

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

Scientific name: *Ferrissia walkeri*

Current Listed Status (if any): SC

Common name: Walker's limpet

Proposed Action: Add the species, with the status of: _____ Remove the species Change the species' status to: _____Change the scientific name to: *Ferrissia fragilis*Change the common name to: Fragile Ancyloid

(Please justify proposed name change.)

Proponent's Name and Address:Tim Simmons & Peter Hazelton Restoration Ecologist and Aquatic Ecologist, DFW, NHESP 100 Hartwell St.
West Boylston, MA 01583

Phone Number: 508 389-6325, 6389

E-mail: tim.simmons@state.ma.us,

Fax:

peter.hazelton@state.ma.us

Association, Institution or Business represented by proponent: NHESP

Proponent's Signature:

Date Submitted:

3/24/2014

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 100 Hartwell St. Suite 230, West Boylston, MA 01583

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.

No, species as recognized under MESA is not a distinct species but a junior synonym of a more common species. *Ferrissia walkeri* (Pilsbry & Ferriss, 1907) has been combined with *F. sharpi* (Sykes, 1900) under the congener *F. fragilis* (Tryon, 1983) using molecular phylogenetic techniques (Walther et al. 2010) -

“none of our extensive sampling of North American *Ferrissia* populations have, to date, recovered unambiguous specimens of *F. walkeri*.”

“Nominal *Ferrissia fragilis*, *F. sharpi* and putative *F. mcneilli* and *F. walkeri* specimens shared individual genotypes (Figs. 3–5) and exhibited overlapping shell phenotypes (Figs. 6, 7; Table 3). These results led us to conclude that they are all conspecific and to reclassify *F. sharpi* (Sykes, 1900) and *F. walkeri* (Pilsbry & Ferriss, 1907) and *F. mcneilli* Walker, 1925, as junior synonyms of *F. fragilis* (Tryon, 1863).”

Initial listing recommendation in 1985 was not accompanied by an assessment of the distribution in the state, but as an addendum to the list of proposed listing of invertebrates by an outside reviewer (Bilger 1985). The letter stated that the species was only known from two sites on cape cod at that time. However, *F. walkeri* was collected and described ten years earlier from the Mill River (Northampton & Williamsburg, Hampshire County) in the Connecticut River valley in 1973 as part of a species complex with *F. fragilis* (Smith 1974, reviewed in McLain 2003). In 2003, McLain found three individuals in the Mill River in Northampton, which he could only key as a grade between *F. walker* and *F. fragilis* (McLain 2003). Prior to the Walther study (2010), other sources also confirm confusion in the taxonomic separation between *Ferrissia* species (Basch 1963, Jokinen 1978, Dillon & Herman 2009, Hovingh 2004, 2010) caused by regional variation in shell morphology further supporting our conclusion that *Ferrissia walkeri* is a junior synonym of *Ferrissia fragilis*, and warranting its renaming under MESA and removal from MESA regulatory protection.

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

Records for 2 populations were updated in 2006, and a third in 2002. These populations have persisted for over 40 years.

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

Species is native, but not endemic to Massachusetts. See Figure 1 for *F. walkeri* and Figure 2 for *F. fragilis*.

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

Of seven documented occurrences, records for three have been updated as extant since 2002, the remaining four records have not been revisited since first observed in early-mid 1970's.

(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)

This species 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?

NHESP documents seven occurrences in Massachusetts. Three have persisted for over 40 years and four historic occurrences have not been resampled. Extensive unsurveyed habitat exists throughout both systems and thus a high likelihood of undocumented occurrence. *Ferrissia fragilis* is considered common in Massachusetts, and thus is likely found throughout the state (Figure 2, NatureServe, 2013).

