Natural Heritage & Endangered Species Program

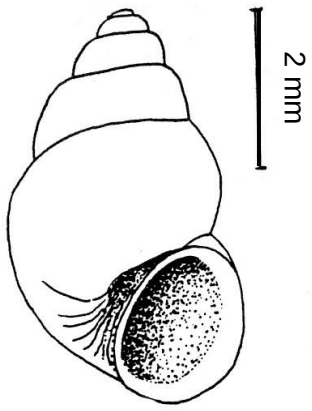
www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Boreal Marstonia
Marstonia lustrica

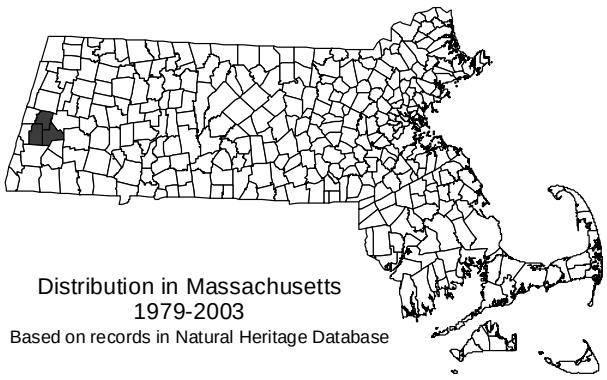
State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: The Boreal Marstonia is a small snail that has a translucent shell with a light greenish or brownish color. The spiral shell is conical and thin, approximately 3 to 5 mm high, and has 4.5 to 6 whorls (Hershler 1994). As with all snails of the subclass Prosobranchia, the Boreal Marstonia has a hardened circular structure, known as an operculum, which acts as a trap door at the shell opening. The operculum has a single obvious spiral that fans out to the perimeter. Identification of this species can be difficult because it requires knowledge of specific anatomical features of snails.



Smith, D.G. *Keys to the freshwater macroinvertebrates of southern New England*. Published by author. Sunderland, MA. 2000.

HABITAT: The Boreal Marstonia lives in rivers and lakes and can be found on rocks and on submerged aquatic vegetation, such as *Vallisneria*, *Potamogeton*, and *Chara* spp. (Jokinen 1992). In Massachusetts, the Boreal Marstonia has been found on vegetation in a eutrophic, hardwater lake (rich in calcium and magnesium) that has an extensive littoral zone. It is not unusual to find this snail in water depths up to 4 meters, but in this lake it was most abundant in the shallow (0 to 2 meters) vegetated zone of *Myriophyllum spicatum* and *Chara* spp. (Ludlam et al 1973). McLain (2003) conducted recent surveys at the historical site and found the Boreal Marstonia in shallow, marshy habitats with sand and mud substrates. McLain also found this species near shore in 1 to 2 m of water where the substrate consisted of cobble, sand, gravel, and some silt. The snail was frequently encountered between the shoreline and dense beds of submerged aquatic vegetation (*M. spicatum* and *Potamogeton* spp.). Historically, the only type of vegetation that this snail had been associated with in Massachusetts was *Chara* spp. (D.G. Smith, personal communication 2003).



LIFE HISTORY/BEHAVIOR: Little is known about the life history of Boreal Marstonia. It has been found in association with the Mud Amnicola (*Amnicola limosa*) which is a very common and abundant snail in the same Hydrobiidae family. Snails in this family have separate sexes. The female deposits her eggs on other individuals of the same species or on the bottom substrate, in which case the egg is enclosed in a protective capsule (Smith 2000).

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

Massachusetts Division of Fisheries & Wildlife

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THREATS: Boreal Marstonia populations in Massachusetts are limited to only one lake and are threatened by activities such as lakeshore development, aquatic plant mowing, herbicide treatment, and water level drawdowns. The resulting decrease in water clarity can prevent the growth of rooted aquatic vegetation in deeper waters, which may be essential for the survival of the species.

RANGE: The Boreal Marstonia is found at the eastern edge of its range in western Massachusetts. This species also occurs in New York, Pennsylvania, and southern Ontario west to states in the Great Lakes region and south to northern parts of the Mississippi River drainage.

POPULATION STATUS IN MASSACHUSETTS: Boreal Marstonia is one of the rarest snails in its subclass Prosobranchia. In Massachusetts, the population is limited to one site and is potentially threatened by various human activities. It is listed under the Massachusetts Endangered Species Act as Endangered. All listed species are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. In addition, listed animals are specifically protected from activities that disrupt nesting, breeding, feeding, or migration.

SIMILAR SPECIES: Boreal Marstonia is similar to the New England Siltsnail (*Floridobia winkleyi*) in appearance except that the New England Siltsnail is more broadly conical in shape. Identification guides sufficiently illustrate the differences among these species (Smith 2000).

REFERENCES:

Hershler, R. 1994. A review of the North American freshwater snail genus Pyrgulopsis (Hydrobiidae). Smithsonian Contributions to Zoology. Number 554: 75-77.

Jokinen, E.H. 1992. The Freshwater Snails (Mollusca: Gastropoda) of New York State. New York State Museum Bulletin 482.

Ludlam, S.D., K.S. Hutchinson, and G.E. Henderson. 1973. The limnology of Stockbridge Bowl, Stockbridge, Massachusetts. University of Massachusetts Water Resources Research Center, Completion Report FY-73-4. 59 pp.

McLain, D. 2003. Status of 4 state-listed snails in Western Massachusetts in 2002. Report to the Massachusetts Natural Heritage and Endangered Species Program.

Smith, D.G. 2000. Keys to the freshwater macroinvertebrates of southern New England. Published by author. Sunderland, MA. 243 pp.