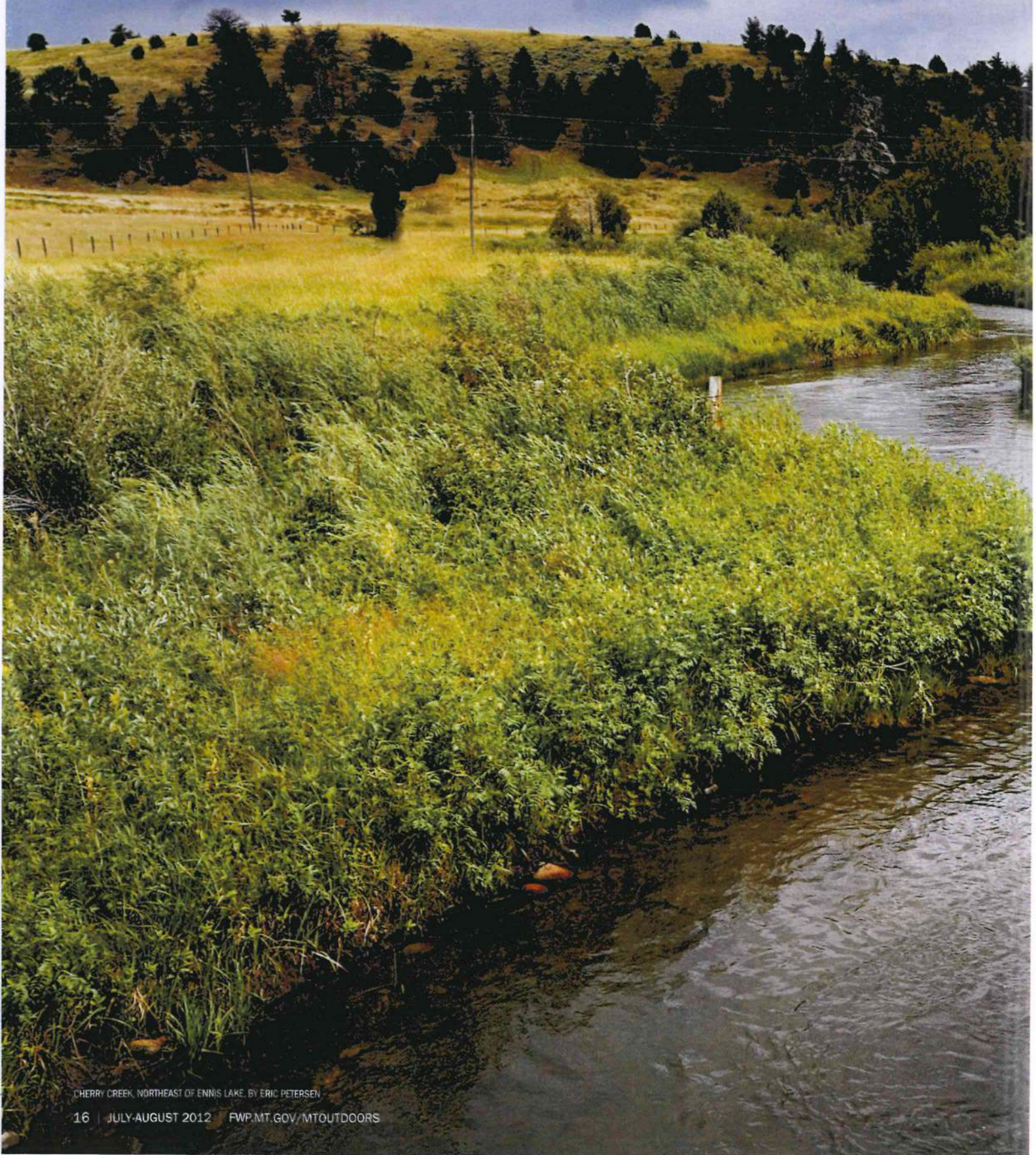




A BIG WIN FOR THE WESTSLOPE

Genetically pure westslope cutthroat populations in the Upper Missouri Basin have dwindled to less than 5 percent of their original range. The ambitious Cherry Creek restoration is helping stem that loss.