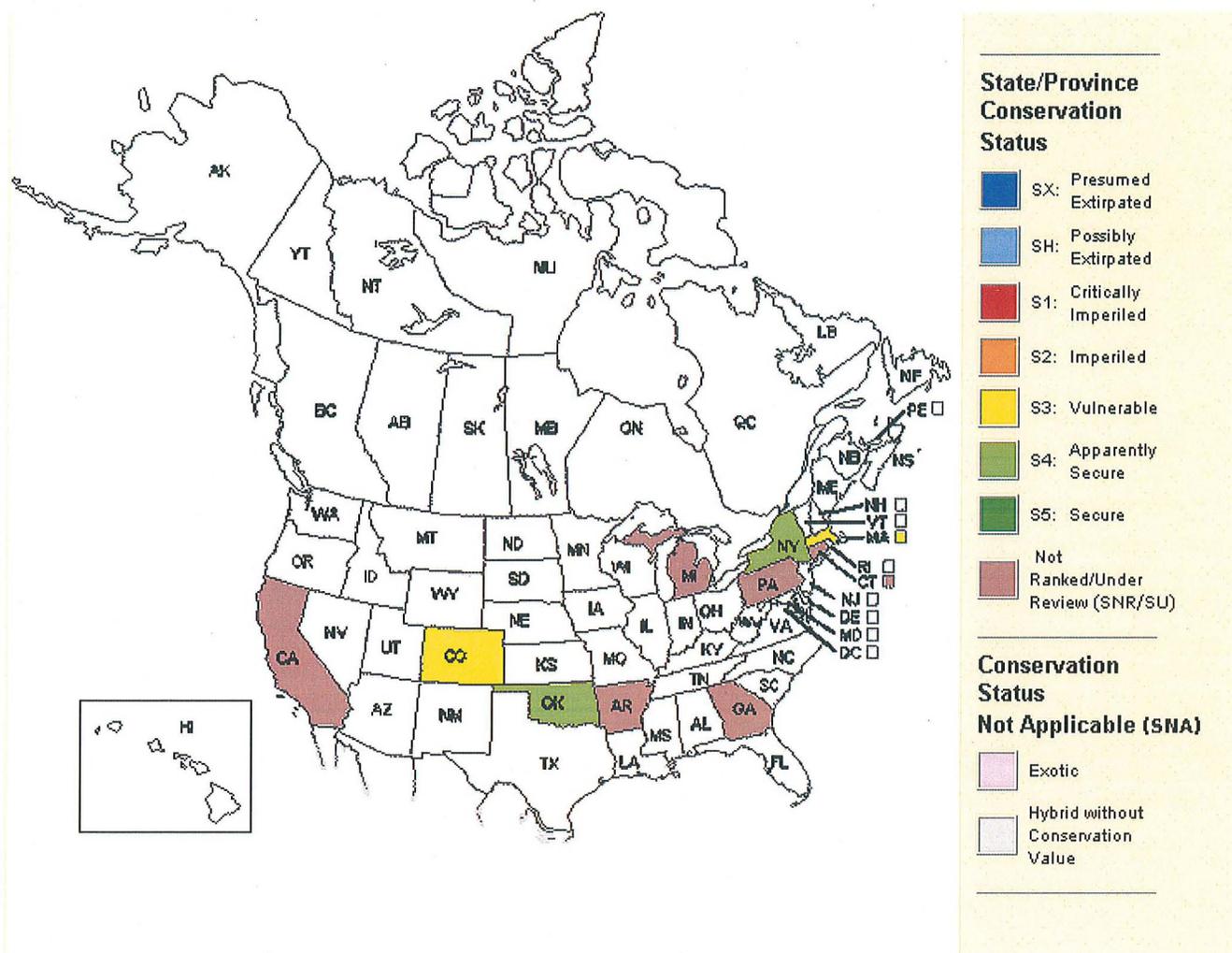


Figure 1: NatureServe 2013 North American distribution and conservation status of *F. walkeri*

