

Species Listing PROPOSAL Form:

Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Alnus viridis* ssp. *crispa*

Current Listed Status (if any): Threatened

Common name: Mountain Alder

Proposed Action:

<input type="checkbox"/> Add the species, with the status of: _____	Change the scientific name to: _____
<input type="checkbox"/> Remove the species	Change the common name to: _____
<input checked="" type="checkbox"/> Change the species' status to: Special Concern	(Please justify proposed name change.)

Proponent's Name and Address:

Karro Frost, NHESP, 100 Hartwell Road, West Boylston, MA 01583

Phone Number: 508-389-6390

Fax: 508-389-7891

E-mail: karro.frost@state.ma.us

Association, Institution or Business represented by proponent: Natural Heritage and Endangered Species Program

Proponent's Signature:



Date Submitted:

5/30/2014

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. *Alnus viridis* (Vill.)Lam.&D.C. ssp. *crispa* (Alton)Turrill

Primary references are Fl. Franc. (DC. & Lamarck), ed. 3. 3: 304. 1805 ; Cham. in Linnaea, 6: 538 (1831).

This species appears as such in Volume 3 of *Flora of North America* (Flora of North America Editorial Committee) and in Haines, Arthur. 2011. *Flora Nova-Angliae*.

(2) Recentness of records. How recently has the species been conclusively documented within Massachusetts?

This species was documented in Massachusetts as recently as 2013. There are currently 5 distinct EOs; two of which are linear, covering 13 and 24 kilometers along the Deerfield River, which consist of merged EOs. A new EO was documented in 2011.

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

Yes, this species has been documented to be native to Massachusetts (Cullina et al. 2011).

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

Appendix A

This species grows in Massachusetts in open locations with cool local temperatures, including exposed ledges and cobble bars on the edges of the Connecticut and Deerfield Rivers. The river shore areas are influenced by high-energy flowage and seasonal flooding, maintaining an open habitat which this species seems to prefer.

(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, it is not listed under the federal Endangered Species Act.

(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?

Number of populations Mountain Alder is currently known only from Franklin and northeastern Berkshire County. MA has 5 distinct current principal EOs, many of which consist of sub-EOs; if sub-EOs are included the tally is 25 current EOs (NHESP database). (Sub-EOs are a series of subpopulations that occur within a relatively large landscape, with functional habitat connectivity, and the possibility of genetic exchange). This species is ranked G5. Among New England states, it has not been ranked in ME, NH or VT, and is not known from CT or RI. It is considered vulnerable in NY; and is of conservation concern in TN and NC (NatureServe 2014).

The population sizes of extant MA occurrences: Documented population numbers vary greatly from 5 genets to several 100 genets, with 2 populations ranked C and 3 populations ranked AB or A. Viability ranks weigh population size twice as heavily as condition and landscape quality.

Likelihood of finding additional EOs: There are potential undocumented occurrences as it occurs predominantly in an under-surveyed portion of the state, Franklin County. The recent survey efforts of the Franklin County Flora Group has located several (9) healthy populations in the past three years. (Per. Comm. M.Hickler) Dedicated surveys for this species are likely to turn up additional EOs.

(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?

Mountain Alder is a circumboreal species. In North America, it ranges from Labrador and Newfoundland west to Alberta and south to northern New England, NY, MI, and MN. There are disjunct populations in western PA and on Roan Mountain straddling the NC-TN border. Western Massachusetts is the southernmost point of Mountain Alder's range in New England. It is more widely distributed in ME, NH, and VT. 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?

State distribution: The known distribution of county records for this species has not changed much; it was previously known from Berkshire, Franklin and Hampshire counties; the Hampshire county record is now historic (last observation 1985) (NHESP database). Mountain Alder numbers at these stations range from 5 to 100 or more genets. Most populations contain robust, mature individuals as well as immature specimens. Franklin County Flora group easily located 11 populations (most of which were previously known); there are likely several additional healthy populations in areas away from roads.