BY TODD WILKINSON



CHERRY CREEK, NORTHEAST OF ENNIS LAKE, BY ERIC PETERSEN

Pat Clancey and Carter Kruse are hiking along the upper reaches of Cherry Creek, where its course jags northward and tumbles out of the Spanish Peaks foothills northeast of Ennis Lake. The creek will eventually join the Madison River in the lower end of Bear Trap Canyon a dozen miles downstream.

Clancey is a longtime fisheries biologist for Montana Fish, Wildlife & Parks in Ennis; Kruse is the aquatic resources manager for Turner Enterprises, Inc. As the pair weave between pellet piles left by elk and mule deer on a game trail, frogs leap into the water and a great blue heron lifts off, hang-gliding in the breeze. At a bubbling spring that feeds the creek, the two stop and peer into a clear pool alight with colorful cobble.

"Watch this," Kruse says. He snatches a few grasshoppers off stems of wild brome and tosses them one by one into the stream. As they land on the water, small trout dash to the surface and engulf the insects before returning to hiding spots in the current.

"They may be little now, but they're the future," Kruse says of the abundant fish. These aren't just any trout. They are westslope cutthroat, a species that has disappeared from much of its home range in Montana east of the Continental Divide. The taxonomic name for westslope cutthroat, *Oncorhynchus clarkii lewisi*, hints at a rich history. It honors Meriwether Lewis and William Clark, who documented the black-spotted beauties in 1805 at the present site of Great Falls. The species is also Montana's state fish.

A few years ago not a single westslope cutthroat lived in Cherry Creek. The fish Kruse and Clancey are watching today were introduced in 2006 as eggs taken from wild stocks in other waters, after FWP removed brook trout, rainbow trout, and Yellowstone cutthroat from Cherry Creek. The westslope cutthroat are there because of what fisheries professionals and trout conservationists are calling one of the most ambitious public-private native trout conservation projects in the United States. "Montana has a long history of thinking and acting boldly when it

comes to fisheries management," Clancey says. "The Cherry Creek restoration is definitely part of that tradition."

Steep decline

While westslope cutthroat in Montana appear to be holding their own west of the Continental Divide, they've declined significantly on the east side throughout the Upper Missouri River Basin. The main reason: competition and hybridization with non-native rainbow, brown, brook, and Yellowstone cutthroat trout, first stocked in the early 20th century. According to Lee Nelson, coordinator of FWP's Native Fish Program, genetically pure westslope cutthroat no longer exist in 95 percent of their historic range in the Upper Missouri watershed.

In 1997 concerned citizens and conser-

vation groups petitioned the U.S. Fish & Wildlife Service (USFWS) to list the westslope cutthroat as threatened under the federal Endangered Species Act (ESA). That prompted a status review across the subspecies' known habitat in the Pacific and Intermountain Northwest. Though the agency eventually determined that federal listing was "not warranted," the review pointed to declining numbers in several parts of the region, including the Upper Missouri River Basin. If populations continued to shrink, federal listing remained a possibility.

A year before the federal review, FWP had begun looking into reestablishing westslope cutthroat in tributaries of the Madison River. "The idea was that replicating and expanding wild populations in those streams would expand their distribution, increase their num-



NATURAL NURSERY Left: To restore Cherry Creek, FWP first applied rotenone at drip stations (in white bucket through green hose). The piscicide was used to kill all existing trout, which were not native to the watershed. "Sentinel" fish (in net bag) were used to test the effectiveness of rotenone drip stations farther upstream.



Below: FWP fisheries workers collected eggs from wild westslope cutthroat in small streams elsewhere in southwestern Montana. The eggs were incubated at a private hatchery on the Sun Ranch south of Ennis for several weeks until reaching the "eyed" stage. Fisheries workers placed the eyed eggs in remote streamside incubators (round white bucket) on Cherry Creek and its tributaries, where they hatched into fry and swam into the streams. "This method allows the developing eggs to imprint on the chemical composition of the water just as if they had been laid there naturally," says FWP fisheries biologist Pat Clancey.

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bers, and reduce the likelihood that a catastrophic event or genetic inbreeding would eliminate local populations," says Clancey. "Also, we thought that as westslope cutthroat reestablished themselves in those tributaries, some would move down into the Madison River." That would provide an additional fishery in the Madison River, where the rainbow trout population was declining from whirling disease.

