GOOD FOR GRASS, GOOD FOR GRAYLING

An innovative new conservation agreement could help save an imperiled fish while easing pressures on Big Hole ranchers.

BY BEN ROMANS. PHOTOS BY THOMAS LEE

HARNESSING GOODWILL Don Reese and FWP grayling recovery biologist Emma Cayer inspect a new fence on the ranch that Reese manages in the Big Hole Valley. Built with federal and state funds, the barrier will keep cattle from trampling the banks of a Big Hole River tributary. The combination of public funding and landowner cooperation is making the Big Hole grayling project a nationwide model for fish and wildlife conservation.

On a hot summer afternoon, Emma Cayer and I are driving through the upper reaches of the Big Hole Valley to check the flow gauge in a rancher's irrigation canal. Cayer—the arctic grayling recovery biologist for Montana Fish, Wildlife & Parks—negotiates the bumpy dirt road while leaving a plume of dust behind. It's late August 2012, at the height of a near-statewide drought, and distant wildfires fill the sky with smoke.

Between the squashed bugs and dusty wiper streaks, I see a small green sign flanking what I assume is a drainage ditch. The watercourse is so narrow the truck's tires straddle its width as we cross. Through the passenger window I read the sign: "Big Hole River." Whatever portion of the Big Hole this is, it looks nothing like the brawny blue-ribbon trout river farther downstream.

"That is a testament to our work," Cayer says, reacting to my befuddled look. "Years ago at this time of year, you might not have found any water in that part of the river. Now it's flowing, and there's a good chance you can find grayling there. It's proof that ranching and grayling can coexist."

For years such a harmonious relationship seemed unlikely. But in 2005, ranchers and other landowners, biologists, and hydrologists set out to accomplish something long thought impossible. They aimed to improve stream flow and habitat for the last population of fluvial (stream-dwelling) grayling in the lower 48 states—without harming the ranchers' bottom line.

Edge of survival

Though the Big Hole is best known for its trout fishing, no description of the river is complete without acknowledging its arctic grayling. This close cousin to trout was historically found throughout the upper Missouri River basin as far downstream as Great Falls. Today the last native population of river-dwelling grayling is restricted to the upper Big Hole basin.

The species has long been prized for its rarity, iridescent beauty, and, perhaps most important, the scenic high-elevation areas where it lives. "Big Hole River grayling are in a unique ecological setting," says Jim Magee, a biologist with the U.S. Fish & Wildlife Service's (USFWS) Partner's Program. "They're in a temperate zone that doesn't flow into Alaska or the Hudson Bay, but actually into the Gulf of Mexico. No other river-dwelling grayling in North America lives in that type of environment." Montana's grayling, it turns out, occur on the very edge of where the species can survive.

