

# Roaming the Red River Valley

Researchers Conduct Studies to Safeguard Fish

Story and Photos by Mandy Thomas



Waking up at the break of dawn, taking a gravel road to the nearest tributary, putting on heat-trapping waders, and tromping through water with electrofishing backpacks is just one description of a typical day as a researcher.

While these events may seem unusual to the 9 to 5 professional, they are typical for researchers conducting field studies to learn more about rare fish species and their habitats in the Red River drainage in eastern North Dakota.

### Studying Rare Species

Starting in July 2006, South Dakota State University graduate students and employees became part of a North Dakota Game and Fish sponsored project, designed to gain greater knowledge about little-studied, nongame fish species in the Red River Basin. Dr. Charles R. Berry, unit leader of the U. S. Geological Survey's South Dakota Fish and Wildlife Research Unit, supervised the project. The Fish and Wildlife Research Unit also provides funding, vehicles, and research and administrative assistance. The study is part of the Game and Fish Department's wildlife conservation planning strategy, which seeks to gather information about the distribution, abundance and key habitats of rare fish.

"As part of the wildlife action plan, the North Dakota Game and Fish Department

has a responsibility to learn more about unknown fish," said Patrick T. Isakson, nongame biologist. "The Department pays SDSU graduates and employees to conduct this research and report their findings so that measures can be taken to conserve and protect the state's fish."

Once the project is complete, in May or June 2008, the data is compiled and used to gain greater knowledge about what kinds of fish are present in the region, where they are found, and how to protect them. Nearly 40 fish species (16,487 total individuals) were collected in 2006. Five rare fish species of concern were collected: Northern redbelly dace, pearl dace, hornyhead chub, stoneroller and trout-perch.

Researchers made unique finds during their studies. One was the central mudminnow found in a tributary of the Tongue River in the extreme northeastern portion of the state. "The only record we know of for this fish was in the Renwick Reservoir in the Tongue River watershed, in 1964," said Cari-Ann Hayer, SDSU research project leader. "It is typically a lake species and we believe that this fish was collected as a result of high water levels we experienced this year in June and July."

Largescale stonerollers found in the Forest River in northeastern North Dakota are also unusual for the region. "The interesting thing

about this find is that this species is not present in any other drainage in the Red River basin or Minnesota," said Hayer. "How they got here is unclear because the closest record of largescale stonerollers to the Forest River is in the Minnesota River and Yellow Medicine River in southwestern Minnesota."

### Working as a Researcher

Researchers' origins are widespread, ranging from South Dakota to Maryland. Through SDSU, however, a handful have one of the most fun, yet challenging, jobs around. Typically, three researchers work on the project, one is 30-year-old Hayer. The others, ranging in age from 22-25, are SDSU graduate students working toward degrees in wildlife and fisheries science.

Although basking outdoors and wading in water may sound like fun, research often takes a large time commitment, patience and tolerance of extreme weather conditions. "We usually work 12-15 hours a day, four to five days a week," said Hayer. "We like to get moving early, usually around 6 a.m., to beat the heat."

Despite long hours and scorching temperatures, fellow researchers don't seem to mind.

"I really like working on this project and enjoy the hours. I'm constantly learning about new species of fish and sampling techniques," said graduate student Jake Billings.

*As a team, researchers wade through the Wild Rice River stunning fish with backpack electroshockers and using small nets and large seines to collect fish to identify, measure and count.*



## Surveying the Red River Basin

In July 2007, researchers concentrated on the Wild Rice River, a tributary of the Red River in southeastern North Dakota near Wahpeton. Typically, researchers sample two to five different sites on the same river during the day for time purposes and efficiency.

Since 2006, more than 110 different sites within the Red River basin were sampled. Some tributaries include: Pembina, Tongue, Park, Forest, Turtle, Goose, Elm, Maple, Sheyenne, Wild Rice and Bois de Sioux rivers. Along each tributary, smaller feeder streams are often sampled as well.

Sites are assessed as to whether they are wadeable and what type of sampling gear is required, such as a backpack electroshocker, seine or trap. Furthermore, land is checked for posting. "Sometimes a site will look good, but it is posted by landowners. In this case, we may try to contact the landowner for permission to sample the site," Hayer said.

Researchers use a number of different techniques to obtain information about water quality, fish type, size and location. "We take water levels so that future comparisons can be made of water quality and condition from one year to the next," Hayer said. "We text oxygen levels, temperature, ph level and conductivity."

Most research is conducted in water less than four feet deep. "We mostly survey places that are chest-level or lower," Hayer said. This year researchers are encountering different conditions than in 2006. "Water conditions are opposite of last year," she said. "In 2006, it was very dry and a lot of small ponds were dried up. This year there is some flooding going on in the Red River Valley and we are being forced to wait for water levels to decrease before we can survey them."

## Tools of the Trade

Researchers use various pieces of equipment to catch fish. When waters are too deep to wade, wire traps called cloverleaves are set along the edges or banks where they are securely tied so they aren't washed away. Researchers check the traps daily by simply lifting them from the water. Regular minnow traps are also used.

At first glance, another piece of equipment resembles a high tech machine and wand used by courageous ghost zappers from the movie "Ghostbusters." For the movie critic, it's hard to see beyond the resemblance and believe the machine is a legitimate piece of research equipment.

The backpack electroshocker is a small machine worn on the back. It has a metal-detector-like rod that sends small electric currents into the water. Shocked fish float to the surface, where they are netted by researchers with a long seine, sorted and counted, then released unharmed back into the water.

