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IOWA CHAPTER

Our mussels need clean water

Freshwater mussels were once prevalent in Iowa's rivers, streams, and lakes. Many species of mussels have faced significant declines in the last century. Of the 54 species known to have existed in Iowa, 12 are extinct in Iowa, nine are endangered and at risk of extinction, while six are threatened of becoming extinct.¹

Mussels are filter feeders – they feed on algae in the water, which also cleans the water. At the same time, mussels require clean, oxygenated water to live and thrive. Reduced numbers of mussels in a river, stream, or lake serves as a red flag that water quality has been reduced.

Mussels require fish, who serve as gracious hosts, to carry their young mussel larvae. Therefore, healthy fish populations need to be present; some mussel species even require a specific fish species. If those larvae attach to any other fish, their larvae are not able to survive.



Shells of mussels found in Iowa's rivers

The reproductive cycle of mussels begins when males release sperm into the water. The female mussel draws the sperm into her body as she filters the water for food. The sperm fertilizes eggs that reside in the female. The eggs develop into larvae and are carried in a part of the female's body that acts like a lure, which attracts fish. When a fish bites into the mussel's lure, the larvae, which are called glochidia, are released. The glochidia clamp onto the fish's gills or fins where they transform into miniature adult mussels. Eventually the miniature mussel adult drops off the fish. From there, the young mussel burrows into the river bottom or the bottom of a lake.

During the first 50 years of the last century, mussels were commercially harvested, with their shells manufactured into buttons or used to create pearls. During that time, many of the species and the rivers were overharvested. Other reasons mussels are facing struggles include

- Damming rivers. The dams limit the fish in traveling up and down the river. Without those fish, the mussels cannot reproduce. Also mussels require shallow flowing water as opposed to the deep pools created by dams.

¹ Iowa Department of Natural Resources, "Iowa Mussel Blitz", August 29, 2012, www.outdoorhub.com/news/2012/08/29/iowa-mussel-blitz

- Channelized rivers and streams which changes the speed which the river flow. Channelizing also changes the nature of the river bottom, which reduces habitat for the mussels.
- Loss of fish species in rivers.
- Exposure to high levels of pollutants in the river, including fertilizers, manure, pesticides, and sewage, will kill mussels.
- River siltation which destroys habitat on the floor of the river. The siltation comes from soil that has been carried in run off from farm fields or blown off those fields. Silt also smothers the mussels. Mussel prefer sand and gravel bars and cannot exist on silted river bottoms.
- Severe fluctuations in water levels, due to heavy rain events, flooding, and droughts, affect the habitat of the mussels. Mussels prefer more stable water levels.
- Introduction of the non-native zebra mussel which competes with the native mussels for food and habitat. Zebra mussels also attach to the shells of the native mussels, which suffocates and starves the native mussels. Zebra mussels also interfere with host fish gaining access to the native mussel lures.

Iowa's freshwater mussels can be protected by

- Reducing the amounts of pesticides used on lawns and gardens
- Maintaining septic systems so that raw sewage does not enter water bodies
- Planting stream buffers
- Implementing farming techniques to prevent run-off and erosion, such as planting cover crops, installing grass waterways, applying only the amount of fertilizers and pesticides as needed
- Reducing the spread of zebra mussels, by draining water from boats and equipment before leaving the access points to a waterbody. Washing and drying boats, trailers, motors, and other equipment before entering another waterbody will help prevent the spread of zebra mussels.

By improving the water quality in Iowa's rivers, streams, and lakes, Iowa's freshwater mussels will have better habitat and will have a better chance at survival.

Sources

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