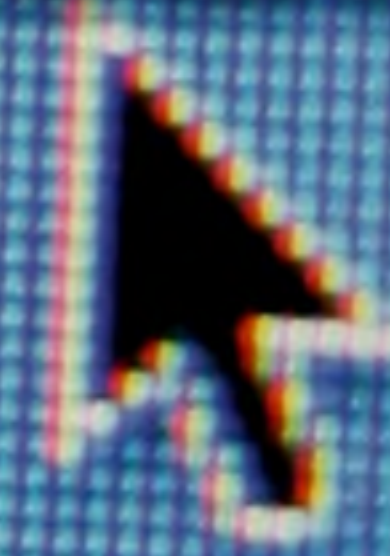




Follow That Fish!

FWP's three Adopt-a-Fish Programs use the Internet to put students into the underwater world of trout, sturgeon, blue suckers, and other Montana fish species. BY DAVE HAGENGRUBER



Beginning on the Continental Divide about halfway between Glacier National Park and Helena, the Sun River flows from the high and wild country of the Bob Marshall Wilderness east for more than 130 miles to its confluence with the Missouri River near Great Falls. In its upper reaches, the Sun winds between the jagged reefs of the Rocky Mountain Front, home to grizzly bears, bighorn sheep, mule deer, and elk. Here the river is cold, fast, and clear enough to hold westslope cutthroat, rainbow, and brook trout. The trout provide sport for anglers and food for ospreys, otters, and other predators. In recent years, some of the fish have also been providing information. These research fish trail long thin antennae as they glide silently through the water, sending data about their movements back to land. Tracking the trout are Montana Fish, Wildlife & Parks biologists,

as well as students taking part in one of the department's three Adopt-a-Fish Programs.

For the past several years, elementary school classrooms from nearby communities have traveled to the Sun River Canyon in the fall to watch FWP biologists capture rainbow and brook trout and surgically implant tiny radio transmitters into the fish. The students then "adopt" and name a particular trout and follow its movements on classroom computers. They watch the fish as it moves up and down the river through the low flows of winter and the high flows of spring runoff, trying to avoid predators and spawn successfully.

The program, along with two others conducted on the Blackfoot and Clark Fork rivers and the lower Missouri and Yellowstone rivers, provides local students an opportunity to learn about fish behavior, fish habitat, and the water flow needs of fish. Participating students also have the chance

to see firsthand how biologists conduct fish monitoring projects. Then they and other students and adults can follow the progress of the fish on the FWP website. Biologists regularly post GPS (Global Positioning System) coordinates of the fish and comment on the movement and fate of the closely monitored specimens. The program was created to show Montana students and others some of the challenges facing Montana's fish and the rivers where they live.

WATER SHORTAGE

Dave Yerk is the FWP biologist responsible for managing the upper Sun River fishery and also the driving force behind the Sun River Adopt-a-Fish Program (originally established by Steve Leathe, FWP regional fisheries manager in Great Falls.) Yerk and his crew spend a few days each fall capturing trout and conducting the three-minute surgical procedure to implant the radio trans-



TROUT TRAVELER FWP fisheries technician Paul Hamlin holds a rainbow trout fitted with a radio transmitter that these students from nearby Fairfield School were soon following on their classroom computers. The fish traveled along the Sun River, which flows from the Rocky Mountain Front into the irrigated plains to the east.

mitters. The FWP crews return throughout the spring and summer with telemetry receivers to locate the fish, and then plot the GPS locations to an Internet mapping program. From their classrooms, students in the nearby towns of Choteau, Fairfield, Greenfield, and Power follow the movements of the fish. One thing they learn is that trout have a tough life in the scenic river.

The major challenge to the fish is created by Gibson Dam. Built in the late 1920s, the 200-foot-tall structure impounds the Sun River within the scenic canyon. The Bureau of Reclamation (BOR) operates the dam and regulates the river flow to meet the water needs of farms and ranches on the prairies stretching eastward from the Rocky Mountain Front. Water passes through the dam into the river below, flowing 3 miles through the canyon to a smaller 132-foot-tall dam, where it is diverted into an elaborate series of irrigation canals.

