INVASIVE INVERTEBRATES

Spiny & Fishhook Waterfleas

Bythotrephes longimanus & Cercopagis pengoi

Sea Grant PENNSYLVANIA

Photo courtesy of Minnesota Sea Grant.

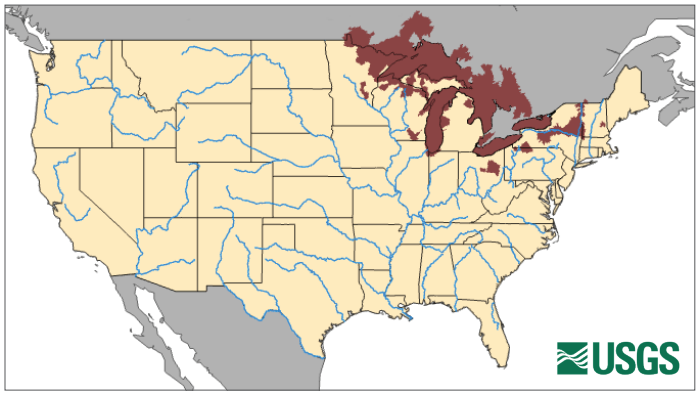
The Spiny Waterflea and the Fishhook Waterflea are tiny freshwater crustaceans that threaten native fish populations by consuming a main food source, plankton. They are also a nuisance to anglers as they collect in cotton-like masses on fishing lines and downrigger cables.

Species Description

Clumps of Waterfleas have a gelatinous texture and appearance, speckled with tiny black eye spots. Magnification is needed to see their transparent bodies, which range in size from 6-16 mm for the Spiny Waterflea and about 10 mm for the Fishhook Waterflea. The Spiny Waterflea has a long, straight tail with several spikes or barbs, making up 70 percent of its total body length. Its head is ball-shaped with prominent eyes that are distinctly separated from the body. The tail of the Fishhook Waterflea is angled at 90 degrees away from the body and has a unique loop or “hook” at the tip, taking up 80 percent of the total body length. The Fishhook Waterflea has a single, large, compound eye, and its egg pouch is elongated and pointed.

Native & Introduced Ranges

Both species of Waterflea are native to Europe and Asia. The Spiny Waterflea is found in Europe and northern Asia, and the Fishhook Waterflea is found in the Ponto-Caspian basin in southwest Asia. They were most likely brought to the Great Lakes in the ballast water of transoceanic ships and were first discovered in Lake Huron in 1984. Since their introduction, Waterfleas have rapidly spread throughout the Great Lakes, and to some inland lakes. In Pennsylvania, both species of waterflea are found in Lake Erie.



Biology & Spread

During the summer, when surface waters are warm, Waterfleas produce new generations through parthenogenesis (no fertilization), resulting in clones of the mother. Males are not needed for parthenogenesis, thus they are rarely found when food is plentiful or when environmental conditions favor rapid population growth. However, when food becomes limited, or during the fall, when water temperatures cool, males are produced via parthenogenesis to mate with females, leading to the formation of resting eggs. The resting eggs are encased in a thick protective coating, allowing them to sink to the bottom of a waterbody where they can survive the cold winter. Fishing, boating, and other recreational equipment can help transport Waterfleas and their eggs to new areas, including inland waters.

Habitat

Spiny and Fishhook Waterfleas can be found in freshwater to brackish lakes. While they prefer open, deep, clear lakes ranging in temperature from 46-86°F (8-30°C), they can also be found in wetlands, estuaries, and marinas.

Impacts

Threat to Biodiversity

Waterfleas disrupt food webs by feeding on small planktonic animals called zooplankton. Their high reproductive rate and ability to build large populations quickly, enables them to deplete the zooplankton population, which small juvenile fish and other aquatic organisms need for food.

Economic Costs

Waterfleas can be a nuisance to anglers and have negative impacts on the recreational fishing industry. They collect on fishing lines and accumulate in high numbers on the tips of fishing rods, making it difficult to reel in the lines. The commercial fishing industry can also be impacted as waterfleas collect on commercial fishing nets and downrigger cables.

Photo courtesy of Brendan Boyd, iNaturalist (EOL).

Photo courtesy of EPA Great Lakes Image Archive, Steve Geving, Minnesota Department of Natural Resources.

Prevention & Control

The reproductive traits of Waterfleas make them very difficult to control and almost impossible to eradicate. Their freeze-and dry-resistant resting eggs can remain dormant for years, surviving harsh conditions and evading management efforts until conditions become favorable for hatching.

Preventing the introduction and spread of the Fishhook and Spiny Watefleas is the best way to protect natural habitats from harm.

- Know how to identify and report the Fishhook and Spiny Waterflea.
- Always check for and remove plants, mud, and debris from boats, trailers, clothing, and equipment before entering a water body and before leaving a water body.
- Drain all water from bait buckets, bilges, and live wells before transporting to new areas.
- Clean all gear and equipment with hot water (140°F or 40°C) or salt water, OR let boats and equipment dry thoroughly for at least five days before entering a new water body.

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References:

Keller, D. 2005. Spiny and Fishhook Water Fleas. Indiana Department of Natural Resources.

Lui, K., Butler, M., Allen, M., de Silva, J., and Brownson, B. 2008. Field Guide to Aquatic Invasive Species: Identification, collection, and reporting of aquatic invasive species in Ontario waters.

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