

Species Listing PROPOSAL Form:
Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: _____ **Carex exilis** _____

Current Listed Status (if any): ___ Watch List ___

Common name: ___ Bog Sedge _____

Proposed Action: Add the species, with the status of:

Threatened _____

_____ 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:

Robert Wernerehl

State Botanist of Massachusetts

Natural Heritage & Endangered Species Program

Division of Fisheries & Wildlife

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Association, Institution or Business represented by proponent:

Proponent's Signature:

Date Submitted: 3/3/2023



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.

Yes. The name *Carex exilis* was first published in Amer. J. Sci. Arts 14: 351 (1828) by Massachusetts own early botanical expert, Chester Dewey, who named many plants in the genus *Carex*. (POWO 2023) (<https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:299683-1>)

(2) Recentness of records. How recently has the species been conclusively documented within Massachusetts? I surveyed a site in Middleton in Essex County in 2018 and located a small population there. That is the most recent record.

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

Yes. It was collected here frequently in the 19th century, beginning in the first half of the 19th century.

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

Yes. It is found in graminoid fens, freshwater wetlands and borders of cedar swamps. Records show there is habitat within the state.

(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, the species has no federal status.

(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 currently 3 populations. Two population were last surveyed as having several hundred plants but in a small area. The third population is estimated at 50 plants. Yes, there are potentially undocumented occurrences in the state. The potential number of undocumented occurrences are likely to be no more than 12. More reports of this species should have come in over time via our collection of watch-listed species. See also the next section on trends.

(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?

This is typically a plant of the far northern US and eastern Canada, with a few outlier rare populations in a few southeastern states. The geographic center is the far northeastern border of NY near Montreal. Massachusetts is at the southern edge of the range. It is not a regional or state 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?**

The species is decreasing significantly but in number of sites and geographically. There are 37 EOs, only 3 of which are still current. The rest are historic, with 21 being 19th century herbarium collections. Geographically it occurred in 28 towns in eastern Massachusetts. Current towns include only North Andover, Lynnfield and Middleton. There are at least 104 herbarium collections from Massachusetts (CNH 2023) almost all from Essex and Middlesex counties, with a half dozen from a large Atlantic white cedar swamp in Wilbraham in Hampden Co. Of these specimens, 72 are 19th century, 29 from the 20th century with 3 from the 21st century.

Carex exilis is not a difficult sedge to identify when in fruit, and not inconspicuous. There are only four records on iNaturalist in New England, those are from northern Vermont, New Hampshire and Maine. It is imperiled or critically imperiled in all New England states except Maine. The plant produces medium size seed which likely falls near the parent plant, although in flooded times these seeds would likely float and be somewhat dispersed. The reproductive capacity does not appear to be low. Germination or seed predation might be limiting factors.

(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 largest threats have been loss of and degradation of high quality wetland systems, both through human alteration, water pollution and development, as well as through likely flooding effects from beaver dams. Fire suppression and climate warming may have played a role. Invasive wetland species such as glossy buckthorn, cattail and Phragmites have taken over significant areas of wetlands, limiting native plant populations.

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

The species does appear to have highly specialized habitat except that it occurs only in high quality wetlands. The dispersal ability should be about the same and the numerous other sedge species in these wetlands that do not appear to be on the decline. *Carex exilis* may be favored in some way by the more granitic type bedrock found in the two northeastern counties where this is more prevalent.

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
State status is required by MESA statues to follow federal listing status at the same level of listing or higher.

Since this species can be considered quite long lived and hardy under most circumstances the following numbers might be lower than proposals for more ephemeral, vulnerable plant species.

For *Carex exilis* to be down-listed to Special Concern, there should be 30 populations larger than 50 plants of which 20 are ranked good to excellent.

For *Carex exilis* to be removed from the MESA list, there should be 50 populations larger than 60 plants of which 30 are ranked good to excellent.

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

Essentially all of the current populations are protected through wetland protection act laws. Addition buffer protection would be essential to maintaining good populations through conservation ownership. The goal should be 30 populations protected in this manner.

(c) Management of protected habitat and/or occurrences

The current habitat needs are not fully known at this time. More research is needed to determine any further management needs.

Literature cited, additional documentation, and comments.

I personally have surveyed three sites with records in the last 6 years and have found this species at only one of the sites.

Herbarium specimen data provided by: [list of providers] (Accessed through the Consortium of Northeastern Herbaria web site, www.neherbaria.org, YYYY-MM-DD)

https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.148060/Carex_exilis accessed 3/3/2023

POWO (2023). "Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.plantsoftheworldonline.org/> Retrieved 28 February 2023."