



DAVE HAGENGRUBER / MONTANA FWP

NET GAIN: FWP biologist Dave Yerck with a shovelnose sturgeon captured as part of ongoing fish population monitoring in the Missouri River below Fort Peck Dam.



What FWP does to conserve Montana's fisheries and improve your fishing

IT'S A GREAT DAY to be working outdoors in Montana. The spring sky this morning is brilliantly clear, the wind is light, and new growth bursts out along the river below Fort Peck Reservoir, an impoundment of the Missouri River in northeastern Montana.

Montana FWP biologist Dave Yerck and his three-person crew are dredging the water with 150-foot-long nets to capture fish. Working from an 18-foot aluminum jet boat, they slowly uncoil their nets into the water. When all the nets are extended across a part of the channel, Yerck and his crew cut the engine and glide silently downstream with the current, taking a short break while the nets go to work. In ten minutes, a beeping stopwatch announces the end of this "drift."

"Get ready to see what it's all about," says Yerck, grinning. "Pulling nets—this is what us fish guys live for."

As the survey nets are hauled, a fish smorgasbord comes into view: blue suckers, smallmouth buffaloes, channel catfish, goldeye, sauger, and shovelnose sturgeon. Skillful hands remove the fish and drop them into a large holding tank.

The crew never knows what the nets will capture. A few weeks earlier, they netted an intact bison skull.

The nets secured within the boat, the crew begins to "work" their haul. With efficiency

developed by thousands of repetitions, they measure and record the length, weight, species, and sex of each fish. Many are tagged before being slipped back into the river. If a tagged fish is later captured in FWP survey nets or by an angler who reports the tag, biologists will know more about the specimen's movements and growth rate.

The work of Yerck and his crew is part of what is broadly called fish management. Because the term is so vague, it's not surprising most anglers don't know what it means. Yet it's important they do. Montana FWP spends roughly \$7 million on fisheries management each year. Roughly half comes from fishing license sales and the other half from a federal excise tax on fishing equipment. The better anglers understand what fisheries management is and why it's important, the better they can work with FWP to ensure Montana's fisheries are being managed well and cost-effectively.

Although the methods of fisheries management vary widely, from scuba diving to genetics testing, the work has always captured the imagination of anglers. Watching an electrofishing boat head out into the night, seeing a hatchery truck lumber up from a boat ramp, or just peering into the depths at a suspended survey net, generations of Montana anglers have asked, "What exactly are they *doing* out there?"

Fish Management Demystified

BY DAVE HAGENGRUBER

What do fisheries managers do?

Fisheries management means keeping watch over, and taking care of, the state's diverse fish populations and their habitats. For example, fisheries biologists have created more trout spawning water at Wade Lake, near the upper Madison River. Using heavy equipment, they dug a serpentine channel from a shallow spring inlet and lined it with gravel (below), providing trout with additional places to lay eggs.



DAVID A. SCHMIDT



DONALD M. JONES

Provide access

Creating a new fishing access site (above) can sometimes take years of public meetings and discussions with adjacent landowners. FWP has purchased 320 of these public water accesses across the state, and more are planned. Other fisheries management work is based on the results of ongoing fish population surveys. Using sinking nets on reservoirs and electroshocking on streams (right), biologists are able to see how fish populations are faring from year to year.

Conserve and restore fish habitat

Gather information

One thing biologists do constantly is collect information from ongoing river and reser-



voir surveys. The work is an essential part of fisheries management. Along with creel surveys and public input, the survey information helps

biologists decide if and when to stock, whether harvest regulations are necessary, and how environmental conditions affect fish populations. Follow-up monitoring and angler surveys help FWP see if specific management techniques, such as fry stocking or a length limit, are having the desired effects on a particular fishery.

Without these surveys, biologists would have no idea how fish populations were faring from year to year.

"Monitoring fish populations is probably the most important and visible fisheries management activity that our biologists perform," says Chris Hunter, FWP Fisheries Division administrator in Helena.

Dave Hagengruber is an FWP aquatic education specialist in Helena.