"Fish don't stay stunned for very long," Hayer said. "This method helps us catch fish, record the results and get accurate measurements."



*Lucas Borgstrom takes a moment of conduct water quality tests.*

Probably the most important piece of equipment for a researcher is a good pair of waders. July's 100 degree temperatures made studies interesting, however, as waders trap heat. After putting on the dreaded waders, researcher Lucas Borgstrom joked, "Anyone want to place bets on how much weight we're going to lose today?"

## Binding Together

Teamwork is apparent as researchers work to complete their studies, like ants building a mound of dirt. "We don't have assigned duties. We all pitch in and perform a variety of tasks," Borgstrom said. "Duties commonly include retrieving fish from cages and nets, counting and identifying them, recording the results and releasing them."

Like the finest crop judge skillfully inspecting grain, researchers are practiced fish identification specialists. "In the case where we are not sure of the identification in the field, commonly among the central



*Scott Sindelar helps pull the seine tight as stunned fish float into the net.*

*Below: Cari-Ann Hayer uses a backpack electroshocker to stun fish in the Wild Rice River.*





*Jake Billings checks a trap along the bank of the Wild Rice River.*

quillback carpsucker and northern river carpsucker, we will preserve a few to identify in the lab," Hayer said. "Sometimes we need to cut open the fish or need a microscope to properly identify them."

Fish are also kept for educational purposes. "Voucher specimens are preserved at each site and taken to the lab so that people doing future research can look at them and verify them," Hayer said. "These fish are exhibited in an educational fish museum collection representing all the fish in the Red River basin."

Counting fish is often time consuming and sometimes painful. "I don't enjoy counting lots and lots of tiny bullheads," said Borgstrom and fellow researcher Scott Sindelar. Identity thieves like poisonous tadpole madtoms also pose a problem. "The worst part of the job is getting stung by little tadpole madtoms that look like bullheads. They hurt really bad," Billings said.

As a whole, however, Hayer and fellow researchers enjoy their job. "Working on this project is hectic, but I love it," she said. "I like being outdoors, working with fish, and being part of a conservation project," said Sindelar. "Eventually, I want to teach the public about conservation and land ethic."

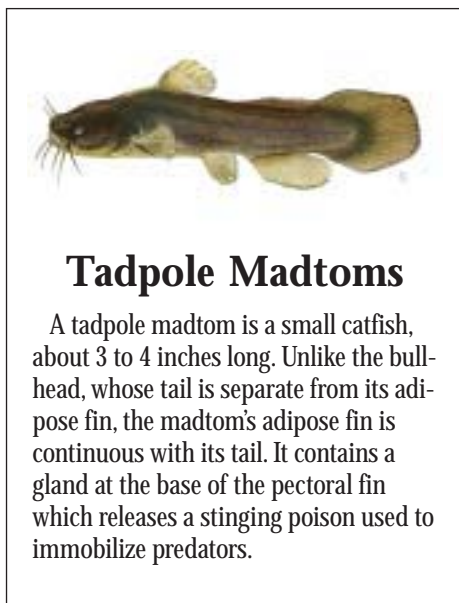
Perhaps the researcher who traveled the farthest was Cory Sterns, studying at Frostburg State University, Maryland. Sterns, whose job was complete in August, is tagging along with fish researchers to accumulate information for his data on river otters in North Dakota. "Since otters eat mostly fish, I want to learn more about fish to help with my studies," he said. On his first summer researching in North Dakota, he said, "I like what we're doing here."

Funding for this project is made possible by State Wildlife Grants, which promote the conservation of all species, but focus most funds on species with greatest conservation need. The study has two major goals.

"One, we want to find out if rare fish occur in the Red River drainage. Two, we want to learn about species habitats so that we can protect them," Isakson said. "Even though funding is needed for this project, it is much cheaper to conduct research and prevent species from being listed on the Endangered Species List than it is to try and fix a problem once it occurs."

This project will continue into May or June 2008. While researchers must delay their work during the winter, in 2008 they will continue to perspire in their waders, perfect their math skills counting bullheads, and rise early to avoid baking in the sun. It's with a smile and a love for the outdoors that motivated researchers continue to keep North Dakota's valuable resources protected and preserved.

*MANDY THOMAS was a Game and Fish Department conservation and communication division intern in summer 2007.*



### Tadpole Madtoms

A tadpole madtom is a small catfish, about 3 to 4 inches long. Unlike the bullhead, whose tail is separate from its adipose fin, the madtom's adipose fin is continuous with its tail. It contains a gland at the base of the pectoral fin which releases a stinging poison used to immobilize predators.

## Rare Red River Fish Species



### Central Stoneroller

Member of minnow family that grows to 8 inches. Body is arched in area just behind head. Breeding males have small bumps along top of head and back called tubercles.



### Horneyhead Chub

Member of minnow family that grows to 10 inches. Olive on top that becomes lighter down the body, with an iridescent stripe along the back. Belly is pale yellow. Bright red spot behind the eye on males, brassy on females.



### Northern Redbelly Dace

Member of the minnow family that grows to 3 inches. Olive to dark brown with yellow or silvery belly except on adult males during the summer when the lower side is red. The side has two dark bands with a light band between them.



### Trout-Perch

Member of the trout and perch family that grows to 6 inches. Silvery translucent color with dark spots in rows on upper half of the body.