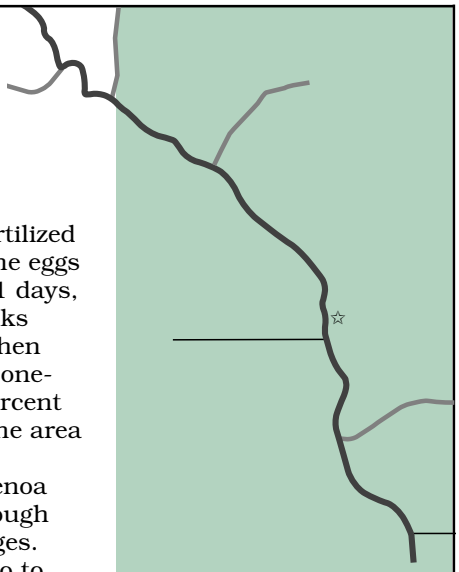
Genoa National Fish Hatchery and Freshwater Mussels



Mississippi River Note 2

There are lots of places in the Upper Mississippi where fish can breed and grow, but the Genoa National Fish Hatchery south of Genoa, Wisconsin, offers a controlled environment for fish research and production. This 200-plus-acre federal facility raises everything from bluegills in ponds to Great Lake sturgeons in indoor tanks. In 1995, Genoa became the first federal hatchery where researchers attempted moving native mussels out of zebra mussel-infested waters.

The hatchery, which is bisected by Highway 35, is a series of ponds laid out along the final mile of the Bad Axe River before it empties into the Mississippi. It was established in 1932, on former farmland, and began producing fingerling bass and bluegills in 1934. The hatchery provides eggs and fry (young fish) free to state and federal stocking projects.

Collecting Eggs

Genoa is one of only three federal facilities that collects eggs from wild walleye and sauger. Early each spring, hatchery workers gather eggs and milt (sperm) from fish that spend their entire lives in the river. After netting a fish, workers stun it with a small electric shock. Walleye eggs and milt can be stripped (gently squeezed out) on the boat, then someone from the Wisconsin Department of Natural Resources (DNR) weighs and records data before adult fish are returned to the river.

Northern pike, sometimes called "slimers," are harder to handle because of a thick layer of slime on their skin, a mouth full of sharp teeth and an aggressive nature. Northerns are held at the hatchery for an average of three to four days, until the time is right to gather their eggs and milt. They are then returned to the river.

Specially designed jars hold the fertilized eggs while flowing wellwater keeps the eggs loose and free of algae. After 11 to 21 days, the fry hatch and wash into long tanks where they absorb their yolk sacs. Then they're moved to ponds until they're one-and-a-half to six inches long. Ten percent of the hatched fish are returned to the area where the eggs were collected.

Most of the walleyes hatched at Genoa are used to stock tribal waters, although occasionally some go to wildlife refuges. Northern pike fry and eggs usually go to states for stocking areas disturbed by Army Corps of Engineers projects.

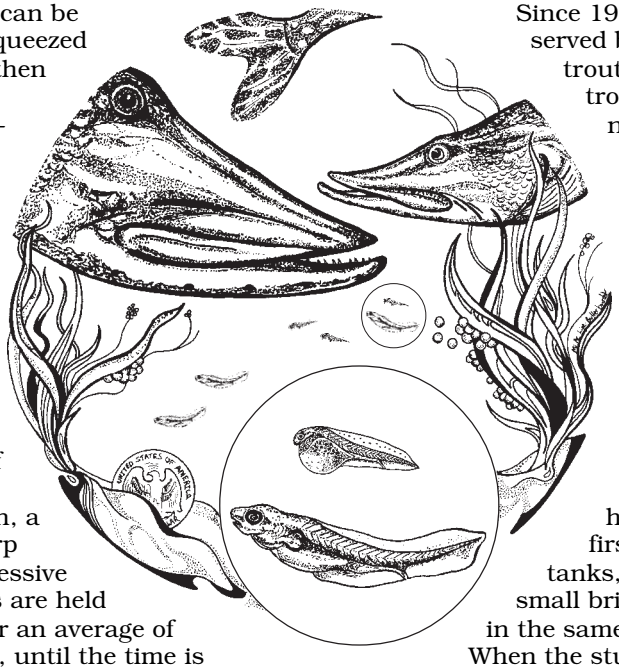
Protecting Threatened Fish

The Genoa hatchery has evolved from simply raising sport fish to protecting threatened fish and helping with environmental management projects. Managers at Horicon Refuge in central Wisconsin hope northern pikes from Genoa will stop a growing carp population.

Fisheries managers use the hatchery to maintain brood stocks of fish threatened by disease and pollution. Fish are held in isolation for about two years and inspected for disease three times, before the hatchery can ship their eggs and fry.

Since 1996, Genoa has preserved brood stocks of lake trout and coastal brook trout. These fish are native to the Great Lakes, where disease makes it impossible to safely gather uncontaminated eggs.

The hatchery has raised about 6,000 lake sturgeons each year since 1994. Sturgeons will not eat pelleted food like most other hatchery fish. When first hatched in indoor tanks, sturgeons eat small brine shrimp hatched in the same tanks. When the sturgeons get bigger they're fed zooplankton seined from the hatchery's ponds. Eventually, they eat



The illustration at left shows five stages of northern pike development: eggs clinging to the underside of vegetation; newly hatched fry retaining yolk sacs; older larvae that have nearly used up their yolk supply; an immature pike; and an adult.