Biologists keep tabs on fish populations in various ways. They mark some fish with an identifying tag and then later don wet-suits and masks to count tagged fish underwater. Or they'll use an electric charge to temporarily stun fish, which are then measured and weighed before being released. Biologists also capture fish using dozens of different net styles and sizes, depending on which particular species they are after.

Yerk, whose crew uses sinking gill nets to capture fish on the Missouri River below Fort Peck Dam, points out that biologists cannot capture and record every fish in the river. Rather, he explains, they take samples from standardized locations and then compare results from one year to the next.

"If we see a population trend moving up or down," Yerk says, "we'll look closer and try and figure out the cause."

Rear and stock fish

If biologist see fewer fish in a population, one solution may be to stock. Growing fish in hatcheries and then putting them in lakes and rivers is the oldest form of fisheries management. And Mark Sweeney, manager of the Washoe Park hatchery in Anaconda, says biologists have learned

much from more than a century of stocking trial and error.

"In the past, the approach was simply to try and stock everything, everywhere," he says. Sweeney explains that such a willy-nilly approach to stocking often failed to provide more fishing opportunities. It also led to the loss and weakening of native and wild fish populations.

"The role of our hatcheries today has changed," he says. "We still provide fish for anglers, sure, but we're also involved with restoring native species and even in helping recover at-risk species like pallid sturgeon and westslope cutthroat."

Having learned from past mistakes, fisheries staff now take many factors into consideration before releasing hatchery fish into the wild. Hatchery managers must ensure they don't spread disease, such as bacterial kidney disease, recently discovered in the Big Springs trout hatchery in Lewistown. Hatchery fish are regularly



checked for sickness at FWP's fish health laboratory, located in Great Falls.

FWP biologists also take pains to ensure



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GEORGE B. KIRSCH

Rear and stock fish

Though famous for its wild trout, Montana still relies heavily on hatcheries for much of its reservoir and mountain lake fish management. FWP produces roughly 40 million fish in nine state hatcheries each year (above). Fish management also means conducting research, such as collecting scales from Big Hole River grayling for DNA analysis (right).



JEFF HENRY/ROCHEJAUNE PICTURES

Conduct research

Gather information

they don't stock fish that would interbreed with wild strains and dilute pure gene pools, such as if rainbow trout were stocked in lakes where they could escape and mix with westslope cutthroats.

After carefully considering these and other factors, such as the health of a reservoir's prey fish base, or anglers' demands, biologists submit requests for hatchery fish.

Then it's the job of the hatcheries to raise the various species to the correct size and then distribute the fish by the right date for stocking. "It can be a real juggling act," Sweeney says.

Conserve and restore habitat

Another fish management challenge is to provide fish with adequate habitat. Ever since 1947, when Montana hired its first fisheries biologist, habitat enhancement and conservation have been integral to the state's fisheries management program. Without healthy habitat, say biologists and the growing number of anglers who understand the connection, fish populations suffer.

"We describe fish habitat as having three main components: water quantity, water quality, and the physical characteristics of the streambed or lake," says Dick Oswald,

fisheries biologist in Dillon.

Oswald manages the major southwest Montana drainages such as the Beaverhead, Big Hole, and Ruby, as well as smaller streams and mountain lakes. It's some of the best coldwater habitat in North America. Unfortunately, much of it is in trouble.

"The water quantity issues—the droughts—have been the dominant feature in my 20 years down here," Oswald says.

When river flows drop, trout populations suffer. The fish have fewer places to reproduce and hide from predators, and low



river levels can cause water temperatures to rise to dangerous levels.

"There's no way to keep the drought from socking these fish," says Oswald. "But we do everything we can to minimize that impact."

FWP works closely with irrigators, providing technical advice and, in some cases, financial assistance to reduce water use from streams. The agency also encourages anglers to release fish, and, when necessary, has imposed harvest restrictions or even closed seasons on particularly hard-hit waters.

Fish population surveys by Oswald and his crew show these efforts are helping fish populations survive the drought, though not enough to fully offset losses from four years of low water.

