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The Last Best Fish: will conservation and consensus save Montana's Arctic grayling?

Jonathan M. Stumpf
The University of Montana

THE LAST BEST FISH: WILL CONSERVATION AND CONSENSUS SAVE MONTANA'S ARCTIC GRAYLING?

By

JONATHAN MICHAEL STUMPF

Bachelor of Science, Music Business, University of Colorado-Denver, Denver, CO, 2004

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Approved by:

Perry Brown, Associate Provost for Graduate Education
Graduate School

Clemens P. Work, Chair
School of Journalism

Keith Graham, Committee Member
School of Journalism

Greg Twigg, Committee Member
Media Arts

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Tucked away in the southwest corner of Montana, in a high-altitude river basin that is the essence of Big Sky Country, warm currents of dry air hang over a fish-stuffed river. The haystack-dotted basin is surrounded by thick stands of pine and a horizon serrated with snow-tinged peaks. In the willow-thick river bottom, a heron navigates the oxbows of the river hunting the aquatic inhabitants while an antelope dashes out of sight over a sagebrush-covered hill. This is the upper Big Hole River valley and to the casual observer it's just another classic Western landscape with postcard-worthy vistas and comforting desolation, but in this high-altitude river, the struggle of an imperiled fish is playing out.

In the upper Big Hole valley, time has stood relatively still with the terrain intact just as it was 50 years ago. The river, however, is changing. It is home to the last native population of fluvial (river-dwelling) Arctic grayling in the Lower 48 and the fish has been in steady decline since it was described over 25 years ago by nature writer David Quammen as "under certain specific conditions, the most exquisitely colorful bit of living matter to be found in the state of Montana." The grayling, a member of the salmonid family, is a cousin of both the trout and the mountain whitefish. While it more closely resembles the dreary gray scales found on the whitefish, it has a unique characteristic that sets it apart: a pronounced sail-like dorsal fin. This prehistoric feature is splattered with cerulean, violet and deep-turquoise spots layered over black ovals and blends to the underbelly with a rosy patina that resembles the waning minutes of sunset. When observed underwater, the grayling can equal the beauty of the most spectacular native trout.

It is culturally and biologically significant to this landscape and as the age-old fight for water continues, the Big Hole grayling population—estimated at around 1,000—is trying to hang on. "We've got Arctic grayling swimming through sagebrush in

Montana," says Peter Lamothe, fisheries biologist with Montana Fish, Wildlife and Parks (FWP). "That's kind of a unique thing."

Opinions differ about what should be done for the Big Hole grayling, often radically. Because the natural world is inherently complex, it leaves no uncomplicated solution for the grayling's recovery. In this harsh climate where ranching rules the land and growing seasons are short, water is at the heart of survival for both the fish and the rancher. The ranchers depend on the water for economic survival; without it the agricultural landscape would perish. For the grayling to thrive, the water should be cool, clean and abundant. However, these days, adequate water in the Big Hole River is lacking for everyone.

This continual struggle for the water in the river is a battle that has been repeated in many watersheds around the West with many individuals and organizations putting forth a willingness to protect a single species and a fundamental resource. Many state and federal organizations actively work to return water to rivers and whether or not it is for the specific species or just to get water back in the river is constantly debated because of the many complexities in these battles. While the focus in the Big Hole is on the grayling, what is of more importance is the cold, clean water that both the ranchers and grayling need to survive.

These struggles are happening across the West, where ecology and economy converge. A more publicized case took place in 2001, in the Klamath River basin in eastern Oregon. The river was determined to provide critical habitat to both the endangered sucker fish and threatened Coho salmon. That year, the federal government denied water to 1,300 users in the basin, saying that under the Endangered Species Act, the fish trump the farmers. In the Blackfoot River basin in western Montana, Wasson Creek was dewatered every summer because of the agricultural demands put on it by those with the water rights. In this instance, Montana's Trout Unlimited leased these

private rights and now the creek flows continually all summer, providing the necessary habitat for the pure-strain westslope cutthroats that inhabit the stream. Both of these cases resemble the struggle being played out in the Big Hole valley.

The journey of the Big Hole River begins in the Beaverhead Mountains at 7,500 feet, where its tributaries skirt the Idaho-Montana border at the outlet to Skinner Lake, south of the farming community of Jackson. The river, identified by an upper and lower stretch, first flows through a high-altitude basin before reaching the midway point in the community of Wise River. After it rushes through an angler-dotted canyon, the river empties into ranch land, intersecting Interstate 5 in numerous spots before joining with the Ruby and Beaverhead Rivers in Twin Bridges to form the Jefferson River and complete its journey through a 1.8 million acre watershed. Visit the upper Big Hole valley and you'll find roughly 3,000 residents occupying 400,000 acres. Here, cell phone coverage winks out in 70-mile stretches and the town of Wisdom—the heartbeat of the valley—still claims the coldest location in the Lower 48. Culturally and biologically, things run much slower up here—possibly one reason why the grayling have persisted.

Historically, fluvial Arctic grayling were found in Michigan and Montana, a glacial relic from the Pleistocene era hanging on at the southern extent of its range. The Michigan population went extinct in the 1930s, leaving the Big Hole River grayling as the last native population in the Lower 48. They once thrived in all rivers in the Missouri River watershed above Great Falls, but then the nation's thirst brought a need for water storage. This practice is not conducive to grayling survival since they require long connectivity in rivers for spawning. With dams being built on the Missouri, Madison, Sun, Ruby, Jefferson and Beaverhead, the Big Hole was left as the longest stretch—156 miles—of undammed river in the watershed. Add the introduction of non-native trout, climate change, habitat degradation, and over-harvest from early anglers, and now the grayling are barely holding on in four percent of their original range.

Attempts are being made at restoring other populations in the Ruby and Sun Rivers, but with hatchery fish. Those native populations have already gone extinct.

Go north to Canada or Alaska and you'll find ubiquitous populations of the Arctic grayling. They grow much larger and are regarded as a sport fish much like salmon or trout, where these rivers are still very wild, and flow much larger, cooler and provide longer free-flowing stretches required for spawning. Even in other states across the West, adfluvial (lake-dwelling) populations thrive. Until recently, they were viewed by the U.S. Fish and Wildlife Service (USFWS) as a disparate species based on behavior and genetics. People and agencies have been aware of the diminishing numbers of grayling in the Big Hole for the latter part of the last century, giving the Big Hole grayling quite an active legal history.