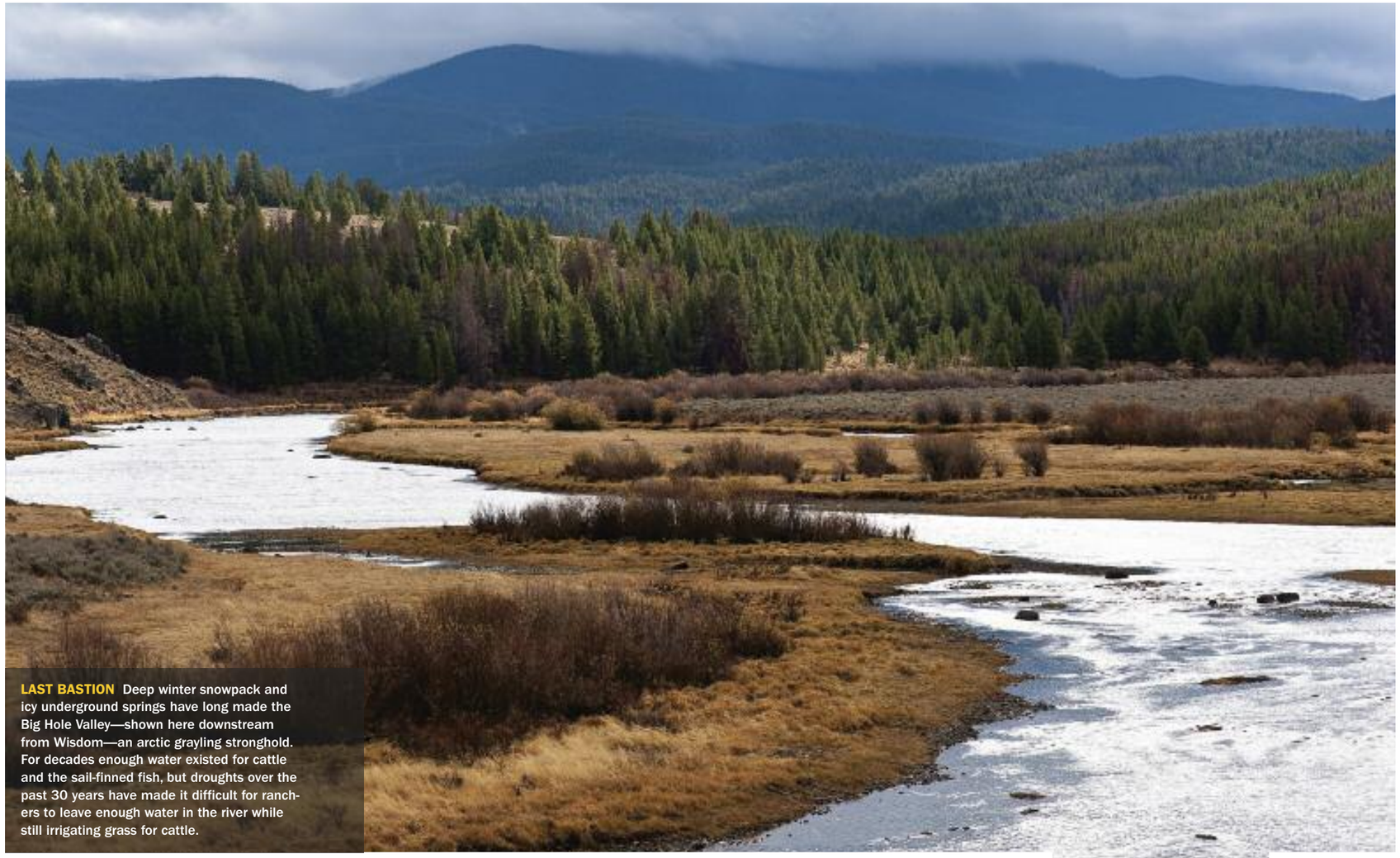
For years the fish's existence seemed solid. Grayling require cold, clear water, and the chilly upper Big Hole had plenty of winter snowpack aboveground and icy springs below. Though local cattle ranchers historically drew vast amounts of water from the river to flood fields for growing grass—later cut and cured to make hay—there seemed to be enough for both livestock and fish. Then came the droughts of 1979, '80, and '81.

After those dry years, biologists began noticing a decline in the upper river's grayling population. Because stream water levels dropped too low, temperatures rose dangerously high and grayling become stranded in pools, unable to reach cooler water. When the next severe drought caused portions of the Big Hole to actually run dry in 1988, it appeared there might not be enough water in the river for growing grass and sustaining grayling.

To address the problem, government agencies, trout anglers, ranchers, and others formed programs and groups—notably the citizen-led Big Hole Watershed Committee. They raised public awareness and identified areas where grayling habitat had been degraded in the upper Big Hole, which extends from the headwaters above Jackson downstream to Dickie Bridge near Wise River. They also reached consensus that saving the salmonid would be impossible without landowner involvement.

Unfortunately, the groups could not resolve the main issue: water allocation. Under Montana law, landowners own the water rights and have little incentive to share.

Then, in the early 1990s, the federal government considered whether to protect grayling under the Endangered Species Act. It eventually deemed that protection was "warranted but precluded"—meaning that, despite legitimate concerns over grayling survival, other species elsewhere in the United States faced even bigger threats requiring federal attention. Mounting legal pressure from environmental groups since has forced the government to take yet another look at the grayling's plight. Its decision is due by the end of 2014, meaning that federal listing could be right around the corner.



LAST BASTION Deep winter snowpack and icy underground springs have long made the Big Hole Valley—shown here downstream from Wisdom—an arctic grayling stronghold. For decades enough water existed for cattle and the sail-finned fish, but droughts over the past 30 years have made it difficult for ranchers to leave enough water in the river while still irrigating grass for cattle.

Upper Big Hole River

Fluvial (stream-dwelling) arctic grayling historically were found throughout the upper Missouri River basin as far downstream as Great Falls. Today the fish is limited to the upper reaches of the Big Hole Valley, now the focus of a new conservation partnership program.

MAP: LUKE DURAN/*MONTANA OUTDOORS*

Ranchers don't want that. Neither do government conservation agencies. Many biologists now maintain that in some cases Endangered Species Act protection can be counterproductive, because people who own property where imperiled fish and wildlife live often work more cooperatively to conserve habitat without federal intervention.