Environmental laws passed by the Montana legislature provide some stream protection. For them to work, however, Oswald has to spend time with landowners and local conservation districts. The districts must approve any project that could affect fish habitat. Oswald advises landowners on how to lessen potential damage to streams from proposed projects so they can get the required permits.

In places where fish habitat has been damaged, FWP uses fishing license dollars set aside in the state's Future Fisheries Program to enhance and renovate streams, rivers, and reservoirs. One such project on a small stream in the Ruby Mountains is providing much-needed habitat for native westslope cutthroat trout.

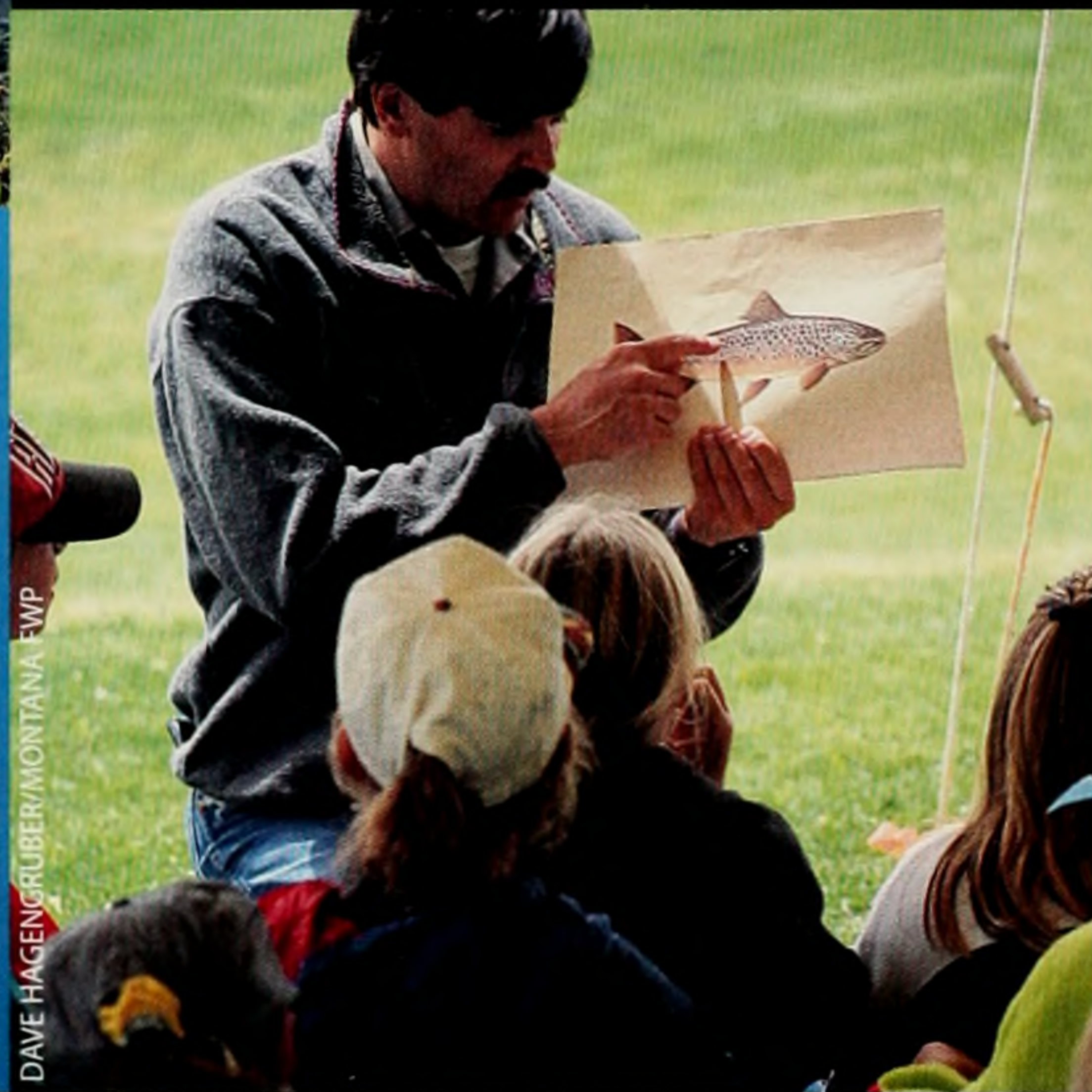
"When we began, that stream was pretty well destroyed and only had about 40 fish per mile," says Oswald. "We've pretty much done a complete rebuild of habitat there and have seen explosive growth of the population, with over 1,000 fish per mile now. That's pretty exciting to see."