Although this population of grayling has been recognized as a sensitive species for more than a quarter-century, the attempts by organizations to gain ESA protection for the grayling has not been easy. Beginning in 1982, the USFWS recognized that the grayling in the Upper Missouri River basin were in serious decline. After years of no mandated protection from the U. S. Fish and Wildlife Service (USFWS), in 1991, the Center for Biological Diversity, based in Tuscon, Ariz., petitioned the USFWS to list the Big Hole grayling under the ESA. Three years later, the USFWS determined it was warranted and put it on a candidate list for ESA protection. Again, in 2003, the Center for Biological Diversity along with the Hailey, Idaho-based Western Watersheds Project sued the USFWS for its refusal to list the grayling. The USFWS responded in March of 2004, still recognizing it as a distinct population segment but this time elevating its status to the highest priority level for a candidate species without making the ESA list. That same year, precipitation was at record lows throughout the watershed and by mid-May, the Big Hole River's upper basin was practically dry. Since grayling spawning takes place in the spring and high flows during this period are necessary to their

survival, the previous plaintiffs sued again in May 2004 to list the Big Hole grayling under the ESA's emergency provision. The litigation was settled out of court in August 2005, determining that the USFWS would make a final judgment for ESA protection of the fluvial grayling by April 15, 2007.

Eight days past the 2007 deadline, the USFWS service announced the findings of its 12-month study, stating that the fluvial Arctic grayling of the Big Hole River did not constitute a species, subspecies or distinct population segment and therefore, did not warrant protection. The fish was removed from the candidate list for the ESA. Seven months later, the Center for Biological Diversity, along with the Western Watersheds Project, the Federation of Fly Fishers, and individuals George Wuerthner and Pat Munday, filed a lawsuit against the USFWS to overturn the April 2007 decision. The outcome is still pending and could take upward of three years for a decision. ESA litigation is a complicated, drawn-out process and even if the decision is overturned, it could take up to another two years to determine the critical habitat of the grayling. The USFWS determines on a case by case basis the location of critical habitat, what landowners are in violation of the ESA, and begins implementation of a plan to mitigate against ESA infractions.

While the views differ about protecting the Big Hole grayling, one individual at the field biologist level feels they might at least still merit special consideration as a unique population. Doug Peterson, a fisheries biologist with the USFWS in Helena, is the lead biologist at the Montana field office and has been administratively at the first level of the grayling decisions going back to 2004. All of these decisions go through a departmental hierarchy up to the Secretary of the Interior who can either agree or disagree with his findings. "My role is to essentially provide the science," Peterson says. "Decision makers consider the science in relation to their interpretation of policy and what else they typically consider."

Peterson is working on a genetics study that could certainly support the claims that the Big Hole grayling is a distinct population segment. But because he is providing evidence and testimony in the current lawsuit, Peterson is limited to the type of questions he can answer regarding his study. "I can say this: I certainly would manage them as independent unit conservation wise," he says. "You wouldn't take grayling from anywhere else and try and put them into the Big Hole. You know what I mean? Distinct population segment characterization aside, I believe, and I think everyone recognizes, they form some type of conservation unit, whether that is a unit unto itself, or the most important unit among a couple of other units of grayling that might be important in the big picture in the upper Missouri."

Should the grayling receive listing under the ESA, it could potentially modify the way ranching operations run, forcing the landowners and ranchers to return water to the river. If the fish were listed, each landowner would be assessed on an individual basis by the USFWS as to whether practices are in violation of the Act. Private property rights do limit a complete takeover, but since water is central to grayling survival and is the foundation of their habitat, most ranches' removal of water from the river would be restricted. Any farmers who receive federal funds, for instance a farm subsidy, would be held to even tighter federal interference should grayling get listed.

Most ranchers, therefore, oppose listing the grayling under the ESA, but that is not to say they want to sit back and watch it to go extinct. Michelle Anderson, a professor at Montana Tech in Butte and board member of the Big Hole River Foundation, recently conducted a survey of 300 watershed residents and agency individuals about grayling management. Although preliminary, the results indicate that of the 90 people who replied, most do believe grayling numbers have stayed about the same or decreased over the last decade. Notably, all but a few respondents wished to see grayling numbers maintain or increase above current levels.

Regardless of a potential listing under the ESA and the imminent threat of federal intrusion, another solution for the grayling may be emerging in a sort of conservation insurance. Back in 2004, all ranchers knew a decision was pending, so Cal Erb, a rancher near Wisdom in the upper Big Hole valley, began investigating the different types of agreements that would offer his ranching operation protection from a grayling listing. He discovered the Candidate Conservation Agreement with Assurances, Lamothe says. The CCAA program was developed in 1999 by the USFWS and provides regulatory incentives to landowners with sensitive species as long as they engage in active conservation. In return for habitat conservation work, the landowners sign into a legally binding agreement that states they will be protected from being charged with the "taking" of an ESA species should the grayling get listed. Under the ESA, a "taking" of a listed species in this situation would be "modifying the habitat of a listed species in such a way that interferes with essential behavioral patterns including breeding, feeding or sheltering." Dewatering the river or destroying the riparian habitat would be two infractions that under ESA regulations, could lead to $50,000 in fines or one year in jail or both. So the CCAA essentially states: Help conserve the grayling now and should they get listed, you'll be exempt from further violations and government interference. "They fully understood they would have to implement positive action," Lamothe says.

In 2005, work began on drafting the CCAA for fluvial Arctic grayling in the upper Big Hole River, a collaborative planning effort of various state and federal agencies, including the USFWS, Montana FWP, Montana Department of Natural Resources and Conservation and the USDA Natural Resources Conservation Service. Each agency contributed to the document with roles being administered based on the specialties of each agency, but also based on the previous working relationships the various agencies had with landowners in the valley. While the CCAA is a program

based on the implementation of conservation knowledge and skills from the various agencies, it also deeply rooted in the relationships that agency individuals have built up over the years with landowners. Lamothe adds that the success of the program "is based on the personalities of the agency folks that are involved."

