Our Water Resources: A Candidate for Listing? The Blackfoot Experience

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Introduction

The Blackfoot River arises near the continental divide and runs west for 132 miles to its confluence with the Clark Fork River near Missoula, Montana. It was part of the route home for Lewis and Clark in 1805. For much of its modern history, it was known as a scenic river with great fishing. (Paul Roos, personal communication 2003) It maintained this reputation until the early 1970s, when its fortunes began to change.

The Blackfoot watershed has 1900 miles of perennial streams, (Neudecker 1999) Landownership in the valley is 44 percent United States Forest Service (USFS), five percent Bureau of Land Management (BLM), seven percent state of Montana, 20 percent Plum Creek Timber land, and 24 percent private ownership.(Neudecker 1999) The individual ownership is mostly large cattle ranches.(*id*)

The Decline of the Blackfoot

During the 1970s, two things, seemingly unrelated, happened that marked a significant change the fortunes of the river's fishery. First, in 1975, a tailings dam burst in the headwaters. (Stiller, 2000) In 1979, the Montana Department Fish and Game Commission formally adopted a policy of wild trout management in Montana's rivers and streams—no longer would catchable-sized hatchery fish be dumped into rivers or streams in Montana.

The Failure of a Tailings Dam

On June 20, 1975, after a three-day rainstorm, a tailings dam on Little Beartrap Creek in the headwaters of the Blackfoot River failed, flushing approximately 100,000 tons of toxic, metal-laden tailings from the Mike Horse Mine into the Blackfoot River. (Stiller 2000). For at least ten miles downstream trout populations had declined by 80 percent. (Montana Department

of Fish and Game 1997). Macroinvertebrates had declined by 65 to 85 percent. (id) And habitat for many miles downstream was embedded with fine sediment, choking off both habitat for macroinvertebrates and destroying spawning habitat. (Stiller 2000). As a practical matter the dam failure largely destroyed what had been a decent cutthroat fishery above Landers Fork. (Paul Roos, personal communication 2003)

Montana's Wild Trout Management

In 1974, after a multi-year experiment on the Madison River, the Montana Department of Fish, Wildlife, and Parks embarked on a policy not to plant hatchery-reared fish in Montana's rivers and streams. (Tom Palmer, Personal communication 2004). Under the auspices of this policy, trout in Montana's rivers and streams would be allowed to naturally reproduce without interference from the annual invasion of catchable-size hatchery fish that had for decades been the mainstay of the fishery. A number of things result from the decision to go to wild trout management. First, instead of broad-brush, generous bag limits, the regulations become much more detailed and site-specific. (2002-2003 Montana Fishing Regulations)

But the most important result of the wild trout management policy is that fisheries managers became much more sensitive to habitat. Without the crutch of put-and-take fisheries, fish populations are a strong barometer of habitat health.

In the Blackfoot, the stocking of hatchery fish ceased in 1979. (Peters et al. 1989). Within just a few years, there was a growing chorus from anglers and outfitters that the fishing in the middle and lower reaches had severely declined.(*id*) But there had been little fisheries census work done on the Blackfoot since the early 1970s, so, beyond the anecdotal evidence offered by disgruntled anglers, there was nothing to document the problem. But in the minds of the public, at least, the Blackfoot was in trouble.

The Road to Restoration

Ironically, it was another mining-related event that served as a catalyst to jump-start the work necessary to identify and address the problem. In 1986, the Sunshine Mining Company proposed the construction of an open-pit gold mine within a few hundred yards of the Blackfoot River a few miles downstream from Lincoln. People up and down the valley, with vivid memories of the 1975 disaster, were alarmed at the prospect of a large mining operation so close to the river. (Paul Roos, personal communication 2003) The concerns came from a diverse collection of valley residents—anglers, outfitters, ranchers, merchants whose livelihood depended on a robust tourist trade—and not just from the usual collection of environmental activists. (*id*) In 1986, there was no advocacy group that had the Blackfoot as its focus, and a number of the most active opponents of the mine felt that they needed some group identity or affiliation to most effectively address the mining proposal. (Becky Garland, personal communication 2003). After some deliberation, people decided to form a local Trout Unlimited Chapter.