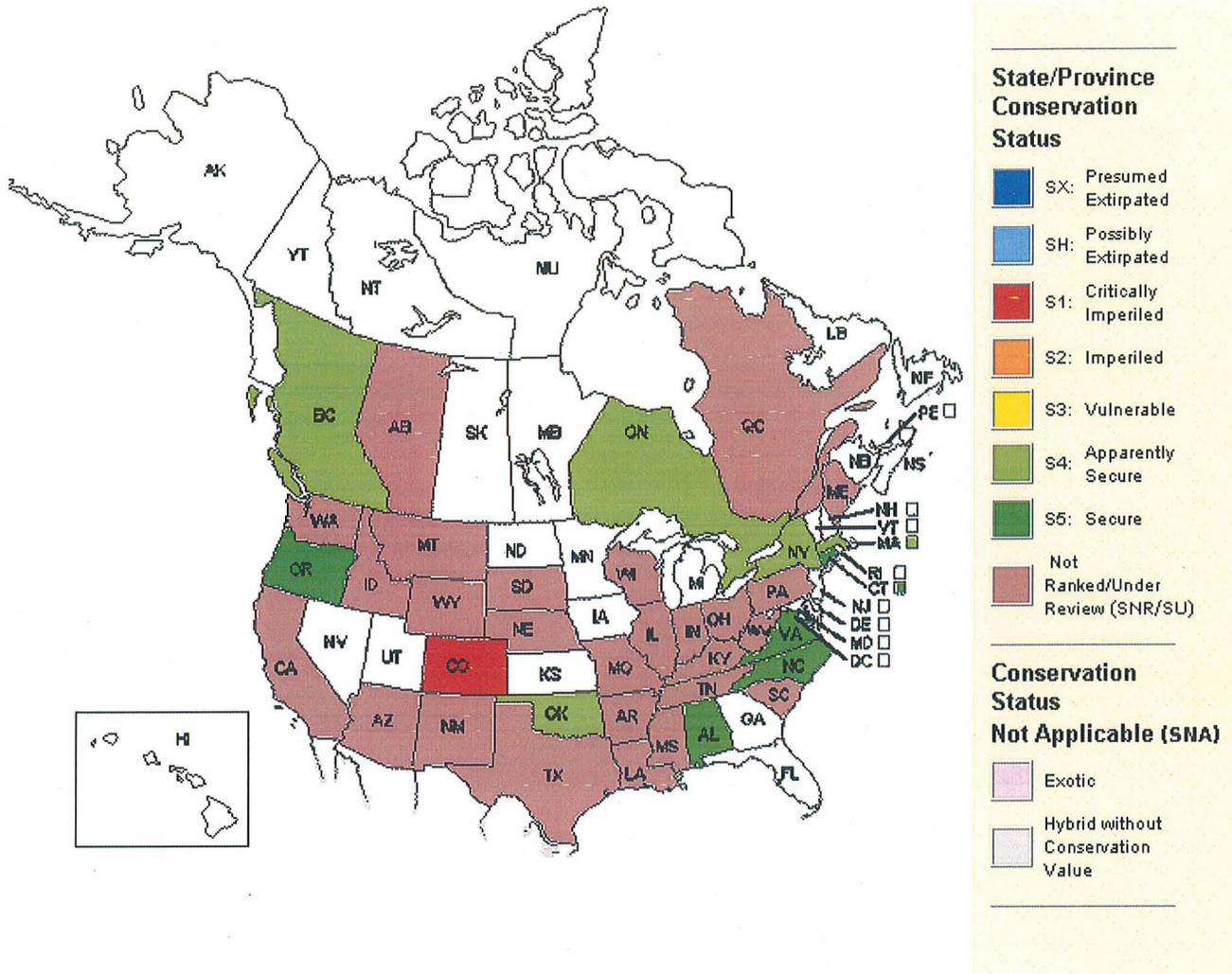


Figure 2: NatureServe 2013 North American distribution and conservation status of *F. fragilis*.