Because of the mobility of the grayling—they sometimes travel up to 70 miles during spawn—the project area encompasses roughly 320,000 acres of private land from the Dickie Bridge river access—the midway point on the river—up to the headwaters. The overall project area is then broken down into five smaller parcels. The document became official on August 1, 2006, and enrollment is open to any landowners within the program area for 30 months.

To educate the ranchers about this opportunity, Lamothe held open houses in Wisdom and Jackson, and went door to door through the valley. These educational efforts worked. To date, the CCAA has enrolled 33 landowners with almost 157,000 private acres and 8,000 acres of state land. In comparison to the other 17 active CCAA programs that have been developed since the program's inception in 1999, the Big Hole CCAA has the largest number of enrollees.

The structure of the CCAA authorizes the USFWS to grant authority to the Montana FWP and their partners to enter into agreements with the 33 landowners and work together to create site-specific restoration projects to enhance the grayling habitat. The four conservation targets in the CCAA are restore in-stream flows, riparian habitat restoration, eliminate entrainment (fish lost in irrigation ditches) and removal of passage barriers for fish.

As of October 2008, there were 47 active projects. These include grazing plans to reduce the impact of livestock on the river banks and digging stock water wells to remove them from the river altogether. To date, over 70 miles of riparian fencing has gone up along the river and tributaries. Outdated headgates are being replaced to more

efficiently manage diversions. Streamside vegetation is being replaced; during a two-day volunteer effort in 2007, over 20,000 willows were planted along the river and tributaries. Fish barriers have been installed on irrigation ditches. Dilapidated culverts have been replaced and streams relocated out of livestock feedlots.

All of these projects are funded by the various state and federal agencies, and by NGOs, including grants obtained by the Big Hole Watershed Committee and Big Hole River Foundation. Roughly half of the $4 million spent on the project to date has come from taxpayers and the other half from grants. Lamothe, the manager of the CCAA at the state level says they are limited by staff, not funds. "We haven't identified a project and not be able to fund it," he says. Ranchers also commit resources to the projects and to date have contributed time, labor, on-site materials like willows, gravel and sod mats, and continuing maintenance of habitat projects.

However, critics of the CCAA state that the essential factor to saving grayling—putting water back into the river—is missing from the agreement. They say consensus doesn't help because there is no requirement in the CCAA that requires landowners to legally put water back in the river. "Without dealing with the problem of minimum in-stream flows," says Pat Munday, author and plaintiff in the current USFWS lawsuit, "grayling recovery under the CCAA is doomed to failure. The Rock Creek reconnection project is an example of this: great riparian and stream restoration project, but utter failure last summer [2007] because of dewatering."

The Rock Creek project overhauled the riparian habitat of the tributary and restored its connection to the Big Hole River (previously, it flowed into an irrigation ditch). Willows were planted and a new stream channel was created in the spring of 2007. That summer, record temperatures and low precipitation throughout the West put a strain on irrigation and Rock Creek went dry.

Water is at the crux of this issue but without healthy habitat, the water is essentially useless. Jim Magee, a grayling biologist with Montana FWP, says just water in the river will not recover the grayling. "Without having functioning channel and riparian systems, habitat conditions are severely degraded regardless of flows," Magee says. "If we have 20 cubic-feet per-second (cfs) in a healthy channel with intact riparian systems, the stream can support much higher biomass, invertebrate, fish and wildlife species. Having a degraded channel that is shallow and over-widened will result in decreased biomass. The message is while in-stream flows are extremely important, there is no magic number."

And like the natural world, the water issue within the CCAA is very complex. While the CCAA does not state a specific amount of water that each landowner must return to the river, it does provide minimum flow targets under a 10-year plan based on the cumulative effect of various actions. This makes the negotiation for reductions in irrigation diversion by the landowners critical. It is a voluntary plan, but all landowner participants are making a concerted effort to strive for the minimum flows. Last year, landowners enrolled in the CCAA released 140 cfs of water to the river that could have been legally used for irrigation, Lamothe says. He understands the landowner's water rights, which is why collaboration with the landowners to reduce irrigation is so crucial. "There is a legal right to divert water," Lamothe says. "If your goal is to end that, then your fight from my perspective is in Helena. You have to change the law. If you want to save grayling, then your fight is in the Big Hole."

"It is hard to put a specific number [on minimum stream flows] because hydrology and climate is extremely variable, and is changing all the time," say Mike Roberts, the hydrologist from the state's Department of Natural Resources and Conservation who is working with the CCAA. He says that variables, like the timing of runoff and snowpack, change every year. "We haven't got resolve on the water issue

because it is something that can't happen overnight. It has taken a lot of years to gain trust to work with these folks."

Add to the other variables climate change, non-enrolled landowners who have rights to the water and a river basin with more water rights than it has water in the river, and the in-stream flow issue gets sticky. In addition, a water rights adjudication process is underway for the entire Big Hole River basin and a final decree won't be made for at least two years, at which time many of the water rights could change, adding one more level of complexity.

Another potential option to help manage in-stream flows is the use of water leasing, which suggests two things: a change of part or all of the water right from irrigation to in-stream flow and financial compensation for this change from various agencies. But because the basin is un-adjudicated, the ranchers don't yet know the amount of their water right or its value. In 2004, the BHWC secured $1 million from the DNRC to pay ranchers for lost production associated with reduced irrigation diversions. "It was an emergency action with very good intentions from all involved," Lamothe says, "but as with most things related to water rights it is very difficult to make it perfect. Again, the primary issue was the inability to recognize the value associated with senior water rights because the final decree for the basin has not been issued."

For the ranchers, water is the lifeblood of their operations. Many understand the complexity of the water rights and know that the adage "use it or lose it" still holds true. This was formerly an argument many ranchers used to not voluntarily return water to the river. They were against returning water to the stream under the CCAA, stating that water users could claim their abandoned water rights since the basin is currently going through the adjudication process. Montana Trout Unlimited was aware of this obstacle and lobbied in the state legislature to change the water use law. Now, if

someone is involved with a program conservation program like a CCAA and they are leaving water in the river as part of a voluntary agreement, they cannot be subject to a claim of water right abandonment. Bruce Farling, executive director of Montana Trout Unlimited says, "To take care of those guys, we added an additional does of insurance and got rid of an excuse."

