

BB-68

2023

## Spiny Water Flea

The spiny water flea (*Bythotrephes longimanus*) is a microscopic animal, also known as zooplankton, that lives in the water column of freshwater lakes and ponds. It is native to Europe and Asia. While our surface waters have several species of native water fleas (*Daphnia* spp.), spiny water flea is larger, and it has a long spiny silica tail that extends down from the main body of the animal. In addition to its larger size, the spiny water flea has a large black eye spot which is generally visible with the naked eye.

The spiny water flea lives in the water column and feeds on other zooplankton. Each spiny water flea can produce up to 10 new individuals in the matter of two weeks, so the population can grow quickly.

### Where is it located?

Spiny water flea was confirmed in Lake Winnepesaukee and Lake Winnisquam in fall 2023. It was first introduced into the Great Lakes in the 1980s, most likely from ballast water from cargo ships, and it has since spread to more than 100 inland lakes in North America. Nearby, it has been in Lake George in New York and Lake Champlain in Vermont since 2012, and in other sites in New York before that. This is the first confirmation of it being in New Hampshire.

### Habitat

Scientific literature shows that spiny water flea is limited by water temperature and salinity, like those found in waterbodies in New Hampshire. Spiny water flea has been found in a range of waterbodies, but it seems to prefer the open water areas of large, low-nutrient lakes.

### Impacts to Humans

Spiny water flea is not harmful to humans. It is safe to swim and recreate on waterbodies that have spiny water fleas. Spiny water fleas may be most noticeable to people who are fishing, as their long spiny tail can get caught on fishing lines. In high enough densities, masses of the animals can accumulate as a gelatinous clump on fishing lines, which can foul the gear and interfere with fishing.

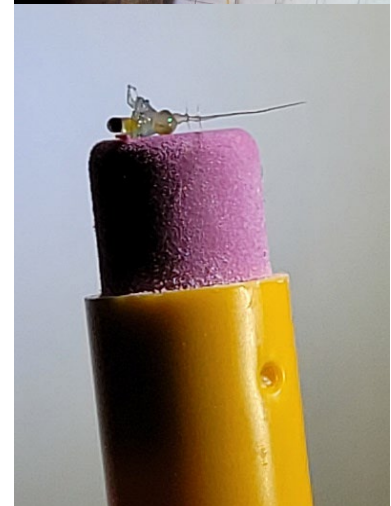


Figure 1. Images of spiny water flea.

## How does spiny water flea impact a waterbody?

Data from other states suggest that impacts from spiny water flea can be aesthetic, recreational, economic and ecological. Below is a list of potential impacts as documented in other surface waters with spiny water flea:

- Fouling of fishing gear/impacts to fishing.
- Alterations to the lake food web due to changes in the plankton community (algae and microscopic animals) upon which the spiny water flea feed.
- Impacts to fisheries because of food web alteration, and physical injuries to the gut tract of fishes from the silica spines on the spiny water flea.
- Possible shifts in harmful algal bloom patterns in waterbodies with spiny water flea, because of the potential reduction in the native zooplankton community which consume algae.



Figure 2. Spiny water flea on a fishing line. Photo credit: Jeff Gunderson, Minnesota Sea Grant

### Monitoring

NHDES has been routinely monitoring for spiny water flea in Lake Winnepesaukee since 2016, as a means of early detection in the state. Lake Winnepesaukee is a high use waterbody, with many transient boaters, and seemed the likely first place to detect this species in New Hampshire.

NHDES lake and volunteer monitoring programs collect plankton samples from lakes throughout the state. Analysis of these samples includes screening for invasive plankton; therefore, *NHDES is not recommending any increased or specialized sampling.*

To protect against the introduction of the spiny water flea into the State's surface waters beyond its current known locations, NHDES encourages everyone to follow Clean, Drain and Dry methods when moving boats and equipment between waterbodies, which are also effective for all aquatic invasive species. These are:

- **Clean** off any plants, animals and algae found on boats, trailers, and other recreational gear, and dispose of it away from a waterbody. This includes anything attached to fishing line, tackle and nets and other equipment used in fishing activities. Pressure washing with hot water is recommended. For fishing and other gear, inspect and remove any organisms you find and wash with soapy and/or hot water. Dispose of unwanted bait and associated water in the trash or on land away from water, rather than dumping it in the waterbody.
- **Drain** your boat, bait buckets, bilges, live wells and other water-holding equipment away from the waterbody, leaving all drains in the open position during transport.
- **Dry** anything that comes into contact with the water, for at least five days.

For questions about spiny water flea please contact the New Hampshire Department of Environmental Services at [\(603\) 271-3503](tel:6032713503) for water quality-related concerns, or the Fish and Game Department at [\(603\) 271-3421](tel:6032713421) for fisheries related concerns.

**Additional suggested reading:**

[Lake George Association website](#)

[USDA National Invasive Species Information Center](#)

[Invasive Species Centre, Canada](#)

References:

Lehman, J. T., & Cáceres, C. E. (1993). Food-web responses to species invasion by a predatory invertebrate: Bythotrephes in Lake Michigan. *Limnology and Oceanography*, 38(4), 879-891.

Strecker, A. L., & Arnott, S. E. (2008). Invasive predator, Bythotrephes, has varied effects on ecosystem function in freshwater lakes. *Ecosystems*, 11, 490-503.

Yan, N. D., Leung, B., Lewis, M. A., & Peacor, S. D. (2011). The spread, establishment and impacts of the spiny water flea, *Bythotrephes longimanus*, in temperate North America: a synopsis of the special issue. *Biological Invasions*, 13, 2423-2432.