"After droughts in 2000 and 2001, we racked our brains trying to figure out how to get grayling back on track by working with landowners," says Magee, who at the time was FWP's grayling recovery biologist. "But people we approached were saying, understandably, 'Why should I give up my water when my neighbor is just going to use it?'"

As a temporary solution, the federal Natural Resources Conservation Service (NRCS) in 2004 paid ranchers not to irrigate. "That's how our agency really started getting involved in the Big Hole," says NRCS district conservationist Kyle Tackett. "The agency was saying, 'Look, we're in, and here's what we're willing to do.'"

Landowners took notice. For the first time, they weren't just being asked to give up some water; they were being paid to do it.

Though rewarding private water conservation made sense, handing out cash wasn't the long-term solution. It was too expensive. And it didn't address problems like the need to improve grayling habitat and institute conservation practices throughout the watershed that could maintain stream flows. Fortunately, a better idea was on its way.

Rest assured

During the early 2000s, the USFWS concluded that species such as the arctic grayling that were "candidates" for federal protection might benefit if the government could offer "assurances" to cooperating landowners. Under the agency's Candidate Conservation Agreements with Assurances (CCAA) Program, participating Big Hole Valley landowners would agree to specific habitat and stream flow restoration projects on their property. In return, ranchers and other private partners would benefit two ways. One, the conservation projects could reverse grayling popula-

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tion decline and reduce the likelihood of federal listing. Two, the agreement would ensure that, should the grayling be designated as federally threatened or endangered, cooperating landowners would not have to give up extra water or do anything else not covered in the existing conservation plan they helped create for their property.

Do things to help grayling now, the federal agreement said, and you won't be penalized later if the species is listed.

The CCAA was written to offer ranchers enough incentive to make helping grayling worth their while. What's more, individual contracts were designed so landowners could opt out at any time. Still, convincing Montanans who traditionally shun bureaucracy to sign on would be a tough sale.

A core workgroup comprising representatives from FWP, the two federal agencies, and the Montana Department of Natural Resources and Conservation (DNRC) floated the CCAA concept past Calvin Erb, a local attorney and owner of one of the valley's largest properties. He thought it made sense. "We [landowners] wanted to negotiate something that didn't change every year," Erb says. "That's why that CCAA appealed to me. It meant finding some finality about our obligations as landowners for grayling recovery."

Erb's endorsement carried weight. Soon other landowners and ranchers began asking to take part. With the first formal enrollment in 2006, more than 30 Big Hole landowners representing nearly 150,000 acres signed on, making it the largest CCAA in the country.

The positive response had as much to do with building trust as it did with federal assurances, says Magee. "Many of us have been working with these landowners for years and developed strong relationships," he says. "One thing we learned was that patience and partnerships go a long way. They know we aren't going to tell them how to run cattle or water their fields."

The "nuts and bolts"

That's not to say all land-use practices could continue as they had for generations. To conserve enough water for both grayling and grass, irrigation refinements were necessary.

The first step was for members of the workgroup to meet with each enrolled landowner and create a site-specific conservation plan, what Cayer calls the "nuts and bolts of the CCAA." During conversations over coffee, both sides found middle ground that met federal requirements without harming the rancher's grass production. "We had to listen closely to each other to make it all work," Cayer says.

The individual plans identify specific conservation actions that do four things: improve stream flows in the Big Hole and its tributaries; enhance the condition of stream channels and banks; remove barriers to fish movement; and reduce grayling "entrainment" (fish straying into irrigation ditches and ending up stranded there or in fields). The most important feature of the plans requires landowners to reduce, temporarily, the amount of water they use when stream flows in various parts of the upper Big Hole and its tributaries drop below targets—for example, 40 cubic feet per second (cfs) in summer. "Basically, everyone gives up a little bit of water until we get back above the target," says Cayer.

Temporarily forgoing even a small portion of the water allowed under their water rights generally doesn't sit well with Montana ranchers. That's especially true in drought-prone areas like the upper Big Hole. Averaging only 22 frost-free days per year, the valley's short growing season does not facilitate raising cash crops. Here, cattle are king, and feeding the king requires grass. "We live and die by hay," says Guy Peterson, a Big Hole rancher. "This is a fairly arid part of the state, and our window to grow isn't very long. So we traditionally keep the ground saturated and hope to cut as much as we can later in the summer."

Fortunately, enough water exists for cattle and fish—but only with more efficient use. By employing better irrigation equipment and information—funded by CCAA agency partners—ranchers can divert less water from the Big Hole system and still meet their grass production goals. One way the agency partners helped landowners conserve water was to install 71 new headgates. Ranchers use these adjustable damlike structures to control the amount of water entering irrigation canals from streams.