The motivations to sign up with the CCAA vary. The primary reason is the possible ESA listing, but for Max Lapham, a fourth generation rancher near Jackson, he says the CCAA has given him the opportunity to complete projects that would normally restrict him financially, with his motivation being that it helps the land, not because of the imminent threat of a grayling listing. "It is going to help the watershed and the creek," Lapham says. "You understand that much. But it is just whether you want to put that money into that well when there are some other priorities that will come first. But with the CCAA, it puts those things up in the front and we have had the financial help to do it." He says the process has been educational and the overall effect is helping. "I feel like I am helping what my great granddad started. I feel like I am doing some things that are really good for the land," Lapham says.

Jim Hagenbarth, a rancher of the lower Big Hole and active member in the Big Hole Watershed Committee, understands the importance of a healthy watershed, but doesn't believe an area should be managed just for the critical habitat of a specific species. "You lose sight of the big picture and all the other species that are dependent upon the habitat," Hagenbarth says. "I am more interested in the habitat than the grayling, because it is the base from which life comes." Hagenbarth clearly appreciates the flow of life within his ranch, but is intolerant of outsiders trying to change his way of life. "The liberal courts and the extreme environmental obstructionists have turned the ESA into a weapon to change land use," Hagenbarth says. "The groups that support the grayling in court have hardly participated in the grayling recovery efforts. They are

only interested in stopping diversion of water and the livestock industry in the Big Hole."

One of these groups, a plaintiff in the current lawsuit, is the Western Watersheds Project (WWP), an organization that is outspoken about the detrimental effects that ranching can have, and about land and water use in the West. Many of their campaigns involve restoring the landscape of the West to the wild state it once was before the advent of livestock production through either litigation or competitive bidding for grazing leases, a program they pioneered in 1993. Executive director Jon Marvel believes that most ranchers involved with the CCAA have signed up out of fear of an ESA listing for the grayling. "What kind of program is that," Marvel asks "where you are acting out of fear, instead of because you actually care about saving these fish?"

In this multi-sided controversy, even the various environmental organizations have differing views. Regardless of reasons for signing onto the CCAA, Farling sees that work is immediately being done to improve the habitat. "I think we are getting these guys to do more under a CCAA than they would if they were just straight listed with a top down recovery plan," Farling says, citing the federal action that supplants local involvement with an ESA listing. "I'm convinced of it, which is why people from Western Watersheds Project and the Center for Biological Diversity, the guys that are suing over this stuff, they don't get any of it. To them, the fish is almost an abstraction. They forget about people. [To them] it is all about reforming western water law—forcing people to put water back in the river and thumping agencies for not doing their jobs. The fish become secondary."

Marvel says a pre-conception of people who litigate for endangered species is that they hate people, don't want them around and that they are waging a war on the West. "None of that is true," he says. But his views differ about the many ranches in the Big Hole valley. "[The ranches] are not important economically to the state of

Montana," Marvel says. "They are not important ecologically. Sure, they are important to individual landowners there, but that is true everywhere. If we are going to save the grayling, the way people are going to live there is not as livestock producers. We really don't need any more cattle; it is bad for your health anyway."

He does admit that some ranchers are more actively involved with conservation efforts than others, but not enough so that the net result of all the ranching will save the fish. "They need to put water back in the streams or not take it out in the first place," Marvel says. "If they are unwilling to do that, then it seems to me that they really don't want to save the fish."

Leah Elwell, conservation coordinator for the Livingston, Mont.-based Federation of Fly-Fishers, says her group entered into the lawsuit because they believe it would good publicity to have the grayling listed under the ESA and help garner attention to the threats it faces. Also, she says the USFWS's reasoning for the non-listing was not science-based. "More of their process," Elwell says, "for making the decision is what prompted our ultimate decision."

Marvel says his organization carefully chooses lawsuits in order to protect species and habitat, and in instances where agencies have violated the law in denying sensitive species protection. "In this case," Marvel says, "they have done both." This is the underlying motivation of the WWP, but some, like Farling, think the fish is a surrogate to reform Western water law.

Some environmentalists think that current Montana water law gives too much priority to existing water rights and makes it difficult to free up water for environmental purposes, especially since the law regards surface water as a public resource. While other Western states like Wyoming, Colorado and New Mexico have minimum in-stream flow laws in place, Montana does not. Marvel says that water is critical for the fish to survive, thus their motivation for challenging the decision. "A lot

of people have said to me 'You can't change private water rights or water diverted from streams on private land,'" Marvel says. "I think they're severely mistaken if that is what they believe. I think that the law is powerful enough to force water back in the stream. I don't know a better way to put it. The law is designed to save species."

While the litigation for listing may or may not help the grayling, a decision is still three years out. The immediate impact on grayling numbers rests with the landowners and agencies that are involved with habitat restoration through the CCAA to help recover the fish. If the Big Hole grayling has any chance of recovery and survival, the CCAA program could be their immediate salvation. With over 157,000 acres of habitat, roughly $4 million in funds and countless man hours on the ground and behind the scenes contributed to this species, it at least gives the grayling a fighting chance.

Kendra Womack, a fish biologist with the USFWS in Boise, Idaho, studied the CCAA program extensively while completing her master's at Utah State University. She says that the Big Hole CCAA, compared to other CCAAs, really addresses what is being done for the fish. "There are places where the CCAA is being used more to protect the landowners and not the species," Womack says. "With the grayling, you can identify very specific things to do that have very measurable impact on the species. I don't know that in the grayling case a listing would really be beneficial, especially because of how much has gone into building relationships and building trust."

Jeff Everett, the USFWS CCAA representative, says the entire program is based on building relationships with the landowners and that takes an investment of time and energy. "It takes time to build up the credibility that you have their best interest in mind," Everett says "and that the goals and objective that you have from a resource point of view, and fixing the habitat have everything in common with the ranch, and their goals and objectives from a livestock operation point of view."

The CCAA does offer a less confrontational way to save grayling, but many ranchers aren't convinced the document will provide full protection from the law should the grayling get listed. Harold Peterson, a rancher in the upper Big Hole valley along Big Swamp Creek is aware of this and while the CCAA is offering him protection from a possible ESA listing, it has yet to be legally tested once a species is listed. "Who is to say they list the grayling," Peterson asks, "and then those environmental groups come back in with some high-powered lawyers after you have already done what was asked? This is scary stuff. You get a big group with a lot of money come in here and file a lawsuit, and you have to spend $100,000 to defend yourself. That is not too good. We're dealing with dynamite really."

