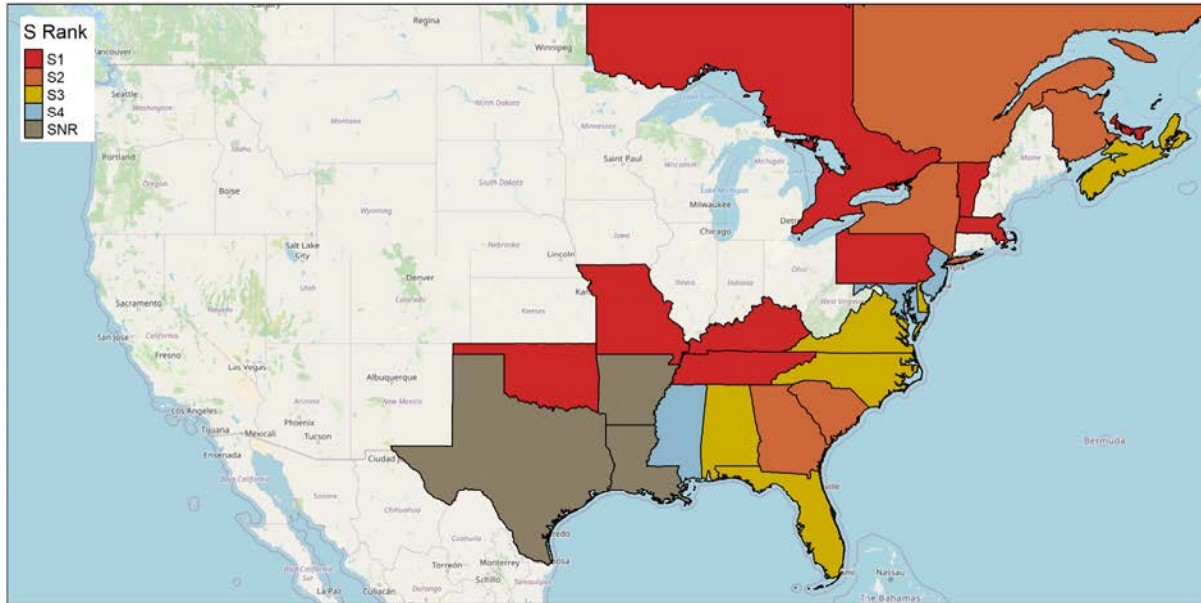


Figure 1: *Neottia bifolia* North American distribution.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	Unknown

III. NY Rarity and Trends

Trends Discussion

As bogs, fens, and other wetlands were converted to muck farms or otherwise drained, populations were undoubtedly lost (NYNHP 2023, 2024). The number of populations that may have been lost after European settlement is impossible to assess. However, with greater protection to wetlands, the number of populations has likely stabilized. Threats are minimal today, especially as additional populations are found. New populations were likely present at these sites for many years, but infrequent surveys failed to locate them. Overall, there has probably been a slight decline in the total number of plants, but protection of their habitat in NY should effectively conserve *Neottia bifolia* (NYNHP 2023).

Details of historic and current occurrence

This orchid is found in scattered locations of southern Quebec, southern Ontario, northern Vermont, New York, northern Pennsylvania, Massachusetts, and New Jersey (NatureServe 2023). It is also found more commonly in the southeastern US along the Coastal Plain from Virginia to Texas (NatureServe 2023). Since this orchid is easily overlooked, there is a chance that the range is even broader than this (NatureServe 2023). New York is near this orchid's northern limit, given that the plant is more common in the southeastern United States (NatureServe 2023). Within New York, the orchid has a split distribution (NYNHP 2023). Some of the larger extant populations are located along the Coastal Plain of Long Island, but populations have been reported over a widely scattered area that ranges from the Adirondacks into central and western New York (NYNHP 2023). There were likely more populations

throughout the state in the past, as there are about 20 historical populations, and only 13 known today (NYNHP 2023).