Number of populations: The number of populations appears stable. Of a total of 6 distinct EOs, 5 (80%) are current. These numbers suggest a decline, however, one current EO was just recently discovered, and most of the

other EOs consist of several sub-EOs and the acreage of the mapped habitat has been increasing in size as new populations are observed.

The population sizes of extant MA occurrences: It is difficult to say for sure, because some surveys are not comprehensive and may target different areas in different years; but the available data indicate that in most cases a greater number of plants have been documented in more recent surveys than in the earlier ones (NHESP database). This indicates that overall, populations are not declining in size, and may be increasing.

Reproductive capacity: Reproductive capacity does not seem to be a limiting factor for this species. Within a good habitat, the species flowers and fruits regularly. Staminate and pistillate flowers are enclosed in scales on separate catkins. Staminate catkins typically are in 1 cluster of 2-4, while pistillate catkins are in 1 or more cluster of 2-10. The fruits are tiny samaras, which are wind dispersed. (FNA 1997)

(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.

Mountain Alder has a limited geographical range in Massachusetts. Within that area, it is a disturbance-adapted, relatively hardy species. Threats include alteration of the current disturbance regime (change in the water-releases on the Deerfield River) or over-shading due to closure of canopy where it occurs in upland areas. Finally, it may face competition from the invasive exotic plant Japanese knotweed and related species: *Fallopia japonica*, *F. sachalinensis* and *F. x bohemica*. Down-listing this species is not likely to significantly alleviate these threats. The threats should be carefully evaluated before delisting.

Changes in land-use pose a threat on unprotected lands, but this species would likely not be lost or even decimated state-wide due to this threat. Over 290 acres are mapped as habitat for this species and portions of the larger EOs occur on protected land (NHESP database).

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

Mountain Alder's specialized habitat includes ice scoured river banks and open rocky cliffs near the Deerfield River. This species also occurs in cool wetland edges and along small stream channels. The ecological requirements are not entirely understood as it only occurs within a limited range in MA.

(9) 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:

Providing data do not indicate that the threat of invasive plants or over-shading (or another currently unidentified threat) to populations ranked A through CD is dramatically increasing, this species may be delisted if:

(a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates: The number of current, distinct EOs, not on the Deerfield River, increases to ten, and half are ranked BC or greater; and 90% should be ranked C or greater; and

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

At least 50% of the EOs with ranks of B or greater shall be 90% on protected land (most EOs are long and linear and cross several property boundaries and town lines); and

(c) Management of protected habitat and/or occurrences

For protected lands to be included, the protection must allow for control of exotic invasive species and the ability to thin the canopy if needed to allow more light to the populations.

In 2002, this species went from Special Concern to Threatened. The Recovery Goal at that time stated:
“In order to downgrade the listing category from Threatened to Special Concern status, greater than 20 occurrences, each with population sizes that numbered greater than 30 individuals would need to be documented in Massachusetts.” (Cullina 2002)

We have 25 extant sub-EOs (many of which have been combined with others to form the 5 principal EOs). At least 16 sub-EOs have populations with greater than 30 individuals.

Literature cited, additional documentation, and comments.

Cullina, MD. 2002. Proposal to Change the Classification of Species Under MESA for *Alnus viridis* ssp. *crispa*, Mountain Alder, from Special Concern to Threatened. NHESP Element Files.

Cullina, MD, B Connolly, B Sorrie and P Somers. 2011. The Vascular Plants of Massachusetts: A County Checklist, First Revision. MA NHESP.

Flora of North America Editorial Committee (FNA). 1997. Flora of North America: North of Mexico; Volume 3: Magnoliophyta: Magnoliidae and Hamamelidae.

Haines, A. 2011. *Flora Novae Angliae*. The New England Wild Flower Society.

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

Massachusetts Natural Heritage and Endangered Species Program (NHESP). 2014. Biotics Database.

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: February 24, 2014).