While grayling numbers in the Big Hole have decreased from the time people first noticed, no one involved with recovering the fish has completely given up yet, from the ranchers to the agency individuals to the litigants. They are each implementing what they believe is the best method to restore the grayling, from planting willows to drafting conservation plans to fighting legal battles. The efforts continue and whether it is enough to elicit a positive response from the population is yet to be determined. The Big Hole hasn't changed too much from the time Quammen traveled to the river to write about these fish and while there may be fewer grayling in the river today, overall his words still hold true: "They *are* there, the Big Hole grayling," he said in 1982 for *Audubon* magazine. "At least for now."

The Diplomat - Mike Bias

As a fly-fishing guide in the heart of trout country, his job is providing clients with lifetime memories and unforgettable fish. Now, a fish that resides in one of his home waters is edging toward extinction, but this conservationist doesn't think listing it under the Endangered Species Act will save the fish, and he's trying to convince everyone.

I'm standing on the bank of the Big Hole River with fly-fishing guide Mike Bias of Twin Bridges, Mont., preparing for an afternoon of angling. As he scans the water, he quickly puts together my angling plan. He hands me a brown, hand-tied girdle bug and several San Juan worms, and tells me to cross the river, carefully negotiating the current below the tail-out. Next, he says to walk my way back up into the pool, casting along the way, emphasizing the need to get the flies down deep and watch my backcast. It's obvious he possesses the skills and talent to successfully navigate the many river obstacles to putting his clients onto fish, as 15 minutes later I'm releasing a 14-inch brown trout.

But in addition to today's fishing plans, Bias and I are also here to discuss his role as the executive director of the Big Hole River Foundation (BHRF), and similar to his guiding job, how he negotiated the Foundation's way through a difficult decision surrounding a resident fish, the fluvial Arctic grayling. Specifically, the April 2007 decision by the U. S. Fish and Wildlife Service (USFWS) to keep the fluvial Arctic grayling of the Big Hole River off a candidate list for protection under the Endangered Species Act (ESA) and the polarized viewpoints that emerged in the wake of this decision. This population of grayling is the last native population in the Lower 48, estimated around 1,000, so the decision to remove them from candidate status was controversial.

Bias is the executive director of the foundation whose mission is to protect and enhance the home waters to this fish, and he tells me it was mandatory for the BHRF to

quickly explain its opinion regarding the decision. Ranchers were telling him "we sure dodged a bullet with this one" downriver the day after the decision in Twin Bridges. Upriver, near Divide, protesters—some former BHRF board members—were grilling papier mache grayling on the banks of the Big Hole and filming it for dissemination on YouTube to publicize what they thought was a misinformed decision by the USFWS. Both interests wanted support from the Foundation and therefore, they needed to release an immediate decision.

The BHRF was started by conservationist and famed fly-tier George Grant. As a resident of Butte with a background in protecting watersheds—the local Trout Unlimited chapter bears his name—Grant formed the nonprofit organization 20 years ago with the intent of protecting and conserving the Big Hole River because he knew it was such a unique watershed. The 400-member Foundation is funded by both individual and corporate donors and they were taken into consideration before the BHRF came to a decision.

Its board of directors—like the river basin—is diverse and includes both a rancher from the valley and a professor from nearby Butte. The professor is conducting a survey about the varied perceptions of grayling management, while the rancher is trying to exterminate a wolf that is bothersome to his livestock. Regardless of these backgrounds, all have a shared concern of finding the best available options to care for the river. Bias knows the lawsuit that is being filed challenging the decision is far too extreme for the fairly moderate foundation to associate with, but he also knows the grayling numbers are down and that immediate action is needed to restore the population.

Bias doesn't think the lawsuit will immediately help the grayling, but he does say that based on science they should be given ESA protection. So based on their mission statement and the consensus of the board of directors, the BHRF agreed that the

best way to immediately protect the grayling was to develop science-based conservation strategies to effectively enhance the critical habitat of grayling.

The river community might have dodged an immediate bullet with the non-listing decision, but Bias says they probably just put off the inevitable for a while. He knows that many in the ranching community see the decision as an opportunity to buy more time and he hopes they will utilize programs like the Candidate Conservation Agreement with Assurances (CCAA) to seek protection from listing repercussions and government management of property while improving grayling habitat.

But with his educational science background—spotted owl studies for his master's and small mammal dynamics for his doctorate—he also knows that the finding is flawed. "As a decision based in biology, it was ludicrous," Bias says. "It should have been listed." He cites a low population number and the distinct population segment factor as the two reasons that flaw the decision. He explains that wolves and grizzly bears in the United States—both protected under the Endangered Species Act—are not the same as the wolves and grizzlies in Canada and Alaska, just like the grayling in the Big Hole are not the same as the grayling elsewhere. Bias also agrees that the CCAA is an excellent program for immediately conserving and hopefully recovering the grayling in the Big Hole. Finally, Bias supports the rights of the individuals and groups to pursue legal action with regards to the decision.

So does he think if the grayling were listed as an endangered species it would save them from extinction? "Listing doesn't necessarily save a species that gets on the list," Bias says. "That's important for people to know. But, I think the end result, if it is listed, it will help. My concern with individuals and groups that are just concerned with suing the government isn't by itself helping. A lawsuit against the Fish and Wildlife Service isn't going to put more grayling in the river in the next five years. I haven't seen a lawyer out here yet that is helping put more grayling in the river."

His argument is based on these numbers: since the introduction of the Endangered Species Act in 1973, 1,358 total species have received protection under the act and 149 of them are fish or distinct population segments. Of those 149, none of these species or populations have been designated as recovered. Only five have been removed from the list; four because of extinction and one due to a taxonomic revision. It's not to say that the endangered or threatened species have not seen increases in populations. The shortnose sturgeon and the greenback cutthroat trout both have seen population growth, but not enough to warrant removal from the list.