Each spring Gibson Reservoir fills with snowmelt from the surrounding mountains. The BOR then releases water from the dam in torrents for downstream irrigation. The trout below the dam try to survive in the massive flows during dam releases, and later in the low flows during summer and fall.

“Many of these kids use this water on their farms. I don’t think they make the connection that it comes from this river. Focusing on an individual fish makes it even more meaningful for them.”

Downstream from the diversion dam, flows eventually dwindle to barely a trickle.

FWP established the fish-following project to bring local fifth- and sixth-graders into the Rocky Mountain Front to see where the Sun River comes from, how it is used, and how that use affects fish populations. “Thirty years from now, these students will be the adults in the community who decide what happens to the river and its water,” says Yerck. “My hope is that the experience they have with these fish and this river right now gives them a basic understanding of the whole system and how it all ties together, and an appreciation for just how special this place really is.

“There’s no question about the importance of agriculture to this entire area, and that the water from the Sun is vital to irrigators,” Yerck adds. “But I also believe that we can work with irrigators to improve efficiency, and make that water go further for both irrigators and the trout fishery.”

During the fall field trips up the Sun River Canyon, the classes also tour the dams and canals with a representative of the local irrigation district. One teacher says her students are fascinated to learn that the water in the irrigation canal running past their school begins in a wilderness environment. “Many of these kids use this water on their farms,” says Susan Kalanick. “I don’t think they make the connection that it comes from this river. Focusing on an individual fish makes it even more meaningful for them.”

Students return to the canyon in the spring, where they join Yerk as he uses a radio receiver to locate their adopted trout. “The first fish our class adopted, a female rainbow trout, the kids named Jill,” says Kalanick. “We were all eager to follow her and see what would happen.” Unfortunately, the trout soon disappeared from the Sun. When Yerk finally found the transmitter, it was high on a ridge above the river. “An osprey or eagle must have got her,” says Kalanick. “The kids were really depressed over the loss of their first fish.”

The fate of other trout in the Sun River study varies widely. A few have remained near where they were first captured. Several have plunged to their deaths over the top of the diversion dam. Many have been caught and eaten by anglers or predators, while others have simply disappeared, their fates unknown. One trout traveled from the river into an irrigation diversion and ended up 12 miles away in Pishkun Reservoir, where it likely became a meal for a northern pike.