In late 1987, the Big Blackfoot Chapter of Trout Unlimited (BBCTU) had its charter meeting at a residence close to the site of the proposed new mine. The FWP regional fisheries manager responsible for the Blackfoot attended the meeting. When questioned as to the state of the fishery, he answered that FWP had done no recent population work on the Blackfoot and therefore had no information on the state of the fishery. (Dennis Workman, personal communication 003). Worse, his office had limited funding for field work and was putting its effort into the Bitterroot and Rock Creek. (*id*) In short, the agency wasn't planning to do anything anytime soon. When questioned as to how much money was needed to initiate the field work, he indicated that approximately $15,000 would cover a season of inventory work. Within a few weeks, the chapter raised the money and presented FWP with a check and the request to get started in 1988. (Paul Roos, personal communication 2004).

In 1988, FWP completed a field season and, in 1989, published the report of its findings. The findings largely vindicated the apprehensions of the public. (Peters et al. 1989) The report concluded as follows:

> Trout populations were below expected levels in virtually all reaches sampled. . . Populations of native trout species, cutthroat and bull trout, of the Blackfoot river appear to be particularly threatened

(Peters 1989:44) The report also concluded that, when compared to nearby waters of comparable stature, Rock Creek and the Bitterroot River, the Blackfoot fared poorly. (*id*) To its credit, FWP, in the face of this information, committed to a two-year investigation of the river to further refine the cause of this decline. (*id*) BBCTU agreed to assist with funding of that effort. ((Neudecker 1999) Over the next two years, FWP initiated extensive surveys and habitat assessments from the North Fork of the Blackfoot to the mouth that pinpointed the cause and location of habitat impairment within the basin. (*id*)

The survey identified the usual suspects of fisheries habitat damage in the west—impacts from historic mining activities (acid mine drainage), logging (sedimentation from road construction, removal of key streamside vegetation, fish migration blocked by culverts), livestock grazing (riparian damage from overgrazing), agricultural activities (streamflow depletion from irrigation and stock watering, fish migration blocked by irrigation diversions, and entrainment of fish into irrigation ditches). (Neudecker 1999)

Second, this work identified the tributaries to the Blackfoot as the areas most severely impaired. While the main stem of the Blackfoot had habitat problems, in most cases those problems had a tributary link, habitat loss to fine sediment from damaged tributaries.(*id*)

Restoration of the Fishery

In the face of this information, the BBCTU undertook, as its primary mission, the restoration of the Blackfoot River trout fishery. (Neudecker 1999) One of the chapter's first acts was to develop a cooperative agreement with the USFWS through its Partners for Fish and Wildlife Program to work on the restoration of the Blackfoot fishery. In addition, it developed a

close working arrangement with FWP. Working with these partners, BBCTU developed a two-pronged restoration strategy: (1) protecting the two native trout species—bull trout (Salvilinus confluentus) and westslope cutthroat trout (Onchorhynchus clarki lewisi) with catch-and-release fishing regulations throughout the drainage; and (2) working with private landowners to restore habitat in the Impaired tributary streams (Neudecker 1999). The first prong was simple, and in 1990, the Montana Fish and Game Commission promulgated a catch-and-release regulation for bull trout and cutthroat trout.

The second part of the strategy was more problematic. One of the fundamental challenges of cooperative stream restoration work is to develop enough of a trust relationship with the landowners to even get started on restoration. Developing that relationship can be a slow, uncertain process, especially when a conservation group initiates the project. Too often, rural landowners, schooled to distrust "outside groups" that want to tell them how to do their business, are notoriously difficult to approach about modifying their behavior. (Greg Neudecker, personal communication 2004) But, unlike many Trout Unlimited chapters, the membership of which is almost exclusively made up of anglers, the BBCTU had a leg up on the trust issue. At the time of its creation, nearly half of the board members didn't even fish. Likewise, nearly half the members came from a ranching background. (Paul Roos, personal communication 2003). As a result, there were people on the BBCTU board who, by dint of their agricultural background, could dispel distrust with their neighbors.