This is the crux of a 20-minute Powerpoint presentation that Bias has been giving to the various interests involved with Big Hole grayling. Initially, the BHRF's viewpoint was stated in an editorial in the Montana Standard in May 2007. Then, in March 2008 at the Arctic Grayling Recovery Program (AGRP) luncheon, an annual meeting of scientists, conservationists and other grayling-related interests, Bias presented the various perspectives for not listing. "It was sort of out of my realm," Bias says. "It was more political, talking about political perceptions of the non-listing, which isn't as cut and dry as counting bugs. But the feedback I got was great. Everyone I talked to said they learned something."

The following month, Bias presented to the Big Hole Watershed Committee, which consists primarily of landowners in the Big Hole Valley and interests that weren't present at the AGRP luncheon. Again, it was well received by the crowd of mostly lay people.

In a tough position to accommodate so many various river interests, Bias' final conclusion as executive director states that scientific evidence suggests the grayling should be protected under the Endangered Species Act and that the foundation is supporting the CCAA as an appropriate and immediate tool of addressing species recovery. But all politics aside, conservation of the river, streams and ranching culture is

at the heart of Bias' motivation, which was the main reason he quit his environmental consulting business in California: to come make a difference in the Rocky Mountain West on a river he's been guiding for years.

"This river valley is unlike any other river valley in the West," Bias says. "It is not developed, it is largely ranching families, it is an undammed and unique fishery, but it still needs conservation effort and that is where I think I can make a difference."

The Eco-capitalist - Peter Lamothe

This fisheries biologist with Montana Fish, Wildlife and Parks is the state manager of a conservation program that is the largest of its type in the United States. The goal? To save the last native population of fluvial Arctic grayling. But as he reveals, the fight to recover Big Hole grayling requires more than just planning, money and action.

Peter Lamothe, a fisheries biologist with Montana Fish, Wildlife and Parks, is a pragmatist with hope. The recovery of the Arctic grayling in the Big Hole River in southwestern Montana, in his view, requires more water in the river and an improved riparian habitat. Also, finding a consensus with all interests involved, from the ranchers to the NGOs. "I know in the long run," Lamothe says, "if we are going to save grayling in the Upper Big Hole, this is the approach we need to take." But the grayling, says Lamothe, also require something else: hope.

Last April he was guide to New York Times reporter Jim Robbins on a trip to the Big Hole Valley for an article about climate change. Robbins took the time to speak in-depth with Lamothe and Big Hole Valley ranchers, and left rather excited about the work being done to improve the habitat for the grayling. Then Robbins went and spoke with a climatologist. "He called me back," Lamothe says, "and said, 'There doesn't seem to be a lot of hope out there. Not just for grayling, but for trout in the West. The distribution of these species is going to change.'" To this, Lamothe replied, "Well, what do you want? You want me to not have hope? Not keep doing what we are doing? You can't act that way. Let's try."

That is what Lamothe is doing: trying to save the fluvial Arctic grayling of the Big Hole River. It's the last native stronghold in the Lower 48, with an estimated population of only 1,000 remaining. In April 2007, the United States Fish and Wildlife Service decided to remove the Big Hole grayling from a candidate list for protection

under the Endangered Species Act (ESA). Presently, the decision is being challenged in court.

To give the grayling a chance, there are myriad factors from vegetation reclamation and in-stream flows, to grazing changes and headgate updates that are all part of the cumulative effect toward recovering the fish. How are all these projects being executed? With the Candidate Conservation with Assurances Agreement (CCAA) for the Big Hole grayling, a document drafted with the help of Lamothe and other state and federal agency individuals that is a program in which landowners with grayling habitat can pro-actively conserve. In exchange for their pre-emptive conservation, the landowners are offered protection from federal interference, should the grayling get listed under the Endangered Species Act.

Initially, the challenge was taking this data-heavy conceptual document and implementing it on the ground and for Lamothe, a self-proclaimed eco-capitalist, it was a matter of hosting open houses in Wisdom and Jackson—the only two towns in the upper Big Hole—and going door-to-door at each ranch explaining how this document will help the river and the rancher. The outpouring of support far exceeded the agency's expectations, with 40 ranchers initially signing on to the CCAA. But since the program was still conceptual, most ranchers just wanted to know—like in previous years—how much water they needed to give up. Lamothe told them he didn't want water. He said that they can put more water through a river with poor habitat and that will be meaningless for grayling. He wanted to discuss riparian areas and stream habitat. "I think that caught ranchers by surprise," Lamothe says.

Lamothe says the program itself has been an ongoing educational process, from the drafting of the 149-page document to learning about the irrigation practices and cattle management of the ranching operations. The ranchers were in the same situation, with little knowledge about the methodology to improve fish habitat. "We've seen it

with every issue that we deal with," Lamothe says. "At first, they don't know what it will mean to their operation, but they are willing to try. Once you get some in place—fish ladders, fish screens—and you can show them and their neighbors, it gives them peace of mind that we are not trying to take over their operations, we are trying to make some changes that will make it more fish friendly."

Before the non-listing decision was made, Lamothe thinks that motivation to sign on with the program was tied to potential fears that a listing for the grayling under the ESA would have a negative impact on their operation. But since the decision, enrollment into the CCAA still continues.

"I think we have seen a real paradigm shift from these landowners," Lamothe says. "Having done these projects, having started this process, that incentive has been reduced quite a bit and there has just been a lot of pride in getting these projects going. They have taken a lot of pride in that. The projects haven't stopped and they continue with more."

The Executor - Jeff Everett

He's the representative from the U. S. Fish and Wildlife Service sent to help recover the Big Hole River Arctic grayling. But between moving streams, restoring the grayling habitat, and getting water back into the river for the grayling, he still manages to meet the goals of the other Big Hole River users—the ranchers.

It's late April in Jackson, Mont.—calving season for ranchers—and Everett is standing in Harold Peterson's feed lot with lowing cattle nearby. He is ankle-deep in manure and shooting photos of the small puddles of water in the center of the lot. "This is cool," he says, glancing through the Nikon lens. Today he is evaluating the condition of a feedlot restoration project he helped complete last fall. As a wildlife biologist with the United States Fish and Wildlife Service, this is one of many projects that were completed to help recover a dwindling population of Arctic grayling in the Big Hole River in southwestern Montana. The task, however, is sometimes challenging, especially when your bosses at the Department of the Interior decide that the species you are trying to preserve and restore is not a genetically distinct population and should not warrant protection under the Endangered Species Act (ESA), even though it is the last native population of fluvial (river-dwelling) Arctic grayling in the Lower 48, with population estimates around 1,000. Not surprisingly, the decision is being challenged in court.