Northern pike eggs are about 3.4 mm long, slightly more than one eighth the diameter of a quarter (diagrammed in the lower left corner). The remaining stages of pike are also shown to scale.

Illustration by Mi Ae Lipe-Butterbrodt.

adult brine shrimp from another facility.

Genoa is helping to reintroduce sturgeons to the Wolf River. Two dams built near Shawano, Wisconsin, in the early 1900s cut off the sturgeons from the headwaters, effectively eliminating them in the area that is now the Menominee Reservation.

Protecting Native Mussels

In 1995, the Genoa hatchery began research to help save the Upper Mississippi's native mussels from being destroyed by invasive zebra mussels.

Zebra mussels, native to Europe, probably arrived in the Great Lakes in the ballast water of trans-Atlantic ships. The zebras spread to the Mississippi through the human-created canals and rivers that connect the river with Lake Michigan.

Zebra mussels cripple native mussels by attaching to their shells, and compete for food and oxygen.

Researchers from the Upper Mississippi Resource Conservation Committee (UMRCC) collected several species of native mussels from an infested spot in the river, scrubbed them clean of visible zebras, then quarantined them for 35 days.

Mussels were placed in four kinds of structures, or treatments, and returned to the river (the control set) or put into a quarter-acre pond at the hatchery.

The first test treatment, called "shoe-bag" structures, are nylon mesh bags with an individual pocket for each mussel. They were placed upright about an inch above the bottom. The second and third treatments used metal trays filled with dredge material. The mussels were placed inside, and the trays were either buried or suspended a few feet above the bottom. The final treatment used a metal barrier, or corral, on the bottom to prevent the mussels from wandering away.

The experiment had four goals: (1) develop a method to move healthy native mussels without transporting zebra mussels; (2) compare growth and survival of mussels in artificial ponds and in the river; (3) determine whether some species survive and grow better after moving; and (4) decide which treatment gives the best survival and growth rates.

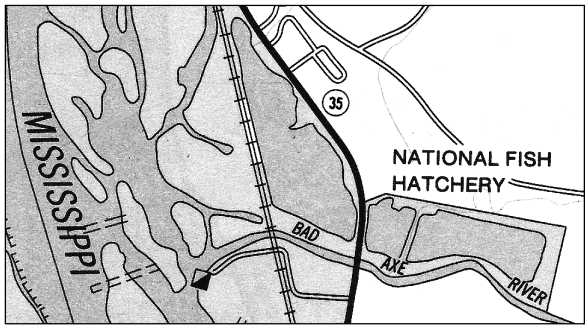
Results suggest that mussels such as the mapleleaf (*Quadrula quadrula*), pigtoe (*Fusconaia flava*) and threeridge (*Amblema plicata*) can be moved with some success. Others, such as the fragile papershell (*Leptodea fragilis*) and threehorned wartyback (*Obliquaria reflexa*), cannot. Of the four treatments, mussels in the suspended trays seemed to grow best.

Finally, the pond environment at the hatchery appears less productive than the river. Future research will study how best to feed mussels in artificial environments.

While the project did not create an ideal home for native mussels, it succeeded in several ways.

"We showed that it is possible to move natives without transplanting zebras," says Kurt Welke, fisheries biologist for the Wisconsin DNR. "And we developed a set of protocols — or handling procedures — that will make it possible for us to move mussels in the event that somebody decides we need to in order to save them."

Projects at other national hatcheries, which began after the Genoa project broke the ice, have pushed the research further, and have even hatched new mussels in artificial environments.



Things to Do & See

Tours

The Genoa National Fish Hatchery does not currently have a visitor's center, but can accommodate group tours arranged in advance. For information contact Todd Turner, hatchery manager, at (608) 689-2605.

River Aquarium

You can see some native fish and a display of native mussel shells at the Iowa State Aquarium located in Guttenberg, Iowa. The Aquarium is usually open for visitors from May to October. Call (319) 252-1156 to check the hours.

Fisheries Schools

According to Todd Turner, the University of Wisconsin-Stevens Point offers one of the finest schools for fisheries biology. Bemidji (Minn.) State University and the University of Arkansas-Pine Bluff also offer fisheries programs.

For Your Information

An excellent handout describing the life cycle of mussels is available from the James Ford Bell Museum of Natural History at the University of Minnesota. Write to the James Ford Bell Museum, 10 Church Street SE, Minneapolis, MN 55455.

While not specific to the Upper Mississippi, the Virginia Polytechnic Institute and State University offers a poster of America's Pearly Mussels. You can order a copy for $5.00, plus $2.50 shipping and handling from Extension Distribution Center, 112 Landsdowne Street, Blacksburg, VA 24061-0512. Checks should be made out to "Treasurer, Virginia Tech."

Todd Turner, manager of the Genoa Fish Hatchery, provided information about hatchery history and practices.

Kurt Welke, biologist for the Wisconsin DNR in Prairie du Chien, Wis., and Rhonda Kenyon, of the La Crosse, Wis., office of the DNR provided information about the mussel relocation project.

This and other River Notes are available on the Big River World Wide Web site (www.big-river.com) or from the Minnesota-Wisconsin Boundary Area Commission, 619 Second St., Hudson, WI 54016-1576; (612) 436-7131 or (715) 386-9444.

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