Most importantly, the rancher members of BBCTU's board were widely respected in the valley. For example, Land Lindbergh, who ranched in the valley since the early 1960s, was widely regarded for his ability to mediate between diverse interests in the valley, and for his commitment to maintaining the rural, agricultural character of the valley. (Coughlin 1999) Likewise, Jim Stone, another early board member, a lifetime resident of the valley and a rancher, is the chairman of the Blackfoot Challenge.(*id*)

In addition, the two agency partners, USFWS and FWP, had people with the fortuitous mix of both good biological talent and exceptional people skills. Don Peters, the author of the 1989 inventory report, and the biologist assigned to the Blackfoot, realized that, even though, as a biologist he deplored many of the land-use practices that were the source of the fishery problem, he quickly realized that, somehow, he would have to swallow his indignation and learn how to work with the landowners. In effect, he had to reinvent himself, from being simply a biologist to being a biologist/diplomat. (Peters. personal communication 2003) Likewise, Greg Neudecker of USFWS's Partners In Wildlife Program, recognized early that he would get a lot more done in the long run if he talked less and listened more at the front end of the process. (Greg Neudecker, personal communication 2003)

Neudecker's experience in the Blackfoot now informs USFWS training of new employees into the Partners In Wildlife Program in Montana. Now, new employees can expect about two years of cooperator contact in which the USFWS employees will largely be listening and learning—they won't be making suggestions for how the landowner should behave or what they should do to their property (a common complaint about federal employees in general and USFWS employees in particular). (Greg Neudecker, personal communication 2004).

Neudecker takes his restoration approach a step further and characterizes any successful restoration effort as being equally based in science and art. On the science side of the equation, it is important to gather enough data to identify the proper candidate site for restoration—one that is susceptible of rehabilitation, and enough data to identify the problem. On the art side, it is important to hire or bring into the process people who have more than simply scientific competence—they must also know how to engage with the people whose land will host the project. The second part of the art is to assure that, as much as possible, the effort is community-based.(*id*) To that end, Neudecker worked hard in the Blackfoot to identify key people in the community—opinion leaders and other widely respected local residents, and to get them engaged in his work. (Coughlin 1999)

With this lucky combination of personalities, talents, and approach, the partnership was ready to proceed. In 1990, FWP prioritized tributary streams in the lower basin for restoration, based on their importance to native trout and on their potential for contributing to the fishery of the main stem of the Blackfoot River. (Neudecker 1999) That same year, BBCTU embarked upon its first restoration projects.(*id*) These projects focused on four areas—instream habitat restoration, enhancing instream flows, addressing fish passage barriers, and reducing the entrainment of fish into irrigation ditches. (*id*)

In order to gain some traction and trust, BBCTU and its partners started with small, relatively simple projects that had a high likelihood of success—willow plantings and riparian fences, for example. (Neudecker, personal communication 2003) But BBCTU recognized the importance of finding a show-case project that could expand local interest in the chapter's restoration efforts. In 1992, it found it in the lower reaches of Rock Creek, a small tributary to the North Fork of the Blackfoot that had been severely degraded by decades of livestock use. The lower 1.5 miles is effectively a spring creek, receiving most of its flow from groundwater discharge. (Pierce et al. 2000) before the restoration, it was wide, shallow, and warm, supporting few fish. The restoration effort included the removal of six barriers to fish passage, the installation of more efficient diversion structures, a conversion from flood irrigation to sprinkler, and restoration of the stream habitat by significantly narrowing the channel, increasing woody debris, and planting riparian shrubs over the entire 1.8 miles of the reach.(Pierce et al. 1997) In addition, once the channel work was done, extensive planting of riparian vegetation was necessary to maintain the channel configuration. By 1994, within two years after the completion of the restoration work, brown trout young-of-the-year populations had increased almost seven-fold. Because this project was within sight of Highway 200, it received considerable scrutiny, and it became a frequently-visited demonstration site. (Don Peters, personal communication 2003)

In the wake of this successful project, interest in BBCTU's restoration efforts grew, and its proliferated to the extent that, by 2001, fish screens had been installed on diversions in 12

streams, fish passage structures had been erected on 26 streams, grazing management improvements on 23 streams, restoration of riparian vegetation on 27 streams, streamflow improvements on 25 streams, and the removal of feedlots on 12 streams.

