U.S. Fish & Wildlife Service

Genoa National Fish Hatchery and Native Mussel Restoration

- In North America, it is estimated that 43% of the 300 species of freshwater mussels are in danger of extinction.
- In 2005, the Genoa National Fish Hatchery raised over 2.6 million juvenile freshwater mussels.

Genoa NFH produced feshwater mussels of multiple species in 2005 for recovery and restoration work throughout the Upper Midwest.

These juvenile winged mapleleaf mussels were recovered from culture cages on the St. Croix River near Minnesota's Twin Cities.

This Federally endangered female Higgins' eye pearlymussel is being held at Genoa NFH in support of freshwater mussel recovery efforts on the Mississippi River. This female is displaying its lure to attract a host fish. When a fish investigates the lure, larvae are released which attach to the gills of the fish.

-USFWS photos

Nearly 300 species of mussels inhabit freshwater rivers, streams, and lakes in North America. This is the richest diversity of mussels found in the world. Native mussels are the most endangered freshwater fauna in the United States. Further, the current extinction rate (percent loss per decade) for freshwater mussels is 1.2% and is estimated to be 6.4% in the future. These rates fall within the range of estimates for tropical rainforest communities (1-8% loss per decade). Historically, the Midwest boasted the most diverse collection of mussels in the world; but today, the States of Minnesota, Wisconsin, Iowa, Missouri, Illinois, Indiana, and Ohio list more than half of their 78 known species as endangered, threatened, or requiring special concern.

The Genoa National Fish Hatchery (NFH) has been raising fish for fisheries management programs since its founding in 1932, and currently produces up to 14 species of warm, cool, and coldwater fish annually. The life cycle of most freshwater mussels require a host animal, usually in the form of a fish, to complete their larval development.

This process involves the physical attachment of the mussel larvae or "glochidia" to a host fishes gills, skin, or fins for a period of time ranging from days to months depending on the mussel species and other variables. Genoa NFH, with its varied fish production capabilities, has efficiently incorporated the production of a wide range of mussel species into existing restoration programs. The advantages of large scale fish production and the ability to inoculate thousands of fish annually with multiple species of mussels makes Genoa NFH a valuable tool in mussel restoration and recovery in the Midwest.

-USFWS

This is a two year old Higgins' eye pearlymussel showing an identification tag and marker.

Since the inception of mussel propagation at Genoa NFH in 2000, the hatchery has released over 5.6 million juvenile mussels of 9 species, including 4.2 million of the Federally endangered Higgins-eye and Winged Mapleleaf mussels. The initial success of these stockings has been evident through the recovery of over 32,000 sub-adult and adult Higgins-eye mussels of multiple year classes from cage culture production sites in the Mississippi River and the discovery of free living individuals at host fish release sites in Wisconsin and Iowa.

In addition to the millions of Federally endangered mussels produced at Genoa NFH, the project is involved in the restoration efforts of seven other species of freshwater mussels, many of which are listed as threatened on several state status lists. Since 2001, Genoa NFH has released over 1.4 million juvenile and subadult mussels of these seven species into four watersheds in the Upper Midwest.

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These two species of native mussels (black sandshell on the left and plain pocketbook on the right) are destined for restoration efforts in the Upper Midwest. Notice the numbered tags on some of the individuals.

Genoa NFH continues to work closely with the states of Iowa and Minnesota on species restoration plans to bolster native mussel populations that have been impacted by environmental degradation and habitat losses.

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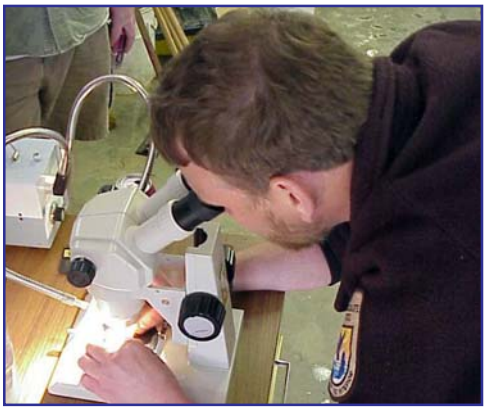
Thousands of yearling freshwater mussels of three species are being prepared for a restoration project in Iowa.

Genoa NFH supports a wide range of science and technological initiatives concerning freshwater mussels by supplying early life stage and older mussels on an ongoing basis to research facilities across the nation. The hatchery works closely with other Federal agencies, universities, and research centers on projects such as host fish research, environmental contaminant issues, and genetic sampling. The hatchery is also a leader in adapting basic research techniques and technologies into a production scale model for restoration and recovery of these unique and interesting species.



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Biologist Roger Gordon carefully checks the health of mussel larvae (glochidia).

Species of Native Mussels Produced by Genoa NFH including Methods Used and # Juveniles Stocked
FR = Release of Free Ranging Host.

Species	Methods	Juveniles Stocked	Species	Methods	Juveniles Stocked
Black sandshell	Cage/FR	276,768	Pocketbook	Cage/FR	77,680
Fatmucket	Cage	16,188	Sheepnose	Aquaria	0
Mucket	Cage	54,072	Hickorynut	Cage	1,384
Yellow sandshell	Cage	32,175	Higgins' eye	Cage/FR	1.900,000
Purple wartyback	Cage	6,699	Winged mapleleaf	Cage	191,425

Species and Numbers of Mussels Produced in 2005 at the Genoa National Fish Hatchery

For information on mussel culture operations at the Genoa NFH contact: Doug Aloisi at 608/689-2605 or visit the website at: http://www.fws.gov/midwest/genoa/
For general information on freshwater mussels, visit the Fish and Wildlife Service native mussel website at: http://www.fws.gov/midwest/mussel/index.html