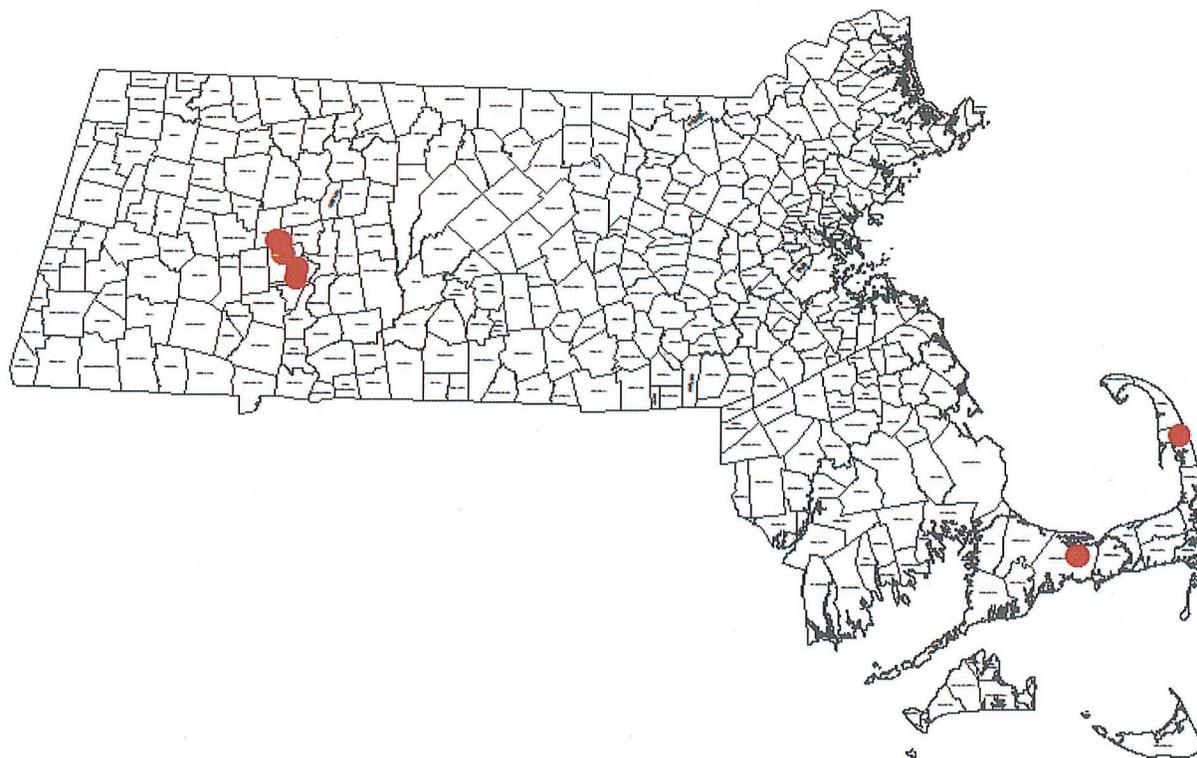


Figure 3: Distribution of *F. walkeri* in Massachusetts.

(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?

Ferrissia fragilis complex (i.e. *F. walkeri*, *F. sharpi*, *F. mcneilli*, *F. fragilis*) is distributed throughout North America from Quebec, Ontario, Alberta and British Columbia – south to all southern border United States. Massachusetts is surrounded by other states within the species range (Figure 2, NatureServe, 2013).

(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?

Documented populations appear stable in the state. Estimates of population size and reproductive rates have not been performed in Massachusetts, though *Ferrissia fragilis* is known to be self-fertilizing (Dillon & Herman, 2009). No long-term trend has been identified.

(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.

No decreasing trend is evident. Listed species is being reassigned taxonomically to more common parent species without MESA protection.

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

F. fragilis is a habitat generalist and can be found in low gradient small to medium sized rivers, and shallow benthic lacustrine habitats. It is often associated with organic debris and macrophytes in lentic environments (Jokinen, 1978).

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

Species proposed for taxonomic re-classification and delisting from MESA. No distribution goals are identified or needed.

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

Species proposed for taxonomic re-classification and delisting from MESA. No habitat protection goals are identified or needed.

(c) Management of protected habitat and/or occurrences

Species proposed for taxonomic re-classification and delisting from MESA. No management goals are identified or needed.

Literature cited, additional documentation, and comments.

Basch, P.F. 1963. Studies on the development and reproduction of the freshwater limpet snails of North America. Bulletin of the Museum of Comparative Zoology, Harvard University 129(8):401-461.

Bilger, M.D. Letter to Mr. H. Woolsey, Massachusetts Natural Heritage Program, March 21, 1985.

Dillon, R.T. & J.J. Herman. 2009. Genetics, shell morphology, and life history of the freshwater pulmonate limpets *Ferrissia rivularis* and *Ferrissia fragilis*. J. Freshwater Ecology 24:261-271.

Hovingh, P. 2004. Intermountain freshwater mollusks, USA (*Margaritifera*, *Anodonta*, *Gonidea*, *Valvata*, *Ferrissia*): geography, conservation, and fish management implications. Monographs of the W. N. American Naturalist 2:109-135.

Hovingh, P. 2010. Distribution of a unique limpet (Gastropoda: Ancyliidae) in the Colorado River drainage basin, Western North America. W. N. American Naturalist 70(4): 508-515.

Jokinen, 1978. Habitats of two freshwater limpets (*Ferrissia*: Ancyliidae) from New England. The Nautilus, 92(4):156-160.

Smith, D.G. 1974. The mollusca of the Mill River, M.S. Thesis. University of Massachusetts, Amherst, 148pp.

McLain, D., 2003. Status of 4 State-listed Snails in Western Massachusetts in 2002. A report to the Massachusetts Natural Heritage & Endangered Species Program. 6pp.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available: <http://natureserve.org/explorer>. (Accessed: February 7, 2014).

Walther, A.C., J.B. Burch, & D. O' Foighill. 2010. Molecular phylogenetic revision of the freshwater limpet genus *Ferrissia* (Planorbidae: Ancyliinae) in North America Yields Two Species: *Ferrissia* (*Ferrissia*) *rivularis* and *Ferrissia* (*Kincadidilla*) *fragilis*. *Malacologia*, 53(1): 25-45. 2010.