To report instantaneous flows and water availability for irrigation, DNRC hydrologist Mike Roberts installed four real-time stream flow gauges in strategic locations within the project area, adding to existing gauges. Ranchers can now monitor flows on their home computers or even smart phones so they know exactly when to scale back or increase water use. "For us to sit down and start talking to landowners about water savings and flow conservation, we need quantitative data," Roberts says. "That makes a big difference compared to just saying, 'Well, we don't think you should irrigate as much. You need to reduce your flows.'" One landowner, initially skeptical about CCAA enrollment, later told Roberts he used less water to produce more hay after following recommendations from CCAA advisers.

Successful site plans

Though essential, maintaining adequate stream flows for grayling is just half the equation. "This is also about creating places for these fish to survive," says Roberts. "You can have a big concrete channel with all the water in the world, but it's not going to help grayling reproduce" (see "Improving Where Grayling Live," page 14).

So far the CCAA Big Hole project has cost $3.6 million. Funding has come from FWP's Future Fisheries Improvement Program as well as the NRCS, USFWS, Bureau of Land Management, Big Hole Watershed Committee, and Big Hole River Foundation. The Nature Conservancy, Trout Unlimited, and state wildlife grants have also contributed.

For their part, landowners and agency staff are required to review the site-specific plans twice each year to see if conservation objectives are being met. Cayer, a longtime rider who often accompanies ranchers on horseback, says she always looks forward to the reviews. "There's nothing more satisfying than visiting the Big Hole River with a landowner after a project is completed and seeing that it has really taken hold."

The site plans seem to be working. Despite the drought, the 2012 count for age one or older grayling in the upper river was the highest it's been since the CCAA program started. And while much of Montana endured extreme or severe drought last year, the Big Hole—traditionally one of the first rivers where FWP closes fishing during

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COFFEE TALK Federal, state, and landowner partners in the Big Hole CCAA regularly sit down to discuss better ways to keep grayling alive and ranches afloat. Facing page, left to right: Emma Cayer (FWP), Mike Roberts (DNRC, also above center), Kyle Tackett (NRCS), Jim Magee (USFWS, also above left), and Big Hole rancher Guy Peterson (also above right) at Peterson's dining room table. "Here we were talking about Guy's grazing concerns, any irrigation problems he might have, his water usage, things like that," says Cayer. "This is something we do at the end of every growing season so we can check compliance with the conservation agreement and landowners can let us know of their concerns and successes."

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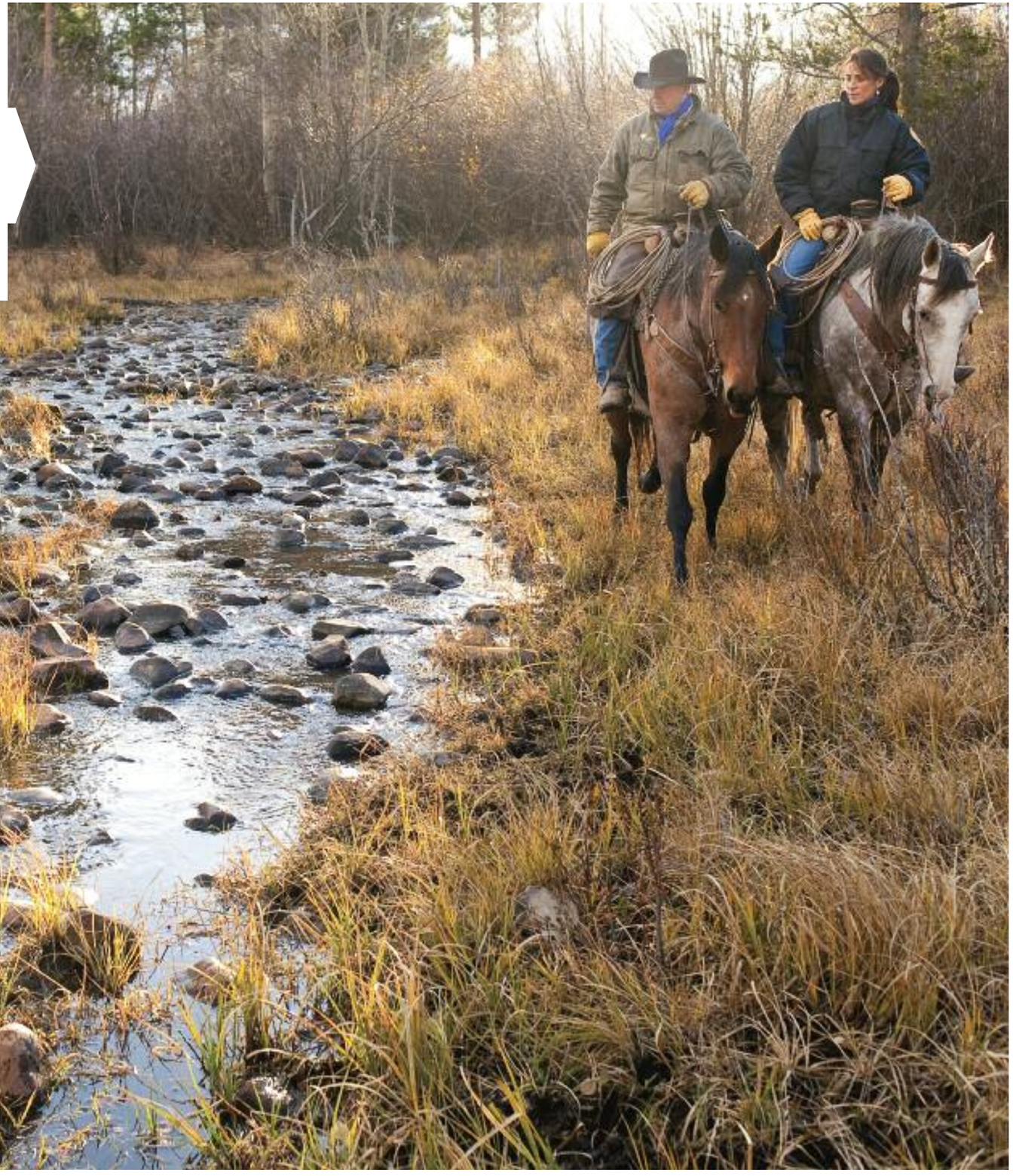
dry spells—continued to flow with no recreation restrictions throughout the summer.

