



Natural Heritage & Endangered Species Program

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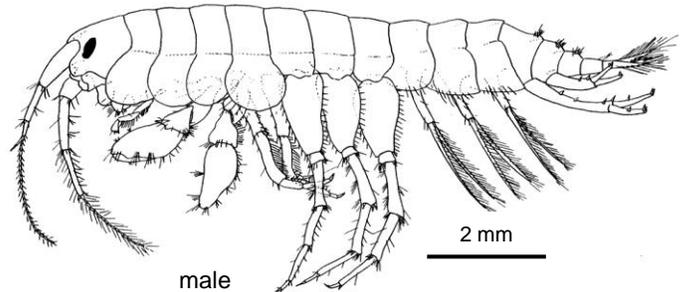
Massachusetts Division of Fisheries & Wildlife

Northern Spring Amphipod *Gammarus pseudolimnaeus*

State Status: **Special Concern**

Federal Status: **None**

DESCRIPTION: The Northern Spring Amphipod is a laterally compressed, many segmented, freshwater crustacean that looks like a small, flat shrimp. It is uniformly dark and mature specimens can reach lengths of 11 to 18 mm (Bousfield 1958, Bell 1971, Hynes and Harper 1972). Its head has two pairs of antennae and a pair of eyes, and is fused with the first of seven thoracic segments. Each thoracic segment, as well as the six abdominal segments, has a pair of legs and/or gills that aid in respiration and locomotion. Identification of amphipods is difficult because knowledge of specific amphipod anatomy is required.



Smith, D.G. 1984. *Selected freshwater invertebrates proposed for special concern status in Massachusetts, Part II*. Mass. Dept. of Env. Qual. Engineering, Div. of Wat. Pollut. Control. Westborough, MA.

SIMILAR SPECIES: Amphipods in the genus *Gammarus* are similar to this species. *Gammarus fasciatus* is most similar in that it is uniformly colored, although it is smaller and has conspicuous dark bands. Identification guides sufficiently illustrate the differences among these species (Smith 2000).

RANGE: The range of the Northern Spring Amphipod extends throughout the previously glaciated regions of New York and the Great Lakes region. Three localities in southwestern Massachusetts and an isolated locality in the central Hudson River system in New York represent the currently known southeastern range limit of the species along the Atlantic seaboard. The Massachusetts populations appear to be the only populations in New England and are possibly glacial relict populations (D.G. Smith, personal communication 2003).



HABITAT: In Massachusetts, the Northern Spring Amphipod has only been found in vegetated, calcium-rich springs and spring-fed streams that flow through the swampy lowlands of the western drainages of the Housatonic River basin (Smith 1997). However, throughout its range it inhabits a variety of aquatic habitats with an affinity toward springs and spring-fed streams. This species can be found in cool, hard waters that are high in carbonate from the associated bedrock,

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

Massachusetts Division of Fisheries & Wildlife

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and is occasionally found in outlet streams (D.G. Smith, personal communication 2003).

LIFE HISTORY/BEHAVIOR: Few studies have investigated the life history of the Northern Spring Amphipod, and those available have been done on populations outside Massachusetts. These studies found that the life cycle of this species ranges from 9 to 16 months (Bousfield 1958, Hynes and Harper 1972, Waters 1981, Miller 1982). Reproduction begins in late winter and early spring. Eggs are brooded for three to four weeks with young appearing in late March or early April. Reproductive activity continues through the summer, ceasing by mid fall. There is no reproductive activity or growth in winter.

In general, amphipods aggregate in large numbers and remain hidden in organic debris or among beds of aquatic vegetation. All appendages are used to aid locomotion, and some specifically aid in swimming by providing a thrusting force, while others flex outward to bend the body, allowing for a sideswimming movement. It is for this reason that amphipods are given the name “sideswimmers” or scuds (Smith 2001). Amphipods react negatively to light, and so tend to be more active at night.

THREATS: The Northern Spring Amphipod lives in clear, unpolluted waters. Land development or water-related projects that might result in groundwater contamination are a potential threat to this species.

POPULATION STATUS IN MASSACHUSETTS:

The status of the Northern Spring Amphipod in Massachusetts remains unclear. It is only found in a restricted area characterized by carbonate-rich springs. It is listed under the Massachusetts Endangered Species Act as a Species of Special Concern. 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.

REFERENCES:

- Bell, R.T. 1971. Handbook of the Malacostraca of Vermont and neighboring regions. Zoology Department University of Vermont. Burlington, VT. 65 pp.
- Bousfield, E. 1958. Fresh-water amphipod crustaceans of glaciated North America. *Canadian Field Naturalist* 72: 55-113.
- Hynes, H.B.N., and F. Harper. 1972. The life histories of *Gammarus lacustris* and *Gammarus pseudolimnaeus* in southern Ontario. Crustaceana, Suppl 3. Studies on Peracarida: 329-341.
- Miller, S.A. 1982. The life history of *Gammarus pseudolimnaeus* Bousfield in a central Wisconsin stream (Amphipoda: Gammaridae). *Crustaceana* 43: 89-99.
- Smith, D.G. 1997. An annotated checklist of Malacostracans (Crustacea) inhabiting southern New England fresh waters. *Journal of Freshwater Ecology* 12 (2): 217-223.
- Smith, D.G. 2000. Keys to the Freshwater Macroinvertebrates of southern New England. Published by author. Sunderland, MA. 243 pp.
- Smith, D.G. 2001. *Pennak's Freshwater Invertebrates of the United States: Porifera to Crustacea*. Wiley and Son's Inc., NY. 638 pp.
- Waters, T.F. 1981. Seasonal patterns in production and drift of *Gammarus pseudolimnaeus* in Valley Creek, Minnesota. *Ecology* 62 (6): 1458-1466.

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