The following year the agency learned that a major private Montana landowner wanted to help restore westslope cutthroat in the Madison Basin. The surprising offer came from media-mogul-turned-bison-rancher Ted Turner. Turner and his son Beau had heard about the plight of westslope cut-

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throat from FWP reports and knew about the whirling disease infestation in the Madison River. Concerned that a similar disease could wipe out isolated pockets of westslope cutthroat, Turner proposed partnering with the state to pursue something never before attempted—turning an entire drainage into a new stronghold for the native trout.

At 113,000 acres, Turner's Flying D

Ranch southwest of Bozeman contains most of Cherry Creek and its secondary tributaries. Clancey, who became the lead field supervisor for the Cherry Creek westslope restoration project, called the proposed opportunity "breathtaking," because it would create the largest intact watershed with westslope cutthroat in the Upper Missouri Drainage.

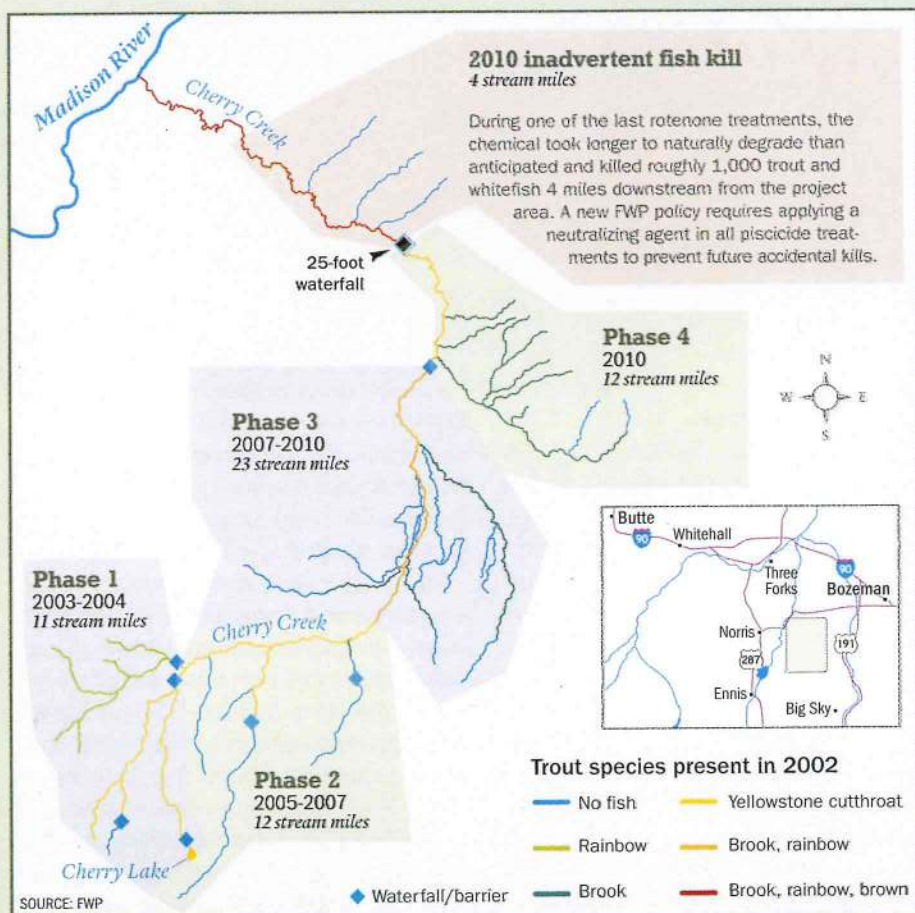
Historically, Cherry Creek was barren of westslope cutthroat and other fish above a 25-foot waterfall 8 miles upstream from its confluence with the Madison River. Brookies, rainbows, and other trout species not indigenous to the area were stocked in the fishless creek starting in the early 1900s. If those trout could be removed and replaced with pure westslope cutthroat, the restored population would remain protected—by the natural barrier formed by the falls—from the threat of nonnative trout moving up from the Madison. Renovating Cherry Creek promised to significantly increase the total mileage of streams east of the Divide harboring pure-strain westslopes. What's more, the creek could serve as a secure, self-sustaining reservoir of wild fish that could become seed stock for expanding pure westslopes elsewhere in the Missouri River Basin.