Perhaps even more significant, landowners such as Peterson are acknowledging the respect and attention they receive through the CCAA process. "Most ranchers in this valley aren't used to the level of consideration that Emma, Jim, and the rest of the crew give us," says Peterson. "It gets our attention and lets us see that what the CCAA proposes is good for the river and good for ranching.

"It's worked well enough for me to keep up these efforts should the CCAA ever go away, or heaven forbid, the fish becomes listed," Peterson adds. "I have grayling in my backyard. Who else in this country can say that?"



GOOD HORSE SENSE Reese and Cayer discuss reasonable options for restoring willows to a trampled stretch of a tiny tributary. "This is my favorite part of the job," says Cayer. "It's a time when we can just get out and talk about what needs to be done both for grayling and for the ranch operation."

JOHN WINNIE JR.

Improving Where Grayling Live

Saving grayling requires more than just water; it also means restoring places in the Big Hole River and its tributaries where grayling live. "If we don't fix the habitat problems, we're not doing much good," says Emma Cayer, FWP arctic grayling recovery biologist.

To improve grayling habitat, state and federal agencies have **restored 27 miles of stream channels.** This usually requires reconfiguring previously straightened stretches to their historic serpentine shape, which naturally produces deep hiding cover and cleaner spawning gravel.

One example is Rock Creek, historically a vital tributary for grayling reproduction. The stream was rerouted in the late 1980s from the Big Hole directly into an irrigation ditch. In the past few years, workers have restored the historic channel, reconnected it to the mainstem river, and installed incubators to hatch out grayling eggs.

Along streams throughout the watershed, volunteers have **planted more than 70,000 willow seedlings.** When grown, the shrubs will prevent banks from eroding in high water, add cooling shade, trap silt during high flows, and attract terrestrial insects that drop into the streams. In addition, **34 fish ladders have been installed** to allow grayling to move both upstream and downstream past diversion dams—wood plank barriers built years ago to direct water into irrigation systems. "Grayling will travel 60 to 70 miles each year to spawn, overwinter, and reach cooler stretches in summer," Cayer says. "Barriers definitely can hurt the population."

Partners also **installed fencing along 110 miles of stream banks** to keep cattle off critical river and tributary stretches at certain times of year. By trampling banks, cattle make streams shallower (and thus prone to warmer temperatures) and increase silt that smothers fish eggs downstream. Though cows can keep weeds under control, they also graze bank-stabilizing willows and other shrubs. So that livestock can drink, state and federal agencies have **installed, away from streams, 55 watering systems,** each consisting of a newly drilled well, an electric pump, a power source, and stock tanks. "We're finding ways to improve grayling habitat without making life harder for landowners,"says Cayer. ■