This project, executed six months after the decision was made to take Big Hole grayling off the consideration list for ESA protection, involved the relocation of 1,100 feet of Big Swamp Creek, a tributary of the upper Big Hole and an historic spawning ground for the grayling. Regardless of what the Department of the Interior, Justice Department and other competing interests decide about the grayling, Everett understands that action on the ground—not a lawsuit or ESA listing—is the impetus for their survival.

"I love what I see here," says Everett, as he details the new features of Big Swamp Creek as it carves its way through the original floodplain as a series of runs, riffles, clean gravel and flat pools. One year ago, Big Swamp Creek flowed lifeless through the middle of Peterson's feedlot. Back then the creek was a shallow, wide channel with no riparian vegetation, devoid of any fish habitat and looked more like a wading pool for cattle. The Petersons originally diverted it into their feedlot back in the 1950s to provide year-round water for their livestock.

This feedlot project is one of 47 active restoration projects being implemented by Everett and the various agencies and stakeholders in the Big Hole Valley, and is part of the Candidate Conservation with Assurances Agreement (CCAA), a voluntary program to promote conservation from landowners in the habitat of at-risk species. The other projects vary from drilling stock water wells to creating fish passage and improving headgates in the irrigation systems. Essentially, help save the grayling now by improving their habitat on your property and you'll be safe from further conservation obligations demanded from the government should they get listed under the Endangered Species Act.

In November 2007, contractors spent three weeks moving dirt, building a livestock fence and planting sod mats, costing the CCAA program $55,000 or roughly $49 per foot of stream. This relocated the creek back to its original floodplain, and with a berm in place to prevent waste runoff, Big Swamp Creek is now on its way to once again becoming a healthy fishery. "This met our goals and objectives from a restoration and fisheries point of view," Everett says, "and it also met the landowner's expectations and obligations from a ranch management and operation point of view."

Overall, the project has been a success. With above average snow pack and a wet spring, the stretch of stream was tested with high runoff flows and successfully held

together. “A few small chunks of sod mat did shift on us,” Everett says, “but overall the project held together extremely well through its first real test.”

The fishery also is responding. The Peterson family has reported seeing fish in the channel. “We now have fish using this reach of stream for the first time in more than four decades,” Everett says.

Regardless of what the courts decide about the grayling’s status, Everett continues doing what he knows will have an immediate effect on the fishery: the snowball effect of many small projects and collaboration with the private landowners. “Ultimately,” Everett says, “when it comes to preserving and restoring a species on this scale over hundreds of square miles, working with private landowners is where it is at. We need the same thing that a working ranch needs: large open spaces, healthy grasslands, good water quality and plenty of it.”

The Rancher - Harold Peterson

He's a fourth-generation rancher in the upper Big Hole valley, ground zero for the fight to save fluvial Arctic grayling. Actively involved with habitat improvements to his ranch, he is a model rancher for grayling recovery. Ask him, though, if he thinks the population will recover and you might be surprised with his answer.

On the late April day I visit Harold Peterson on his 2700-acre ranch in the Big Hole Valley of southwestern Montana, where he raises 500-head of cattle, lives with his two sons and their spouses, six grandkids, seven horses and three dogs, everything on his ranch was as I expected. "This is 100 years of gathering," Peterson says, playing tour guide as we walk around his lifelong home and he gives me the story behind each structure, all painted the presupposed ranch red. On this day the centerpiece to the two houses and 10 outbuildings is a 20-foot, steel tubular cart overflowing with hay. The red log house he built for his mother in 1959 sits 25 yards from his own. The log barn homestead that is almost 120 years old was moved from its original location one mile down the road to its present site. The rugged barn with the horse stables is also used for calving. The mechanic shop he built for his sons is where they overhaul tractor engines. "I put every stinking screw in it by myself," he says of building. On the walls of the garage, above four modified tractors, hang antlers displaying the success of past hunts for moose, elk, deer and antelope. These are the pride and joy of his deft sons Dean and Clay. In the last building we tour, the spry 72-year-old Peterson hops over more farm equipment back to a shadowed corner, where he reveals from underneath a dusty gray canvas, a relic from his younger days, a snowplane that he built in the 1950s. He says it is sort of the predecessor to the modern day snowmobile. This particular snowplane has a small cockpit for one built on three skis and powered by a 65 horsepower airplane propeller engine in the back, with the capability of reaching speeds of 70 miles-per-hour.

The tour concludes at Peterson's kitchen table, the communal spot of most farms and the location for the remainder of our conversation. To be clear, though, I'm not out here to discuss ranching, history or genealogy with Peterson, because I probably could have spoken with any rancher in the Big Hole about those topics. Conservation is the topic du jour and as we sit and talk, I see evidence of this as I take notice of the decorations in the room. Sitting on a table in the corner, leaning against the window, hidden among the proudly displayed family photos, I see an award from the Beaverhead Conservation District proclaiming Harold Peterson the 2007 Outstanding Conservationist of the Year; it partially hides another similar award.

Depending who you ask, though, it might seem ranching and conservation can't work together. One executive director from a non-profit conservation group that specializes in watershed protection said that ranches in the Big Hole Valley are not important economically or ecologically to the state of Montana. A few hours spent with Peterson might suggest otherwise and not just because of a few modestly displayed conservation awards.

Peterson's ranch is along Big Swamp Creek, a tributary to the Big Hole River. This river basin is home to the last native population of fluvial Arctic grayling in the Lower 48, formerly a candidate for listing protection under the Endangered Species Act. In April 2007, the United States Fish and Wildlife Service decided that the Big Hole River Arctic grayling is not a distinct population segment and therefore, does not warrant protection as an endangered species. Many ranchers exhaled after this decision was made. Peterson however, knows "someday it will be back," since the decision is being challenged in court by various river interest organizations and environmental groups. "This is scary stuff," Peterson says. Taking action to preempt any government involvement on his property, he signed up with the Upper Big Hole River Candidate Conservation Agreement with Assurances (CCAA) for fluvial Arctic Grayling, a project

that gives landowners the chance to conserve grayling habitat. Should the grayling reach endangered species status, no additional conservation measures will be required of the landowner because of their participation with the CCAA. It is essentially a way to hedge against the Endangered Species Act while actively participating in government-approved conservation efforts.