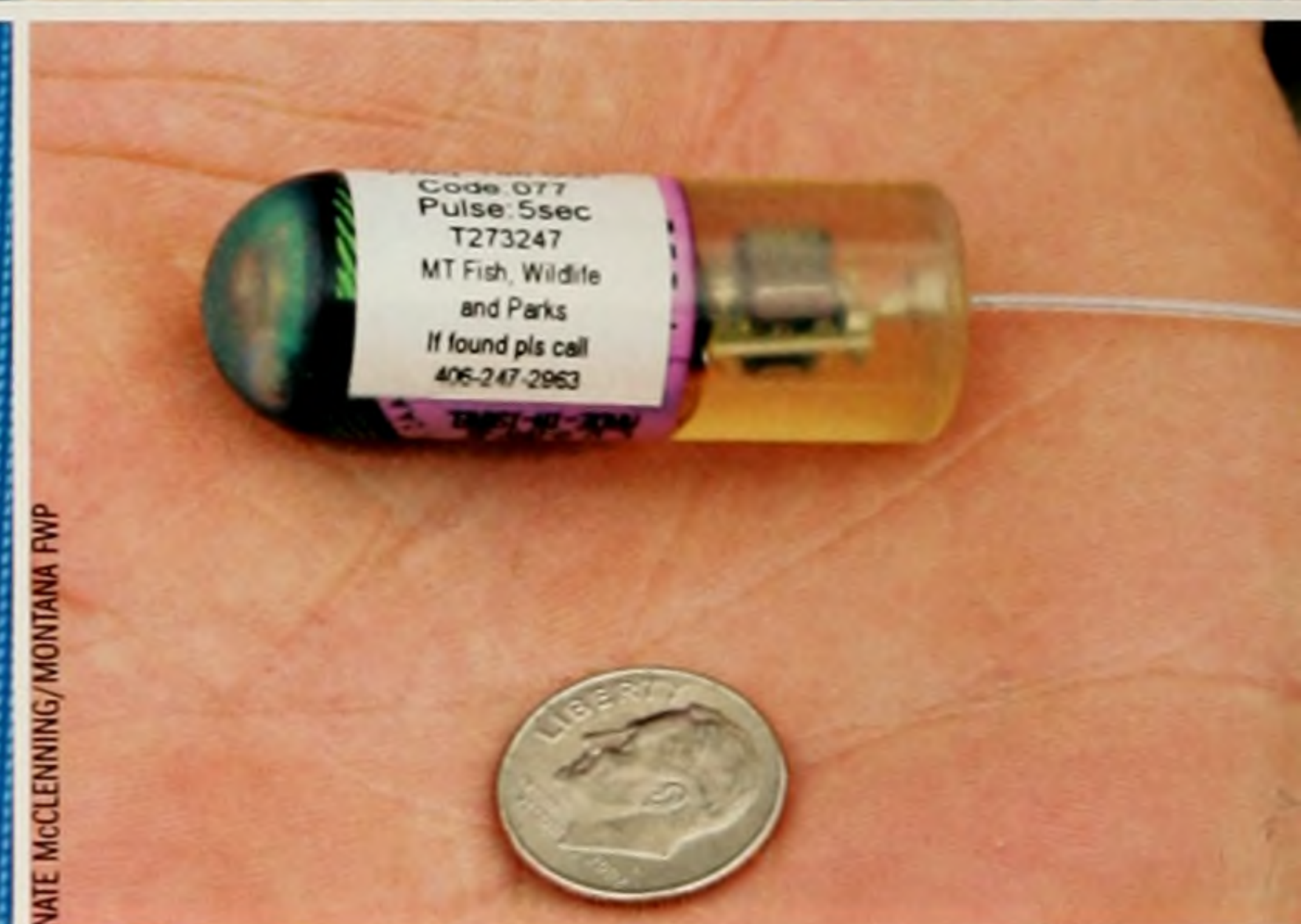
Northerns have also devoured radio-tagged trout that were part of the Blackfoot and Clark Fork rivers Adopt-a-Fish Program, the first of its kind in Montana to bring live research on native fish and their movements directly into rural classrooms. A cooperative effort by FWP, the Bureau of Land Management, the U.S. Fish and Wildlife Service, Northwestern Energy, and the Blackfoot Challenge (a landowner-based conservation group), the program initially focused on native bull and westslope cutthroat trout. It later evolved to include native largescale suckers as well as intro-

Dave Hagengruber coordinates the FWP Aquatic Education Program.



DAVE HAGENGRUBER/MONTANA FWP

STREAMSIDE SURGERY Above: FWP crews insert the tiny transmitters (near right) into trout on the Sun River. Students from surrounding communities visit Gibson Dam (above right) to learn how water releases for irrigation affect trout survival. On the Sun, Blackfoot, and Clark Fork rivers, students see how biologists follow trout along the stream using radio receivers. On the Yellowstone (far right), FWP crews follow far-ranging tagged fish in boats.



MATE MCGLENNING/MONTANA FWP

duced northern pike, which have found a home in the still, weedy waters of Milltown Reservoir. The northern pike grow fat on a steady flow of cutthroat trout—including several carrying radio transmitters—blocked by the dam during their downstream post-spawn migration.

The research looks at how Milltown Dam affects fish and fish movement on the Blackfoot and Clark Fork. The two rivers meet at the dam a few miles west of Missoula. Researchers, led by FWP fisheries biologist David Schmetterling, capture fish blocked from upstream movement by the dam, implant them with radio transmitters, and release the fish above the dam. FWP crews and students from several local classrooms monitor the fish swimming upstream to reach spawning sites in tributary streams.

The research has proved that the dam creates a biological barrier to federally protected bull trout as well as westslope cutthroat, a species that has been petitioned for listing

under the Endangered Species Act. That information, says Schmetterling, factored into an Environmental Protection Agency decision in 2003 to require that the dam be removed.