Some of the most straight-forward projects have had the most dramatic results. In August, 1994, the highest catch per unit effort of bull trout in the entire Blackfoot drainage occurred in the highest upstream irrigation canal on the North Fork of the Blackfoot River. (Pierce et al.. 1997) In 1989, biologists counting redds on the North Fork found seven redds (*id*) Between 1994 and 1996, screens were installed on all five canals on the North Fork. By 2000, counts on the North Fork had risen to 140 redds. (Pierce et al. 2002)

The effect of the overall restoration effort on the native fish populations has been dramatic. In two core bull trout spawning and rearing streams, Monture Creek and the North Fork of the Blackfoot, combined bull trout redd counts have increased from a low of 18 redds in 1989 to over 200 in 2001. (Pierce et al. 2002).Westslope cutthroat densities on two reference reaches of the main stem increased 923 percent and 758 percent respectively between 1989 and 2000. (Pierce et al. 2001). In addition, westslope cutthroat populations have significantly increased on several tributaries. (Pierce et al. 2000)

There have been other positive spin-offs from this work as well. In the mid-1990s, BBCTU realized that many of the state and federal agency people with some standing to work within stream environments had little understanding of stream morphology. BBCTU arranged an intensive, week-long field seminar in geomorphology with Dave Rosgen, a highly regarded geo-morphologist. (Ron Pierce, personal communication 2001). Forty people attended that seminar.(*id*) Since then, the seminars have become an annual event. (Hinson 2002)

With the turn of a new century, BBCTU and its partners have turned their attention to the upper Blackfoot watershed. To be sure, the work is not finished in the lower basin. Restoration efforts continue and an aggressive monitoring effort is underway to track the results of the restoration efforts to date. (Pierce et al. 2001)

In 2000, to direct its work, DFWP, in collaboration with BBCTU and the USFWS, established restoration priorities for the 88 tributary streams in the Blackfoot basin. Of these 88 streams, baseline work has indicated that 83 streams suffer from some kind of habitat impairment. DFWP has ranked the streams in priority based on biological and resource benefits (150 possible points) and social and financial considerations (50 possible points). (Hess 2003)

The Role of Monitoring in Restoration Effort

From its inception, the collection of population and habitat data, both baseline and post-project monitoring, has been paramount to the success of the fisheries restoration efforts. The data gathering process, beginning with the 1988 inventory, has grown more intensive and more focused each year. (Ron Pierce, personal communication 2004) From the time of the earliest habitat work, there has been a parallel track of habitat and biological data collection.(*id*) As restoration projects are completed, monitoring of habitat and biological response to the effort begins. (Ron Pierce, personal communication 2004) And as restoration work progressed in the lower basin throughout the late 1900s, baseline population and habitat research began in the upper basin. (Pierce et al. 2002)

As the work has expanded, so has the cost of supporting the work. Funding the baseline data gathering and ongoing monitoring has been one of the greatest challenges facing FWP, who is responsible for most of the work. (Pierce, personal communication 2004) Funding the work, like many other parts of this restoration effort, has been a collaborative undertaking. In addition to FWP, BBCTU, the North Powell Conservation District, the USFWS, the Blackfoot Challenge, and a number of other public and private entities have contributed funding to data gathering effort. (Pierce et al. 2004)

In 1986, Kai Lee, a member of the Northwest Power Planning Council (NWPPC), enunciated a direction for the Columbia Basin Fish and Wildlife Program of the NWPPC grounded in the principals of adaptive management. (Lee et al. 1986). Professor Lee described

adaptive management at its essence as “learning by doing.” “Adaptive management, as a strategy for implementation, provides a framework within which measures can be evaluated systematically as they are carried out.” (Lee et al.1986). While Professor Lee’s strategy was focused on anadromous fish, it may have found its clearest expression in practice in the Blackfoot. Ron Pierce, responsible for most of the monitoring effort in the Blackfoot, characterizes the Blackfoot restoration effort as “iterative restoration,” “Restoration is also iterative and relies on continued habitat and population monitoring, expanding the scope and modifying methods of restoration based on monitoring results.” (Pierce et al. 2004).

Typically, there appears to be an institutional bias among many natural resource agencies against funding baseline and monitoring gathering basis on an ongoing basis. (Ron Pierce, personal communication 2004). And yet, those involved n the Blackfoot restoration effort are emphatic that the data gathering, intensive as it is, is crucial to the success of the overall restoration effort. (Greg Neudecker, personal communication 2004) In order to assess the efficacy of restoration efforts, it is important to (1) know what was there when the effort started, and (2) what is there afterward. (*id*) Stream restoration is still a relatively new discipline, with a relatively small body of empirical work testing various restoration hypotheses. In the Blackfoot, the monitoring effort has been aggressive and unflinching in evaluating the work done. It could well stand as the poster child for Lee’s strategy of adaptive management. Monitoring lies at the heart of that effort.