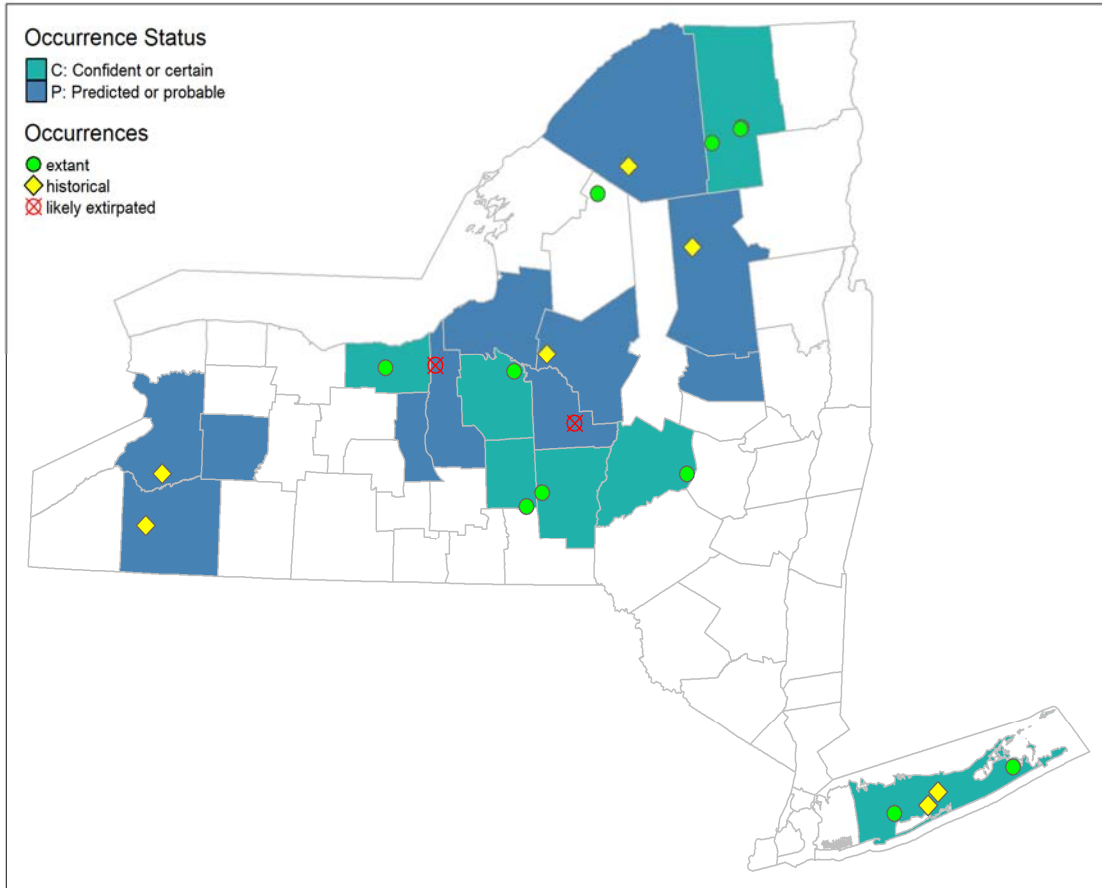


Figure 2: NYS distribution for *Neottia bifolia*.

Table 1. Number of records (element occurrences) of *Neottia bifolia* grouped by the dates known to be extant (the years spanning first observation to last observation) and the number and percent of total of USGS 7.5 minute map quadrangles these observations fall within for New York State.

Years	# of Records	# of distinct quads	% of quads in State
Pre-1995	15	20	2.0
1995-2004	4	4	0.4
2005-2014	5	5	0.5
2015-2023	4	3	0.3

Monitoring in New York

One population occurs on State Park lands and is monitored on a 10-year rotation. Another two populations are designated as HCVF and are monitored on a 5-year cycle. Most of the extant populations have been visited after 2004, with six population visited in 2019 or later. None of the other populations have been regularly monitored.

IV. Primary Habitat or Community Type (from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

Northeastern Habitat Classification Macrogroup: Northern peatland.

NY Ecological Communities: Black spruce-tamarack bog, Coastal plain poor fen, Dwarf shrub bog, Inland poor fen, Red maple-blackgum swamp, Red maple-hardwood swamp, Red maple-tamarack peat swamp, Highbush blueberry bog thicket (Edinger et al. 2014, NYNHP 2014).

Habitat or Community Type Trend in New York

Declining: **Stable:** **Increasing:** **Unknown:** ✓
Time Frame of Decline/Increase:
Habitat Specialist **Yes:** ✓ **No:**

Habitat Discussion:

Neottia bifolia is a plant of peat moss areas including bogs, poor fens, and wet woods (NYNHP 2024). It grows in the rich humus of low moist woods, marshes, or sphagnum bogs, usually in association with rhizomes of cinnamon fern (*Osmundastrum cinnamomeum*) and royal fern (*Osmunda regalis* var. *spectabilis*) (Flora of North America 2002). Other descriptions of habitat include shaded bogs and wet woods or, northward, sphagnous thickets and bogs (Fernald 1950; Gleason & Cronquist 1991; Rhoads and Block).

V. Species Demographics and Life History (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Neottia bifolia is a perennial orchid. The plant flowers earlier than other species of the same genus in New York, in May and June (NYNHP 2024). It is pollinated by flying insects, including fungus gnats (Hoy 2003). The small above-ground stem may not appear every year, and only lasts a few weeks when it does, disappearing soon after seed set (Hoy 2003).

Table 2. Phenology of *Neottia bifolia* in New York State (NYNHP 2023).

Phenology	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flowering												
Fruiting												

VI. Threats

Today there are few threats that impact this species. Run-off may have some impact, but this is not well studied (NYNHP 2024). Much of the habitat where this plant might be found is either protected on public land or subject to wetland protection laws.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes:

No:



Unknown:

If yes, describe mechanism and whether adequate to protect species/habitat:

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

No direct management requirements are needed for this orchid except to protect the sites where populations occur. This should include protection to any waterways that may influence the populations.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) -

<https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>

Table 3. Recommended conservation actions for *Neottia bifolia*.

Conservation Actions	
Action Category	Action
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection
Land/water management	2.1. Site/area management
Land/water management	2.2. Invasive/problematic species control
Land/water management	2.3. Habitat & natural process restoration

VII. References

This SSA drew heavily from these resources:

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