CAN YOU HEAR ME NOW?

Turning fish into mobile radio units is a technological challenge. The transmitters must be small and light for the fish to carry them, but batteries powering the transmitters must be strong enough to last at least a year (so biologists can gather the data they need). New technology allows batteries to be powerful yet tiny. And now transmitters can be programmed to turn themselves off to save battery life over winter when the fish are inactive, and then turn back on in spring when the fish start moving more.

Implanting the transmitter is a quick procedure requiring two people. The captured fish is anesthetized using a chemical dissolved in water, which is poured over its gills (also supplying the fish with oxygen). The



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fisheries biologist or technician then makes a small incision in the fish's abdomen and places the transmitter inside the body cavity, closing the opening with sutures. The nearly invisible antenna, thick as heavy monofilament fishing line, trails behind the fish. The fish have a remarkable ability to survive this seemingly traumatic procedure, showing survival rates that often exceed 90 percent.

Each transmitter has a specific code, enabling biologists to track hundreds of individual fish with a single receiver that can pick up a signal from up to a mile away. FWP then posts GPS data points of the fish's location on its website, where anyone can follow the fish's progress. FWP crews have also set up ground stations at the mouths of tributaries to the lower Missouri and lower Yellowstone rivers. The stations automatically record tagged fish as they swim by, and biologists stop by periodically to download the locations onto laptop computers.

Local elementary students are the primary

focus of the Adopt-a-Fish Programs, but thanks to the Internet, students from throughout the United States are monitoring the movement of Montana fish. "We have a college wildlife class in Virginia and schools in Wyoming that have all adopted fish," says Mark Henckel, outdoors editor for the *Billings Gazette*, who manages the website for the Adopt-a-Fish Program on the Missouri and Yellowstone rivers.

THE SPECIES NOBODY SEES

The eastern Montana program got its start in 2002 after Henckel visited three students at Benzine School, 25 miles north of Sand Springs in Garfield County. The kids were interested in fish and came up with the idea of an eastern Montana Adopt-a-Fish Program they could follow on-line. Henckel talked with Yerk, who was stationed at Fort Peck at the time conducting research on the Missouri River, to see if FWP was interested. After Yerk started the Missouri–Yellowstone

Adopt-A-Fish Program in 2002, he transferred to Choteau. FWP biologists Dave Fuller and Matt Jaeger have since expanded the program with Henckel to include additional species and more areas. In 2006, says Henckel, 31 different classrooms took part.

The Missouri–Yellowstone program focuses on the native fish of eastern Montana, including paddlefish, pallid sturgeon, shovelnose sturgeon, burbot, channel catfish, and blue suckers. "These are fish nobody ever sees," says Henckel, "and they certainly aren't species most people would associate with Montana. A teacher in Arizona, whose class has adopted these warmwater fish, told me her kids could not believe species like paddlefish and shovelnose sturgeon actually existed."

The *Billings Gazette* posts weekly updates on the fish throughout the spring, and Henckel says he gets a steady stream of e-mails "from people excited to see what's happening with the fish."

FWP researchers have found that these big-river species like to travel. One paddlefish originally tagged in the Wolf Point area of the Missouri River in fall 2004 (later adopted in 2005 by a sixth-grade class at Boulder Elementary in Billings and named Squishy) migrated up the Missouri and the Milk River the following spring. The students followed its progress as it dropped back downstream, only to repeat the whole round trip a second time. Soon the paddlefish got the urge to roam again and descended 225 miles downstream to Lake Sakakawea in North Dakota, where it spent the summer. In September, the paddlefish migrated back up the Missouri River to the very same spot where it was first captured—covering at least 670 river miles in one year.

FWP biologists say such long-distance travel is normal for paddlefish. They also say what Squishy did was nothing new: Paddlefish and other native warmwater fish have been moving up and down the watery river highways for thousands of years. What is new is that students and interested adults across Montana and the United States are now traveling with them. 🐟

You can follow the fish yourself by visiting fwp.mt.gov and searching for "adopt a fish."