

Species Listing PROPOSAL Form:

Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Neottia bifolia* (Raf.) Baubach
Syn. *Listera australis*

Current Listed Status (if any): None, Watch List

Common name: Southern Twayblade

Proposed Action: Add the species, with the status of: **T**
 Remove the species
 Change the species' status to: _____Change the scientific name to: _____
Change the common name to: _____
(Please justify proposed name change.)Proponent's Name and Address:Bryan A. Connolly
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Association, Institution or Business represented by proponent: Natural Heritage & Endangered Species Program

Proponent's Signature:



Date Submitted:

5/30/14

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581**Justification**

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) Taxonomic status. Is the species a valid taxonomic entity? Please cite scientific literature.This species is a valid taxonomic entity *Neottia bifolia* (Raf.) Baumbach Orchidee (Hamburg) 60(4): 332. 2009Also see the synonym: *Listera australis* Lindl.
Gen. Sp. Orchid. Pl. 456. 1840 [Sep 1840] 456. 1840**(2) Recentness of records.** How recently has the species been conclusively documented within Massachusetts?

2013

(3) Native species status. Is the species indigenous to Massachusetts?

YES

Before 2001 this species had not been seen in Massachusetts. Paul Somers former Massachusetts State Botanist confirmed the identification of this species in 2007. The closest known populations are in Vermont, Long Island, and Nova Scotia. There is no evidence of human introduction where this plant occurs in Massachusetts. This plant has either gone unnoticed or has extended its range naturally.

(4) Habitat in Massachusetts. Is a population of the species supported by habitat within the state of Massachusetts?

YES

In Massachusetts this species occurs in shrub swamps, with several common wetland plants. Fauteux (2013) states, that according to the National Wetland Inventory, there are over 382,231 acres of shrub swamp and similar wetland habitats in Massachusetts, and 1463 acres on Martha's Vineyard alone.

(5) Federal Endangered Species Act status. Is the species listed under the federal Endangered Species Act? If so, what is its federal status (Endangered or Threatened)

NO

(6) Rarity and geographic distribution.

(a) Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?

There are 3 known populations on Martha's Vineyard. The original population ranged from a low of 38 individuals in 2009 to a high of 109 in 2012, with an average of 69 individuals since its discovery in 2001. Of the two additional populations, in 2013 one population was comprised of 187 individuals, the other had 109 individuals. The plant is somewhat cryptic, and has a relatively short visibility window, but extensive searches have been conducted within the vicinity of the known sites by Kristen Fauteux as part of her Master's project. We are unable to estimate a potential number of undocumented occurrences at this time; this plant appears to be very rare in Massachusetts and rare throughout New England.

(b) What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)? Is the species a state or regional endemic?

The range of *Neottia bifolia*, southern twayblade, is much of eastern North America, it is somewhat common in the southeastern US along the Coastal Plain from Virginia to Texas. The species is ranked by NatureServe as G4, or apparently secure globally. *Neottia bifolia* is rare throughout the northern portion of its range, and is of conservation concern in Tennessee, Missouri, Oklahoma, Georgia, South Carolina, New Jersey, Pennsylvania, New York, Vermont, Ontario, Quebec, New Brunswick, and Nova Scotia. It is not a state or regional endemic.

(7) Trends.

(c) Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any long-term trend in these factors been documented?

This species was a new record for the state in 2001 and confirmed in 2007. After extensive searches two additional populations were located. The populations vary in number from year to year, there does appear to be an upward trend at one population. Throughout the northern range of *Neottia bifolia* populations are reported as small and scattered. In New York State some previously known populations have gone extinct, while others have been newly discovered. In the Northeast and adjacent Canada it appears that this species has always been in low numbers.

(8) Threats and vulnerability.

(d) What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

The trend for this species is relatively unknown since the species is new to Massachusetts and there is only data for a relatively brief period of time. The plant is extremely rare but appears to be growing in numbers, two additional populations have been location and one population seems to be increasing. The factors that drive population trend for this species are not well understood. Wetland alterations are a potential threat, though this may not be a major concern due to wetlands protection regulations in the state, and that the currently known populations are located on protected land. Water pollution or eutrophication may be a more likely threat than direct draining or filling of the wetlands that this plant inhabits The population locations are in heavily deer browsed areas but the southern twayblade does not appear to a preferred food, minor trampling or browsing by deer or

possibly rabbits has been observed but does not appear catastrophic. Deer browse may be reducing woody shrub growth and possibly enhancing the habitat for *Neottia bifolia*.

(e) Does the species have highly specialized habitat, resource needs, or other ecological requirements? Is dispersal ability poor?

Neottia bifolia does not appear to be habitat limited. Thousands of acres of similar habitats are found within Massachusetts. Constraints on population size are not clear. Populations in Massachusetts are somewhat larger than others reported for the northern part of the range. Research is needed on its resource needs and dispersal ability.

Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

(a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates

If the species were to reach 25 A-C ranked populations it could be down listed to SC.

(b) Amount of protected habitat and/or number of protected occurrences

15 protected populations ranked A-C.

(c) Management of protected habitat and/or occurrences

Management needs of this species are unknown. The first conservation goal would be to conduct further research building on Fauteux (2013) and establish the species habitat requirements.

Literature cited, additional documentation, and comments.

Fauteux, Kristen. 2013. Habitat Description of the recently Discovered *Neottia bifolia* (Raf.) Baumbach, Southern Twayblade Orchid in Chilmark, Massachusetts. Masters Project, Antioch University New England.

Hoy, Joann M. 2003. *Listera australis* (Southern Twayblade) Conservation and Research Plan for New England. New England Plant Conservation Program, Framingham, Massachusetts, USA.

The International Plant Names Index [web application]. 2014. Plant Name Query. Published on the Internet <http://www.ipni.org> [accessed 21 March 2014].

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: March 5, 2014).