

Tar Spiny Mussel

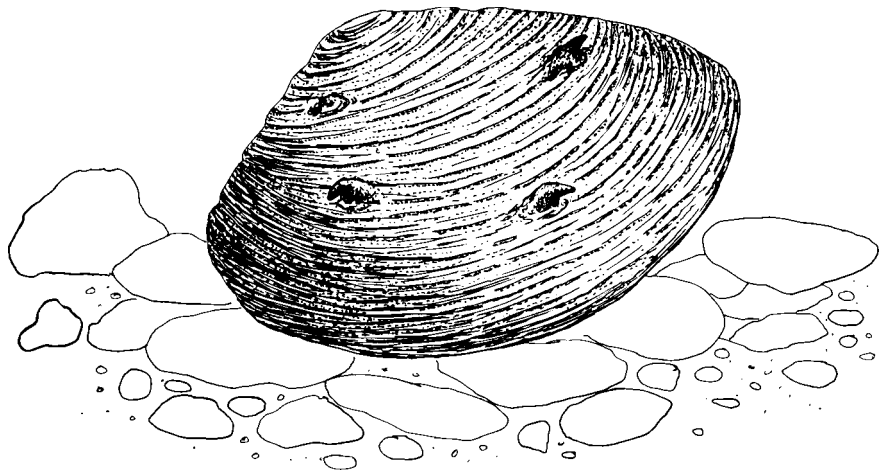
Elliptio steinstansana

Many people are unaware of the incredible variety and numbers of animals that live at the bottom of North Carolina's lakes, rivers and streams. For example, consider just one family of these bottom dwellers—the freshwater mussels. Freshwater mussels are distantly related to marine clams and mussels and share many characteristics with those animals, but they are also quite distinct in some ways from their saltwater counterparts.

There are about 300 species of freshwater mussels in North America, and approximately 60 of these species occur in North Carolina. One of these, the Tar spiny mussel, is one of only three species of mussels in the world that have spines that grow from its shell.

History and Status

The Tar spiny mussel once probably existed throughout the Tar River system from the Piedmont to the coast in North Carolina — and possibly in other adjacent watersheds — but its exact historical range is unknown. Indeed, until fairly recently, it had not been studied by trained aquatic biologists. Archaeological discoveries indicate that Native Americans used to eat freshwater mussels, including possibly the Tar spiny mussel. However, pollution and habitat alteration have vastly changed much of the original habitat of the various mussels, and many have drastically declined in numbers. Because the Tar spiny mussel's range was never very widespread, and



because human impacts have degraded its habitat, this mussel species exists today in only a few Piedmont streams in North Carolina, and nowhere else. It is considered one of the rarest freshwater mussels in the world. As such, it was declared an endangered species by the federal government in 1985, and it is under the protection of the Endangered Species Act.

Description

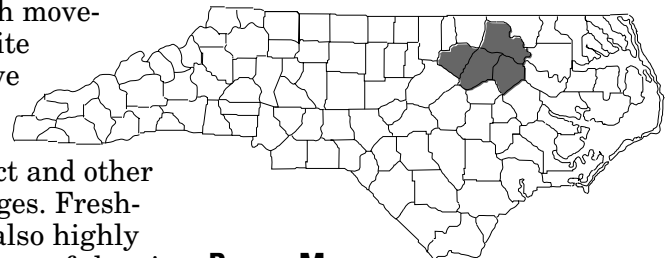
The Tar spiny mussel is a small brown bivalve mollusk about 2 inches long with a hinged shell. The two halves of its shell usually have varying numbers of spines from 1 to 4 millimeters long. The Tar spiny mussel, like other mussels, uses gills to filter food and oxygen out of water. Tubes called siphons that extend out of its shell are used to suck in the water and discharge it along with any wastes. The mussel has a muscular foot that it can stick out of the shell and use to move itself about, although movement is slow and quite limited. Mussels have no eyes, but are sensitive to light, heat, physical contact and other environmental changes. Freshwater mussels are also highly sensitive to many types of chemicals that may be in the water,

and are thus among the first to be affected by pollution.

Habitat and Habits

The Tar spiny mussel lives in well-oxygenated, swift stretches of streams and is usually found buried in coarse sand or gravel with only its siphons protruding into the water.

Freshwater mussels have an unusual method of reproduction. The males release sperm into the water and females filter the sperm out of the water as they filter food and oxygen. The eggs are thus fertilized, and they initially develop in the gills of the females. One female mussel may produce hundreds of thousands of fertilized eggs or larvae. These larvae, called glochidia, are then discharged into the water where they must attach themselves to certain host species of fish in order to survive. The glochidia further develop while attached to the host fish and, after some time, the young mussels drop off,



Range Map:

Rare ■

dig into the bottom of the stream and begin life as filter feeders. The mussels add layers to their shells yearly, and thus grow larger as they get older. Some mussel species have life spans of up to 60 years, but Tar spiny mussels are thought to live up to about 20 years in favorable, unpolluted habitats. Like other mussels, however, Tar spiny mussels face many dangers and are often eaten. Muskrats, particularly, favor mussels, but raccoons, otters and other animals also like to eat mussels.

Range and Distribution

The Tar spiny mussel is currently known to exist only in one short portion of the Tar River, and in tributary streams in Nash and Halifax counties. The population that remains in the Tar River is very small, and there have only been a few individuals found in recent years. Indeed, only two tributary streams still support a healthy population. These populations consist of various age classes of Tar spiny mussels, indicating that the populations are successfully reproducing at the present time. However, their existence is precarious since a single incidence of pollution in the headwaters of either stream could flow downstream and conceivably wipe out the entire population.

People Interactions

Humans are primarily responsible for the decreased abundance and range of the Tar spiny mussel. Development associated with expanding industry, cities and communities has played a part in reducing or damaging the habitat for freshwater mussels, including the Tar spiny mussel. Such activities as building dams, farming

and discharging wastewater or pollution into rivers have been particularly harmful. Because freshwater mussels are so sensitive to such a wide variety of human activities, they comprise one of the most endangered groups of animals on earth.

Some species of freshwater mussels have historically been considered delicacies to humans; however, wild mussels should never be eaten since they tend to build up dangerous levels of many toxic substances that they filter from the water. The collecting of any freshwater mussel is prohibited in North Carolina, and the penalty is even higher for collecting endangered species such as the Tar spiny mussel.

References

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Credits

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TAR SPINY MUSSEL

Classification

Class: Bivalvia

Order: Unionoida

Average Size

Length: 22 to 44 mm

Width: 8 to 12 mm

Spines: 0 to 12 spines from 0 to 4 mm in length

Food

Microscopic plants and animals suspended in the water are filtered through gills.

Breeding

Males release sperm into water. Females filter them out and fertilize eggs in gills. Thousands of larvae are then released, and some attach to fish host. While attached, they develop into juvenile mussels, then drop off and bury themselves in the bottom.

Young

Larval stage called glochidea. They develop into juvenile spiny mussels in a few weeks.

Life Expectancy

Average lifespan is estimated at less than 15 years.