Daunting challenge

Turner's offer was embraced by FWP under three different agency directors and both Republican and Democratic governors spanning more than a decade. The most daunting challenge was the project area's vast size. No one had ever tried to remove fish and replace them with westslope cutthroat on such a scale.

The plan called for applying piscicides (fish toxins) to the entire Cherry Creek system, from its origin at Cherry Lake high in the adjacent Lee Metcalf Wilderness downstream to the waterfall. The chemical treatment would eliminate all the hybridizing and competing nonnative trout to make way for westslope cutthroat.

Despite his enthusiasm for restoring westslope cutthroat, Turner had reservations about removing existing nonnative trout. He had spent years restoring portions of Cherry Creek's riparian (streamside) corridor, degraded from decades of intensive cattle grazing by previous owners. He had watched the creek subsequently repopulate with



OPERATION REMOVE AND REPLICATE Fish were eliminated from Cherry Creek and its tributaries in four phases, beginning in 2003. In each phase, fisheries workers applied rotenone to kill all nonnative rainbow, brook, and Yellowstone cutthroat trout first stocked in the early 1900s. Historically Cherry Creek was fishless upstream from a 25-foot waterfall that prevented fish from moving up from the Madison River. The falls will now prevent nonnative trout from entering the restoration area.

abundant trout—the very ones now targeted for eradication. But after listening to persuasive arguments from his son and others, the lifelong trout angler and coldwater conservationist realized he could, along with FWP and the U.S. Forest Service, make a historic contribution to westslope cutthroat recovery.

Turner's involvement raised the hackles of some Montanans, who argued the project would ruin a long-standing public recreational fishery to benefit a single species. The plans to apply piscicides also drew fire. Three different lawsuits, in state and federal courts, were filed primarily over use of the chemicals, claiming FWP would violate the Clean Water Act.

FWP argued in court that because the Flying D Ranch is private property well removed from public roads, bridges, and other access points, it draws few public anglers, and none within the westslope project area. Though the headwaters of Cherry Lake are on public (federal) land, FWP biologists were confident the new westslope cutthroat fishery would satisfy long-term angler needs.

As for rotenone and antimycin, the fish toxins, Clancey points out that both have been widely applied and well studied throughout the world for decades. Naturally occurring, rotenone is used by indigenous people in South America and the South Pacific to capture food fish. Both chemicals work by preventing fish, aquatic insects, and other gilled organisms from processing dissolved oxygen in water. They are harmless to other life forms, except in extraordinarily large dosages. Rotenone and antimycin break down in sunlight and are quickly rendered benign. What's more, fisheries workers can apply a neutralizing agent, potassium permanganate, at the downstream end of targeted treatment areas to stifle lingering toxic effects. Typically, rotenone and antimycin are fully neutralized within 30 minutes of contact with sufficient potassium permanganate.

Judges in all three legal challenges ruled in FWP's favor and allowed the project to proceed.

Legal hurdles cleared, FWP began the multiyear task of applying piscicides. Fisheries workers started at the top of the drainage in 2003 and moved downstream, in four separate phases over a period of eight years, using closely monitored drip stations.

Nearly 60 miles of main-stem creek and secondary tributaries, some less than a foot across, had to be treated—and thoroughly. If even a few fish were missed, they could repopulate and ruin the westslope cutthroat restoration.

The annual piscicide treatments continued without a hitch until summer 2010. In one of the last rotenone applications, the chemical persisted farther downstream than fisheries workers anticipated. No potassium permanganate was applied that day. Biologists assumed the rotenone would self-neutralize before reaching the end of the project area, as it had in two previous applications at that same site. Roughly 1,000 trout and whitefish were killed for roughly 4 miles farther downstream than expected. Though some dead fish drifted down into the Madison, Clancey says no fish in that river were harmed. "The lethal effects ended about 3 miles up Cherry Creek from the confluence," he says.