If you ask for Peterson's opinion about the chances for the survival and recovery of the grayling, he'll tell you he doesn't think they'll make it because the earth is getting warmer. Regardless, he thinks that something should be done, which is why he keeps his property involved in the process. "You can bury your head in the sand," Peterson says, "but somebody needs to put effort into it, whether it is right or wrong. I'm not in this for myself. I'm not getting anything out of this. I'm doing this for the next generation." His earliest conservation efforts officially date back to 1995 with his role as a founding member of the Big Hole Watershed Committee, a management group that works toward watershed restoration, strictly through consensus. He still drives the 90-mile roundtrip to the monthly meetings in Divide, and has served on dozens of committees within the organization. Before the CCAA came to the Big Hole Valley, Peterson was involved with a similar program through the National Resource Conservation Service's Environmental Quality Incentives Program (EQIP), except in the end, he ended up getting burned with a surprise $2,500 bill for participation. The experience left him very apprehensive of government-funded conservation programs.

In addition to the various headgates Peterson has installed on his property, the project that took place on his property last fall is a model program for the Big Hole CCAA. The project involved the relocation of 1,100 feet of Big Swamp Creek out of Peterson's feedlot, restructuring it to create a riparian habitat more hospitable to return spawning fish, particularly grayling. He committed $1,700 of his own funds to the $55,000 project.

For either the grayling or the grandkids, Peterson knows that action, not finger-pointing, will produce results. “I’m just trying to get something done,” Peterson says, “do something right, protect ourselves and do something to help our kids and grandkids. Maybe it will help them.”

The Lorax - Pat Munday

He once thought the Big Hole grayling could be recovered with a group effort. Now, this e-activist believes that consensus is too late for this imperiled fish and has filed a lawsuit in hopes of bringing about mandated action to save Montana's grayling.

Say his name around ranchers of the Big Hole River Valley and some will tell you they don't think too highly of him. Of course, it's only natural most ranchers shouldn't think highly of him. He is one of five plaintiffs suing to get the Big Hole River Arctic grayling protection under the Endangered Species Act. One day, a rancher called him an asshole as he walked into a bar in Melrose, Mont., a small community on the lower river. This is because ranching and endangered species don't mix well. There was a time that Pat Munday did successfully collaborate with these ranchers and other residents of the Big Hole River Valley as an active member of various river-interest organizations, but now, Munday says, any type of collaboration will drive the grayling to extinction. "Someone had to point out that the Emperor had no clothes," Munday says. He's referring to the decline of the Big Hole River grayling, the last native fluvial (river-dwelling) population in the Lower 48.

Munday loves the Big Hole River, but loves grayling even more. At age 10, he read about grayling and was captivated by their beauty, rarity and evolutionary history. He moved to Montana in 1990, fell in love with Big Hole Valley and in 1998, authored a book, *Montana's Last Best River: the Big Hole and its People*. He caught his first grayling on Labor Day of 1990 at Mussigbrod Lake, a feeder lake to the Big Hole River. His favorite photo was taken of his daughter at age three—holding up a catch of several grayling. The picture now hangs on his bulletin board.

Now, at age 53, he teaches science and technology studies at Montana Tech in Butte, but depending on the day, his appearance might suggest rugged frontiersman.

Today, an Akubra-style hat shades his sun-soaked face; a few feathers stick out the top, flies for fishing are stuck in the band and a gray ponytail hangs from the back. His smallish torso is protected by an olive-drab Army jacket. He is soft-spoken, which is due partially to his nature, but don't be fooled. "I never steer away from conflict," he says.

Munday is an environmentalist and pragmatist who speaks for the Big Hole River grayling. He once rallied to save these grayling as a member of the two primary watershed organizations, the Big Hole Watershed Committee (BHWC) and the Big Hole River Foundation. This was during a period he also was very critical of the Center for Biological Diversity, what he called "an extremist environmental group," because of their extensive history filing lawsuits to protect at-risk and endangered species. Six years later, Pat is still fighting for the grayling, but now with the Center for Biological Diversity as a co-plaintiff on the lawsuit and agrees legal action is the last ditch measure to save this population of grayling. And not surprisingly, he thinks that the BHWC no longer represents all the river's stakeholders and their policies are frozen in time. "I want results," says Munday. "When the watershed committee proved unable to achieve them, and unable even to embrace the evidence that grayling merited an Endangered Species Act listing, then I went looking for other ways to help recover the fish."

Munday is an e-protester. When the non-listing decision came down last April, Pat produced a video—find it on YouTube—called "President Bush Grills an Endangered Species." In his two blogs—Ecorover and the Big Hole Watershed Committee grayling report—Munday offers up mostly critical views about the lack of work going toward grayling restoration and the lack of maintenance for healthy river flows. Blog posts from last summer like "Big Hole River grayling: cooked for another year" and "Low Flows>Hot Water: Big Hole Watershed Committee still failing" pepper the site next to pictures of cows grazing in flooded pastures along eroded stream banks.

"I think that publicizing the case of grayling," says Munday, "and other endangered species is every bit as valuable of work as the on the ground stuff."

In 1997, the BHWC adopted a Drought Management Plan to effectively mitigate low stream flows and water temperatures lethal to fish in the river. Included in this plan was a survival flow for grayling, the water level that biologists feel the species can successfully depart the river for cold water tributaries. As an espouser of higher flows in the Big Hole, Munday says this survival flow of 20 cubic feet per second(cfs) is not science-based and that the creation of his own grayling survival index—a math formula based on river flows—was contrived to "try and rattle the watershed committee," he says. Munday's survival rating is partially science-based, but he admits "it's my arbitrary figure to counter theirs."

Peter Lamothe, biologist from Montana Fish, Wildlife and Parks doesn't share the same sentiment as Munday, but says it is good to have his scrutiny from an extreme viewpoint to "force the middle ground to shift a little bit."

For Munday, the bottom line is the number of grayling that were in the river in the early 1990s compared to their present numbers. "Fewer," he says. "If you work with an unethical and anti-environmental process, you are contributing to the damage that it does." Wistfully he adds, "I can't morally be part of that."