



Natural Heritage & Endangered Species Program

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Massachusetts Division of Fisheries & Wildlife

Alewife Floater *Anodonta implicata*

State Status: **None**
Federal Status: **None**

SPECIES DESCRIPTION: Alewife Floater (*Anodonta implicata* Say, 1829) is a medium- to large-bodied mussel that can exceed 6 inches in length. Shells are elongate and either ovate or elliptical in shape, and are laterally inflated. The beaks are prominently raised above the hinge line, which is straight or slightly curved. The shells are thin, but have a distinct thickening from the anterior to posterior end that is even more pronounced in larger individuals. The nacre is typically copper, pale pink or white. The periostracum is smooth and may vary in color from green to straw yellow, brown or black depending on age, location and environmental conditions. The periostracum of younger animals may contain rays. Shells lack pseudocardinal and hinge teeth (Smith 1991, Nedeau 2008).



Photo by Bill Byrne, MassWildlife

Reproduction occurs in August and glochidia are released the following spring (NatureServe 2014). Glochidia are triangular in shape and possess stout hooks that aid in attachment to gill and fin tissue of fish hosts (Nedeau 2008). Reported hosts include Alewife (*Alosa pseudoharengus*), Blueback Herring (*Alosa aestivalis*),

White Sucker (*Catostomus commersoni*), Threespine Stickleback (*Gasterosteus aculeatus*), Pumpkinseed (*Lepomis gibbosus*), White Perch (*Morone americana*), and Striped Bass (*Morone saxatilis*). However, rates of metamorphosis have not been reported for many of these species (Kneeland and Rhymer 2008, Nedeau 2008, NatureServe 2014).

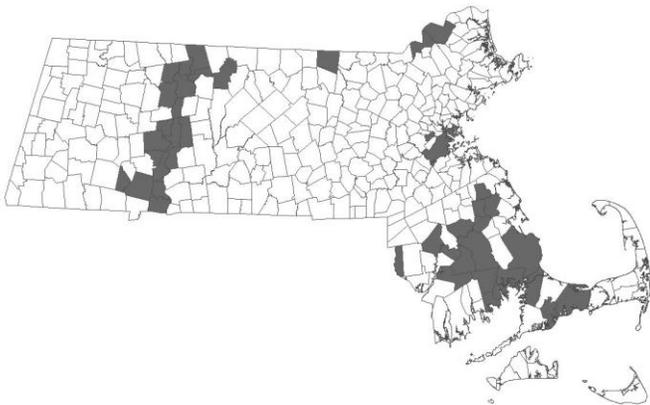


Figure 1: Massachusetts Towns with Recent or Historic Occurrences of Alewife Floater

DISTRIBUTION AND ABUNDANCE: Alewife Floater is an Atlantic-slope endemic species, ranging from the Pee Dee River in North Carolina to the coastal plains of Quebec and Nova Scotia. Though often locally abundant, Alewife Floater's range is largely restricted to waterbodies that have unimpounded access to the Atlantic coast, or those with suitable fish passage structures. In the United States, the state rank (S-rank) of Alewife Floater is listed as under review (SU: Connecticut, Massachusetts), unranked (SNR: Washington, DC, Maine, Rhode Island), vulnerable (S3: Pennsylvania, Maryland, Virginia, New Hampshire), and critically imperiled (S1: North Carolina, New York, Vermont). Three Canadian provinces list Alewife Floater, as secure (S5: New Brunswick), apparently

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

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secure (S4: Nova Scotia), and critically imperiled (S1: Quebec) (NatureServe 2014).

Historic and current records of Alewife Floater in the state are distributed from 43 towns and 13 major basins (Figure 1). Massachusetts NHESP databases have data on 76 occurrences extant occurrences (i.e., record is less than 25 years old and contains living specimens), and four records from shell only (Figure 2).

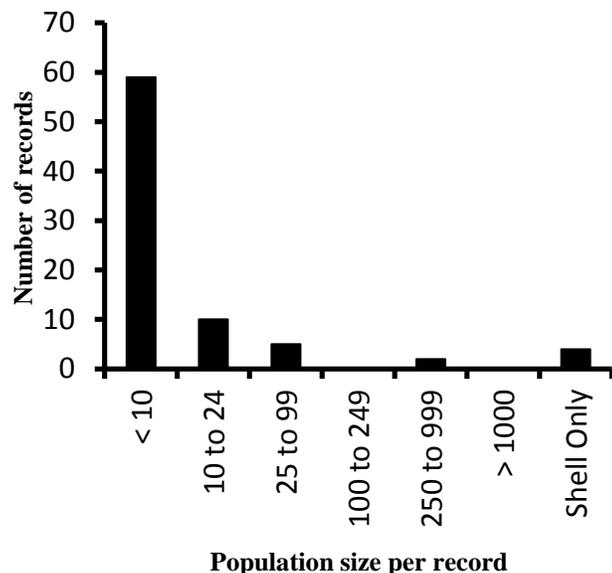


Figure 2: Distribution of Alewife Floater population sizes in Massachusetts

HABITAT DESCRIPTION: Alewife Floaters occupy various substrate types in rivers, streams and lakes, and abundances may be closely tied to host fish habitat. Alewife Floater have been reported from both slow-moving depositional riverine habitats among aquatic vegetation (Nedeau 2008), and those with relatively high velocities with substrates of gravel, cobble, boulder and bedrock (Nedeau 2012). In lacustrine environments, they have been found in the littoral zone exposed to considerable wave action, as well as sandy and muddy pools at depths greater than 30 feet (Nedeau 2008).

THREATS: Alewife Floater appears to be more tolerant of habitat alterations, nutrient pollution, and eutrophication than many other mussel species native to Massachusetts. Nevertheless, changes in food availability, and potential algal-toxicity in hyper-

eutrophic ponds from green algae or harmful cyanobacteria may present a threat to persistence at some sites. Current and anthropogenic sources of nitrogen and phosphorus may increase the evolution of a pond from green algae to cyano blooms, and therefore should be abated when possible. There is also some evidence that harmful algal blooms may become more common with increased surface water temperatures, longer growing seasons and increased heavy precipitation events that can flush nutrients from the surrounding landscape. Nutrient and algal reduction through pesticides may be an effective measure to reduce risk of loss from eutrophication. However, acute and chronic toxicities of such pesticides (and herbicides used for nuisance plant control) are currently untested on freshwater mussels, and should be considered in lake management activities.

Likely the highest risk to Alewife Floater is the loss of hosts. Though many host species have been reported, there are limited data on metamorphosis rates and determination of the primary hosts used in Massachusetts. River herring, Blueback Herring (*Alosa aestivalis*) and Alewife (*Alosa pseudoharengus*), are thought to be the primary hosts used in New England. Both fish species are commercially important, and have been undergoing reductions in population growth throughout their range. Continued loss of river herring stocks could affect Alewife Floater population persistence if other suitable hosts are not recognized. Alternatively, restoration of habitat and passage for river herring and other anadromous host species could result in the expansion of Alewife Floater to recolonize historic distributions (Smith 1985, Raithel and Hartenstine 2006).

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Prepared by P.D. Hazelton, 2015

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