FWP conducted a thorough review of the incident and afterward imposed tighter safeguards. "Our new standards now include mandatory use of potassium permanganate in piscicide treatments to prevent inadvertent fish kills in the future," Clancey says.

Resounding success

Each time biologists verified that all non-native fish had been eliminated from a phase of the project, they introduced eggs collected from wild cutthroat populations elsewhere in the Upper Missouri drainage. The first eggs, planted in 2006, have now grown into healthy 10-plus-inch fish, Clancey says. And the trout are multiplying. "We've begun capturing young-of-the-year westslope cutthroat in the upstream reaches of Cherry Creek," he says. "That tells us the population is reproducing. It's a big step toward our goal."

Follow-up studies show that any aquatic insect populations harmed by the piscicides are recovering to pretreatment levels. That means newly restored trout will have plenty of food to eat.

And anglers will have plenty of fish to catch. Clancey is confident that within a few

years anyone who previously fished Cherry Creek or Cherry Lake will see the same overall size and numbers of trout. "And the fish are moving downstream as we'd hoped," he adds. "We've seen photographs from anglers who have caught westslope cutthroat in the Madison near the mouth of Cherry Creek."

Biologists and conservationists have lauded the Cherry Creek restoration. "It's definitely a monumental achievement in native trout

“What happened there is rare, but it doesn't have to be.”

recovery,” says Bruce Farling, executive director of Trout Unlimited's Montana State Council. "It was clear to us from the very beginning that the venture was extremely well planned and scientifically sound." The Montana Chapter of the American Fisheries Society (AFS) named Clancey its 2010 fisheries professional of the year and Turner its landowner of the year.

Turner contributed more than \$750,000 to cover roughly 75 percent of the Cherry Creek project costs. The rest came primarily from the U.S. Forest Service in the form of staff and equipment to help organize and carry out the project.

"The sheer scale of the project was remarkable," says Bruce Rich, FWP regional fisheries manager during most of the Cherry Creek project and now chief of the department's Fisheries Bureau. "Usually when we're able to do a nonnative fish removal and native restoration, it's on 10 or 11 miles of stream at most. We restored nearly 60 miles of the Cherry Creek drainage, including tributaries. It was a huge undertaking that took years to plan, coordinate, and execute."

Clancey notes that the Cherry Creek project offers inspiration for what can be accomplished elsewhere in Montana and other western states. "What happened there is rare," he says, "but it doesn't have to be."



WESTSLOPE CUTTHROAT TROUT BY JAY FLEMING



For more than a generation, Montana has been in the vanguard of wild trout management. It was the first state to stop stocking nonnative trout in streams and rivers in favor of perpetuating natural, self-sustaining populations. It has helped lead efforts to protect streamside habitat and in-stream flows. Unlike many states' "put-and-take" models of trout management, which pay little heed to water quality and habitat, Montana has long recognized wild trout as a reflection of their environment.

"Where you have westslope cutthroats you have good water quality, and where you have genetically pure westslope cutthroats you have the only trout species that were in that region 200 years ago," Clancey says. "We're losing places like that. But here's a case where, instead of trying to fend off cutthroat losses, we made a real significant gain." 🐟

The worth of a westslope

Lee Nelson, coordinator of FWP's Native Fish Program, notes that the Cherry Creek project and other westslope cutthroat restorations raise an important question: As long as it's a catchable fish, what difference does it make if a trout is a rainbow, a brookie, or a westslope cutthroat?

One reason FWP makes westslope cutthroats a priority, Nelson says, is to reduce the likelihood that the species will be listed as threatened under the ESA. But more important, he adds, is that westslope cutthroat are a fine and beautiful sport fish, part of Montana's cultural heritage. Then there's the argument that humans have an ethical obligation to the natural world, both now and down the road. "I think most people would agree that any species that has existed in an area for thousands of years has an inherent value and should be maintained for future generations," Nelson says.

The allure of something rare and special, that can be handed down like an heirloom from one generation to the next, is a powerful element of Montana's natural heritage. "Biologists and anglers will tell you that the opportunity to fish for a wild-spawned westslope is a wonderful experience that says a lot about the quality of habitats we have left in Montana," Nelson says. "It deepens Montana's mystique as a unique destination for native trout fishing." ■