The Blackfoot effort, as documented by the monitoring, has experienced a full range of result. One case in particular underscores the importance of monitoring in the restoration efforts. Blanchard Creek is a rainbow trout spawning tributary on Clearwater River that, prior to 1991, regularly experienced dewatering from an irrigation diversion. FWP first informally worked with the irrigator to increase flows in 1991.Rainbow densities responded quickly. (Pierce et al. 2000) In 1993 FWP entered into a water lease with the irrigator. (*id*) After a couple of years of higher densities, the populations started to decline. (Figure 1) Monitoring showed that, even as flows

remained in the reach, intensified livestock grazing in the reach protected by the lease resulted in both riparian and instream habitat damage, largely offsetting the benefits of the lease. (Pierce, personal communication 2003) The lease ended after the 2000 irrigation season, and in 2001, the lower 1.1 miles of Blanchard Creek were completely dewatered. (Pierce et al. 2002)

The Blanchard Creek experience, on its face, is instructive in a number of aspects. First, it underscores the importance of monitoring for the efficacy of the restoration project. In this case, even though FWP was unable to reach resolution with the landowner over the livestock grazing, it was able to isolate the cause of the decline. Second, it highlighted the importance of approaching habitat problems holistically. Dealing with one habitat problem to the exclusion of others on a stream may doom the one project to failure.

Restoration Beyond the Ordinary High Water Marks—Building Community

In 1992, BBCTU organized a symposium, the results of which would extend far beyond the organizers' highest expectations. A recurring frustration for BBCTU in its first years was the persistent failure of the many governmental agencies within the basin to talk to each other. In one case, this resulted in one agency developing a river plan limiting the placement of additional access sites in one reach of the river, while another agency was actively seeking funding to pursue additional access in that very reach. (Mark Gerlach, personal communication 1993)

In an effort to stem this kind of behavior, BBCTU held a symposium in the fall of 1992 to which it invited all the governmental agencies—local, state, and federal--active within the basin. The primary, if not sole, purpose of the meeting was to develop a communication network among the agencies so that they did not work at cross-purposes to each other. (*id.*) The symposium led to other meetings, and, over the course of a year, a broad-based watershed group emerged from the effort that became known as the Blackfoot Challenge (Challenge). The Challenge formally organized in 1993. The series of meetings that led to the formation of the challenge also coincided with BBCTU's growing recognition that restoration needs in the

Blackfoot valley exceeded the focus of its mission. At the same time, it understood the importance of a broader approach. (Coughlin 1999)

The objectives of the organization are to "coordinate efforts that will enhance, conserve, and protect the natural resources and rural lifestyle of Montana's Blackfoot River Valley for present and future generations" (McDonald 2003) and to provide a forum for interested parties to discuss projects and issues in a non-adversarial setting. (Stanley 2003). The Challenge has a much broader focus than does the effort initiated by BBCTU. The focus of the Challenge has been characterized as "ridgetop-to-ridgetop." (Mark Gerlach, personal communication 2002) The Challenge has chosen to address the entire watershed. (McDonald 2003)

The Challenge has five primary areas of emphasis: (1) Communication and coordination; (2) information, education, and outreach; partnering, facilitation, and projects; financial and technical assistance; and administration, planning, and program development. (Hess 2003) The Challenge implements its mission through the activities of its committees. In addition to an executive committee made up of board officers, there are a number of issue-specific committees: weed steering committee, education committee, conservation strategies committee, drought and water conservation committee, the habitat, water quality, and restoration committee, and the wildlife committee. (*id*) The committees are a mix of public agency representatives, private groups, and individuals. A common feature of all these committees is that they facilitate information exchange between groups working in the valley, between groups and individuals, and between the Challenge and the interested public.

