

# Bloody Red Shrimp (*Hemimysis anomala*)

## New Invader in the Great Lakes Bloody Red Shrimp (*Hemimysis anomala*)

The “bloody-red shrimp” *Hemimysis anomala*, was first reported in the Great Lakes by NOAA from samples collected in Muskegon, Michigan in November of 2006 in waters connected to Lake Michigan. It is a small shrimp-like crustacean (order Mysidacea) native to the low-salinity margins of the Black Sea, the Azov Sea, and the eastern Caspian Sea and most likely was brought into the Great Lakes via ballast tanks. However, mysids are also used by aquarists as a high-nutrition food for aquarium fish, although we have not found any records that *Hemimysis* is used this way.

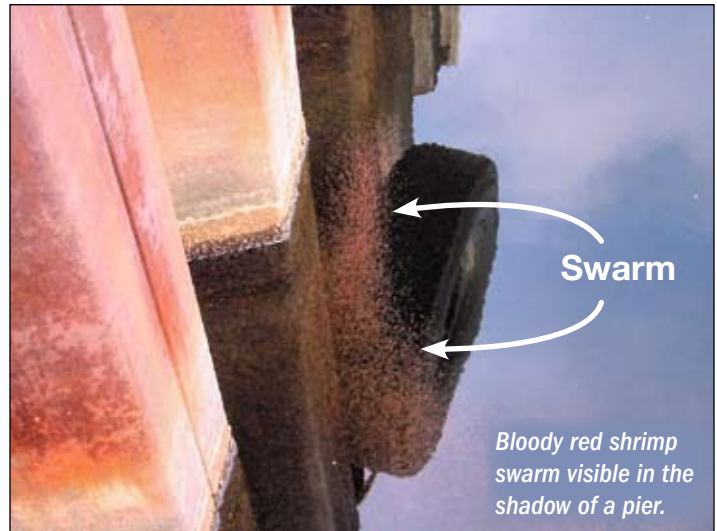
Mysids are often called opossum shrimp because females typically carry their eggs in a pouch. They are free-swimming when not resting on the bottom or other surfaces. They have eight pair of legs rather than the five typically found on larger shrimps and other decapods.

The main Muskegon population was found in a swarm with over 300 individuals per m<sup>3</sup>. It has also been found in samples taken in Lake Ontario off Oswego, New York. In both locations, adults, juveniles, and pregnant females were found, indicating that this species

is reproducing in the Great Lakes. Finding the bloody red shrimp in two separate locations indicates that the species may be widespread, and experts expect that it will be seen in additional locations as scientists begin actively looking for it. The impact of this species on the Great Lakes is yet unknown, but based on its history of invasion across Europe, significant impacts are possible.

**NOAA Research: Help Needed to Document the Spread of this Species!**

The NOAA National Center for Research on Aquatic Invasive Species (NCRAIS), in Ann Arbor, is coordinating a national rapid research response to define



the range, distribution, and impact of the bloody red shrimp in the Great Lakes. It prefers habitats associated with hard structures or rocky bottoms and actively avoids direct sunlight. It has a unique swarming behavior unlikely to be confused with anything else in the Great Lakes. During daylight hours, especially in late summer, it may be observed forming reddish swarms in the shadows of piers, boats, or breakwalls. Swarms disperse at night, but in clear calm waters, the bloody red shrimp may be detected at night by shining a bright light on the water—the shrimp will rapidly swim away from the light. Help is needed to document and prevent the spread of this species! We are asking the public’s help in documenting other locations around the Great Lakes basin where this species has spread. Look for swarms in shadowed areas along the shoreline, especially near breakwalls, docks, channel edges, and near boats. If you see what you believe to be a swarm, please report your observations to the *Hemimysis* Survey and Monitoring Network at: [www.glerl.noaa.gov/hemimysis](http://www.glerl.noaa.gov/hemimysis).

## Stop Aquatic Hitchhikers!

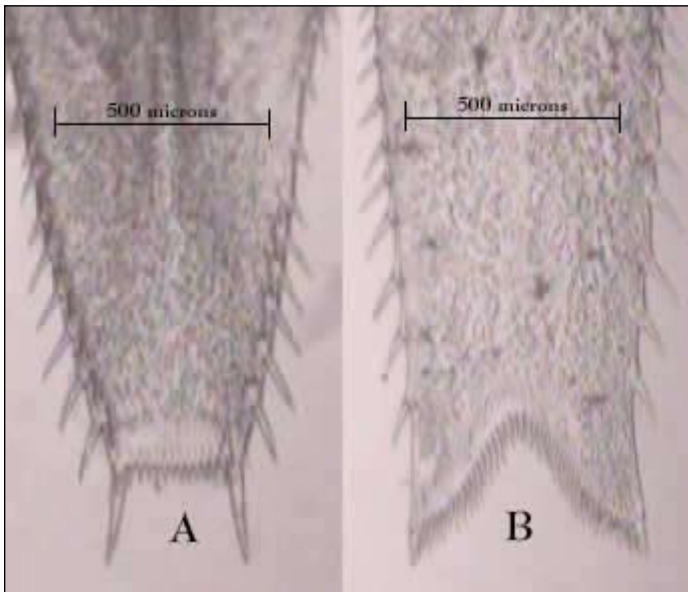
The bloody red shrimp is considered a ‘high risk’ for invasion of inland lakes in the Great Lakes region. Its history of invading canals, streams, lakes, and reservoirs throughout Europe also indicate the potential for significant impacts to our inland lake systems.

