



Sheepnose (*Plethobasus cyphus*)

Common Name
Sheepnose

Scientific Name
Plethobasus cyphus



These sheepnose mussels were collected during a survey conducted to determine presence and numbers of mussels in an Illinois river.

Photo by USFWS; Kristen Lundh

Status

The sheepnose is a freshwater mussel that the U.S. Fish and Wildlife Service has proposed to list as an endangered species.

The sheepnose mussel was designated by the U.S. Fish and Wildlife Service as a candidate species for listing as threatened or endangered under the Endangered Species Act. The Service is now proposing to list it as endangered. If listed, the sheepnose will receive the full protection of the Endangered Species Act, which provides protection against certain practices and would require planning for recovery.

Range

The sheepnose is found across the Midwest and Southeast. However, it has been eliminated from two-thirds of the total number of streams from which it was historically known (24 streams are currently occupied compared with 77 streams historically), and it has also been eliminated from hundreds of miles of rivers in the Illinois and

Cumberland River basins, and from several reaches of the Mississippi and Tennessee Rivers. The sheepnose is currently found in Alabama, Illinois, Indiana, Iowa, Kentucky, Minnesota, Mississippi, Missouri, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin.

Most populations of sheepnose are small and geographically isolated. These small populations, which live in short sections of rivers, are susceptible to extirpation from single catastrophic events, such as toxic spills. Also, isolation makes natural repopulation impossible without human assistance.

Appearance

The sheepnose is a medium-sized mussel that grows to about 5 inches in length. The shell is thick and solid, with the overall shape slightly longer than wide and somewhat inflated. The sheepnose shell is smooth, shiny, and light yellow to a dull yellowish brown and without lines or rays but with dark concentric ridges. The ridges result from periods when growth stops or slows.

Reproduction

The life cycle of the sheepnose, like most freshwater mussels, is complex and includes a stage that is parasitic on fish. Initially, males release sperm into the water current. As female mussels siphon water for food and respiration, they also siphon sperm that fertilizes their eggs. Within special gill chambers, fertilized eggs develop into microscopic larvae called glochidia. Female mussels expel the mature glochidia, which then must attach to gills or fins of a specific host fish species to complete development into a juvenile mussel.

Sheepnose expel glochidia in conglomerates, a jellylike mass of mucus and glochidia, that mimic fish food in appearance. These conglomerates are narrow, red or pink, and discharged in unbroken form so that they look like small worms. When a fish eats a conglomerate, glochidia are exposed to and can attach to the fish's gills.

If glochidia successfully attach to a host fish, they mature into juvenile mussels within a few weeks and



then drop off. The sauger (*Stizostedion canadense*) is the sheepsnose mussel's only known host, but others may be available. After dropping off, glochidia continue to grow and mature if they land in suitable areas. Using fish as hosts allows the sheepsnose to move upstream and populate habitats it could otherwise not reach.

As a group, mussels are long-lived, with individuals living up to several decades, and possibly up to 100, and even 200 years. Sheepsnose, especially thick-shelled individuals from large rivers, are thought to live longer than other mussel species, however, we have no age information.

Habitat

Sheepsnose mussels live in larger rivers and streams where they are usually found in shallow areas with moderate to swift currents flowing over coarse sand and gravel. Sheepsnose have also been found in mud, cobble, and boulders. In larger rivers they may be found in deep runs.

Feeding Habits

Adults are suspension-feeders, siphoning in water and feeding on the suspended algae, bacteria, detritus, microscopic animals, and dissolved organic material. Adult mussels spend their entire lives partially or completely buried within the substrate.

Dams

Dams affect both upstream and downstream mussel populations by disrupting natural river flow patterns, scouring river bottoms, changing water temperatures, and eliminating habitat. Large rivers throughout most of the sheepsnose mussel's range have been impounded; leaving short, isolated patches of habitat below dams.

The sheepsnose also depends on host fish to move upstream. Because dams block fish passage, mussels are also prevented from moving upstream, which isolates upstream from downstream populations, leading to small, unstable populations, which are more likely to die out.

Sedimentation

Poor land use practices, dredging, intensive timber harvests, road construction, and other activities may accelerate erosion and increase sedimentation. Sedimentation that results in blanketing a river bottom may suffocate mussels because they cannot move fast enough to avoid the impact. Also, increased sedimentation reduces the ability of mussels to remove food and oxygen from the water, which can lead to decreased growth, reproduction, and survival.

Pollution

Adult mussels are easily harmed by toxins and degraded water quality from pollution because they are sedentary (they tend to stay in one place). Pollution may come from specific, identifiable sources such as accidental spills, factory discharges, sewage treatment plants, and solid waste disposal sites. Pollution also comes from diffuse sources like runoff from fields, feedlots, mines, construction sites, private wastewater discharges, and roads. Contaminants may directly kill mussels, but they may also indirectly harm sheepsnose by reducing water quality, which reduces survival and reproduction, and lowers the numbers of host fish.

Channelization

Dredging and channelization have profoundly changed rivers nationwide. Channelization physically alters rivers by accelerating erosion, reducing depths, decreasing habitat diversity, destabilizing stream bottoms, and removing riparian vegetation.

Nonnative Species

The invasion of the nonnative zebra mussel into the United States poses a serious threat. Zebra mussels proliferate to such an extent that they deplete food resources and they attach to native mussel shells in such large numbers that the native mussel cannot open its shell to eat or breathe.

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