While the Challenge does not actually initiate most of the conservation projects in the basin, it has become an effective clearing house, mediator, and information source for the myriad conservation efforts now ongoing in the valley. In addition, the Challenge has become an effective fundraising force, and has been able to significantly assist its various conservation partners financially by pursuing diverse sources of funding. (Tina Bernd-Cohen, personal

communication 2004) The results the Challenge's efforts have been impressive. They include: Over 350,000 acres of weeds mapped with 120,000 acres under active management; 2100 acres of wetland restoration; 2300 acres of native grasslands restored; 46,000 acres of grazing management improvements; and 84,600 acres in conservation easements on private lands (24% of the private land in the Blackfoot Valley). (Blackfoot Challenge)

Perhaps the most dramatic example of the potential of the Challenge's committee approach can be seen in the work of the drought and water conservation committee. This committee had its genesis in the perilously low snow pack of the winter of 2000. DFWP has a relatively junior water right for fisheries on the main stem of the Blackfoot below the confluence of the North Fork of the Blackfoot. Rather than make a call for their water from junior users, FWP, working with Trout Unlimited's Montana Water Project and the Blackfoot Challenge, agreed to try a voluntary, cooperative approach to streamflow maintenance, with the Challenge implementing the effort. (Laura Ziemer, personal communication 2001) Within two months in the late spring of 2000, the newly formed emergency drought response committee, managed to get over 70 irrigators involved in a voluntary conservation effort that was based on the concept of shared sacrifice—a recognition that everybody in the community gets hurt by drought. When flows on the Blackfoot reached certain critical levels, various parts of the drought plan would go into effect (*id*) When flows got to 700 cfs, those who had joined the response would reduce their diversions as they described in their plans. When flows hit 600 cfs, DFWP would issue a fishing advisory that would request anglers to not fish at certain times and on certain waters. (Blackfoot Challenge, 2001). In three of the last four years, the drought has been sufficiently severe to invoke the plan. In every year that the plan has gone into effect, this voluntary effort succeeded in securing more water in the river than would be been possible had DFWP invoked its water right in a traditional adversarial approach. (Mike McLane, personal communication 2003)

The Challenge continues to expand the scope of its activities. Recently, the Challenge has taken on the ambitious task of doing the baseline work to establish the Total Maximum Daily

Load (TMDL) of pollutants under section 319 of the Clean Water Act for the entire Blackfoot River. (Tina Bernd-Cohen, personal communication 2004) As with its other efforts, the Challenge has been successful at marshaling the available expertise of the diverse government agencies and private groups. (*id*)

Finally, over the last three years, the Challenge has led a coordinated effort of a coalition of public agencies, private conservation groups, and valley residents to the consummation of the purchase of 89,000 acres of land in the Blackfoot watershed. (Nature Conservancy 2003). Perhaps as importantly, the Challenge led a valley-wide planning effort to assure that the purchase would complement the traditional uses in the valley--ranching, forestry, public access, and wildlife habitat. (*id*) The Challenge began its planning effort almost two years before the lands became available for sale. (*id*)

The success of the challenge rests heavily on a few key things. First, landowners and other stakeholders have bought into the projects. Second, the restoration effort has been fortunate in securing the necessary funding to complete the projects it has. Third, the projects have focused on key species that serve as indicator species. Fourth, government agencies have not attempted to direct the process, but rather to assist it as requested by other partners in the process. (Hess 2003)

Others have noted the importance identifying the key opinion leaders in the valley, and getting them ownership in the effort. (Coughlin 1999) To that end, the agency people active in the Blackfoot are notable for their longevity. Ron Pierce and Don Peters of DFWP, and Greg Neudecker of USFWS have all been working in the valley for more than a decade. (Greg Neudecker, personal communication 2004) They are now widely perceived as being an integral part of the community. (Jim Stone, personal communication 2004) Their agencies could not have achieved what they have n the Blackfoot if they had adhered to the revolving-door policy common in some government cultures.

And finally, there is a widespread perception that the presence of neutral ground, where people can meet in a social setting without the pressures of defending their position is a valuable

part of the cultural mix necessary to make a large-scale collaboration work. In the Blackfoot that place is Trixi's Saloon. (Coughlin 1999) Trixi's has been the site of innumerable discussions, good-natured debates, and socializing, all of which has been a substantial factor in forging a sense of community among the diverse interests in the valley.