“When we do a good job managing these resources, we enjoy the benefits of good fishing along with everyone else.”

—DAVE YERK,
FWP Fisheries Biologist

GEORGE ROBBINS



DAVE HAGEN/UTRUBER/MONTANA FWP

LANDOWNER RELATIONS: So that stream protection laws work as the legislature intended, biologists help private landowners find ways to not damage essential stream fish habitat (above).

TELLING THEIR STORY: Fisheries biologists extend the reach of their work by educating youngsters and by informing adult anglers of FWP management activities and public fishing opportunities.

Provide access

All the fish in the world won't do anglers any good, however, unless there is a way for people to reach the water and cast their lines. Though access is not difficult to provide on rivers running through state and federal land, it's a challenge where fishing waters cross private property, such as in south-central Montana.



provide on rivers running through state and federal land, it's a challenge where fishing waters cross private property, such as in south-central Montana.

“Private land makes up almost 80 percent of our region and an even a higher percentage along the shoreline of the limited water we have here,” says Jim Darling, FWP regional fisheries manager at Billings. “Access is so important. Being near water is just a basic human desire. People want to boat, picnic, walk their dogs, and especially to fish. My job is to respond to that need and provide access for them.”

The challenge is that landowners often don't want the public near their property. “We realize that an access site can be an

intrusion on neighboring property,” Darling says. “But we do our best to lessen those effects and still provide reasonable access to the public.”

FWP currently maintains 320 fishing access sites in Montana. Most are primitive: an access road, dirt or gravel parking area, boat ramp, and perhaps a pit latrine. One dollar from the sale of every resident fishing license and five dollars from the sale of each nonresident license is earmarked to acquire and maintain access sites across the state. In some cases, FWP pays landowners to allow public access to a fishery.

Conduct research

If access brings anglers closer to the fish, research is the part of fisheries management that brings the fish closer to FWP biologists.



Through research, biologists find answers to perplexing management problems. Though FWP's Fisheries

Division has no formal research unit, biologists often become impromptu researchers when they need information that doesn't exist. Take, for example, the mystery of the Yellowstone River's missing sauger.

Following the drought of the late 1980s, FWP's three biologists in the agency's southeast region documented a sauger population decline. Most puzzling, however, was that sauger numbers never recovered in the early 1990s, despite higher water.

“Back then, we didn't know very much about these fish,” says Brad Schmitz, regional fisheries manager at Miles City.

With the aid of a Montana State University graduate student, Schmitz's crew began to conduct telemetry studies, tagging captured sauger and then following the fish with radio receivers.

“After two years of research, we had a pretty good handle on where the sauger went, what they do during their annual cycle, and what might be impacting their population,” Schmitz says.

One disturbing discovery: Up to 100,000 adult sauger were disappearing down water diversion structures each year.

“That was an important find,” says Schmitz. “Those numbers far outweigh any impact fishing pressure might ever have on this part of the river.”

To stem those losses, biologists have begun identifying ways to modify one particular diversion structure so it traps fewer sauger. Another possibility would be to augment wild populations with stocking.

“My goal is to protect and enhance this sauger population,” Schmitz says. “But at the same time, we need to continue to provide fishing opportunities for anglers.”

Schmitz's point cuts to the heart of what he and his colleagues are charged with doing. Fisheries management demands of biologists an attention not only to fish and habitat, but also to the anglers who fund their management activities.

That challenge is made easier by the fact that fisheries biologists are often their own customers. As Yerk points out, “I'm an angler, too—and my love of fishing is what first attracted me to this career. When we do a good job managing these resources, we enjoy the benefits of good fishing along with everyone else.” 