**Do not transport live bloody red shrimp!** To help prevent the spread of this animal, follow the precautions outlined by the

**Stop Aquatic Hitchhikers Campaign**  
([www.protectyourwaters.net](http://www.protectyourwaters.net))

## Identification

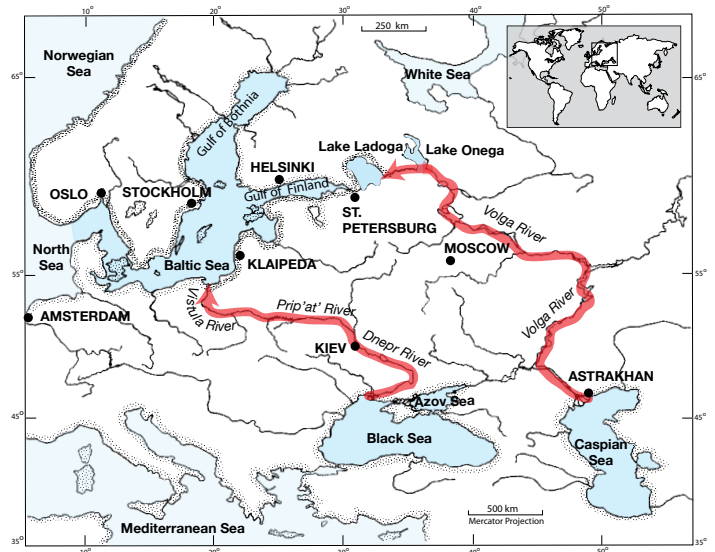
The bloody red shrimp is a mysid, a relative of the native Great Lakes opossum shrimp (*Mysis diluviana*, formerly *Mysis relicta*). Both species have stalked eyes and are generally less than 1/2 inch in length—the invader tends to be slightly smaller, though size ranges overlap. The bloody red shrimp is more red in color, and the native species is more clear, though both can be quite variable. Preserved animals tend to lose coloration. The best way to tell the two species apart is by the shape of the tail (requiring a hand lens or low magnification microscope)—the native *Mysis* has a deeply forked tail, whereas the new invader has a flat end to its tail with two prominent terminal spines. Identifications should be confirmed by an expert as several other mysid species are also invading across Europe with significant potential to become established in North America.



Telson or 'tail' of the invasive bloody red shrimp (A) and native opossum shrimp (B).

## Habitat

The bloody red shrimp is most frequently found over hard bottom surfaces, including rocks and shells. It is unknown at this point whether zebra and quagga mussel beds in the Great Lakes will be suitable habitat for the shrimp. The species avoids soft bottoms. In its native range, across Europe and in the Baltic Sea, the bloody red shrimp is found in water depths to 50 meters (166 feet). It seems to prefer slow moving waters, but has been found along rocky, wave-exposed shorelines. The shrimp is also reported to spend daylight hours hiding in rocky crevasses and boulder cavities, but has also been observed swarming in shadowed areas near the surface by day.



## Native Range

The bloody red shrimp is native to the Ponto-Caspian region of eastern Europe—the same area that zebra mussels came from. Like zebra mussels, it spread across Europe, reaching the Baltic Sea in 1992 and the United Kingdom in 2004.

## Life History

Bloody red shrimp have an individual lifespan of about 9 months, grow to adults in just 45 days, and can produce up to four generations per year. This lifecycle is significantly more rapid than the native opossum shrimp. Females have been documented to carry up to 66 eggs in a clutch. Broods carried by females in the Muskegon population ranged from 2 to 7.

## Potential Impacts

The bloody red shrimp is an omnivore, eating a variety of smaller animals and algae. Their diet includes waterfleas and algae. They may compete with young fish, while providing food for larger fish.

## References

Wittman, K.J. 2007. Continued massive invasion of Mysidace in the Rhine and Danube river systems, with first records of the order Mysidacea (Crustacea: Malacostraca: Peracarida) for Switzerland. *Revue Suisse de Zoologie* 114(1):1-22.

## For more information:

[www.glerl.noaa.gov/hemimysis](http://www.glerl.noaa.gov/hemimysis)



February 2007