In its essence, the Challenge is about building a community of interests in the valley, and operates on the premise that each stakeholder at the table has a legitimate interest and is an active part of the valley culture. This approach has fostered a climate of mutual respect among groups and individuals who have traditionally thought of themselves as traditional adversaries. (Jim Stone, personal communication 2004) Out of that respect has grown the ability of the larger community to act in concert to the benefit of all the interests in the valley.

Conclusion

The Blackfoot experience with collaborative restoration efforts can be summarized on two fronts—the science underlying the restoration effort, and the cultural and social context in which the effort must occur. Careful attention to each of these details is essential. To proceed on one front while neglecting the other is to doom a project to failure.

On the scientific front, the Blackfoot experience underscores the importance of gathering baseline data before restoration begins, monitoring against that baseline after the restoration work is complete to record the response of both habitat and biology to the restoration effort, and responding as needed to confirm, adjust, or discard a restoration approach. In short, thoughtful adherence to the principals of adaptive (or iterative) management are key to long-term success of restoration.

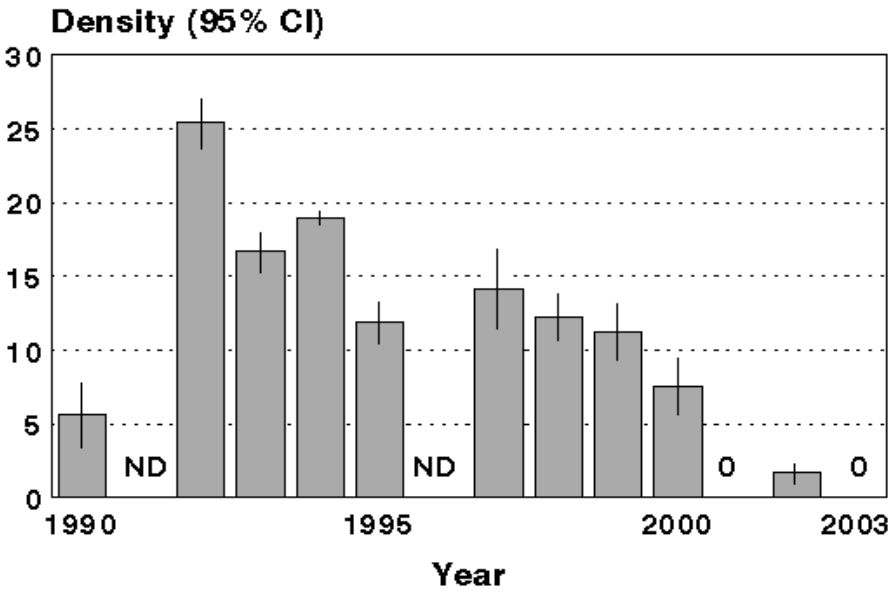
Another key aspect of the information gathering effort is to approach it on a watershed-wide basis. In the Blackfoot, as the effort intensified, it became clear that simply examining the narrow band of land along rivers and streams wasn't telling the whole story. In order to understand the role of wetland, forest cover, and larger land management efforts on the watershed, it is necessary to look from ridgetop to ridgetop.

Any restoration effort, given the immediacy of its effect on people living in the valley—either through specific activities on private land or through its impact on the local economy and culture—has to find a way to achieve local acceptance. As a practical matter, restoration experts have to learn the art of patience—there is no instant gratification in the business of natural resource restoration. To that end, the qualities of the people taking on the task of restoration work are crucial to its success. As the USFWS and DFWP experience teaches, a little respect for the people on the land—even when their practices may offend—can go a long way.

In addition, in an effort as expansive as that in the Blackfoot, it is important to engage the right people in the effort. Identifying widely respected community leaders should be an early task. The courtship of those leaders can be long, and sometimes arduous. It takes time to develop trust. Finding people who will stay the course over years and decades is invaluable.

Finally, while the Blackfoot experience is the beneficiary of a particularly lucky collision of personalities and events that may not be easily replicated elsewhere, the lessons of that experience, grounded in straightforward approaches to science and in some basic precepts of civil society—respect for the position of others and commitment to protect cultural and community values--can inform restoration efforts in other watersheds, even in the face of widely divergent circumstances.

Figure 1



Estimated rainbow trout (fish >4.0”) for Blanchard Creek at mile 0.1. 1990-2003.

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