

Chapter 6

Human-Grizzly Bear Coexistence in the Blackfoot River Watershed, Montana: Getting Ahead of the Conflict Curve

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INTRODUCTION

When large carnivore populations overlap with humans, interactions can be problematic for people, but particularly acute for wildlife. In North America, large carnivores are generally not well tolerated outside of protected areas (Mattson et al. 1996). When incidents or conflicts occur, carnivores are often trapped, relocated, or removed from populations. This pattern holds when grizzly bears conflict with humans at the interface of public and private lands in places like southwest Alberta, southern British Columbia, Montana, and Wyoming (Woodruff and Ginsberg 1998, Wilson 2006). Conflicts or incidents include bears killing livestock, destroying beehives, foraging for garbage close to homes, or, in rare cases, threatening human safety. Often, private lands in valley bottoms and foothills adjacent to public lands are problematic zones, especially when available bear attractants coincide with occupied grizzly bear habitat. Repeated incidents typically lead to more severe conflict, habituation, and eventually to removal of the bear through trapping, relocation or killing.

The purpose of this chapter is to describe how a rural community came together with wildlife agencies and conservation groups to grapple with the complex challenge of learning to live with grizzly bears in the Blackfoot River watershed of west central Montana. This effort started approximately ten years ago when Montana Fish, Wildlife and Parks (FWP) and the Blackfoot Challenge (BC)—a grassroots watershed group in the Blackfoot valley—began meeting to discuss concerns among local residents about increasing grizzly bear activity and conflicts in the region. Grizzly bears were re-expanding their range onto private lands, and there was a clear need to bring people together to determine exactly what the “problem” was and how best to address it. This chapter emphasizes how a collective decision making process encouraged diverse local and national stakeholders to engage in a partnership where participatory efforts helped to substantially reduce conflicts for both bears and people.

Each author of this chapter has significant personal investment and professional capacity in the Blackfoot Challenge. This watershed group is a landowner driven non-governmental organization (NGO) that has worked since the 1970s to enhance, conserve, and protect the natural resources and rural lifestyle of the Blackfoot watershed. The overarching goal of the BC is to provide a forum to support environmentally responsible resource stewardship through the cooperation of public and private interests. The BC promotes cooperative resource management of the Blackfoot River, its tributaries and adjacent lands. The BC initially became involved with grizzly bear management in 2000 and the BC grizzly bear program was officially launched in 2002. As participants, we believed that building on the existing capacity of the BC was a sensible way to approach the problem of living with grizzly bears, and that an inclusive and participatory approach to working with ranchers, landowners, conservation NGOs and agencies would facilitate a more positive response to these animals. It was apparent to us that a single agency or individual would not be able to solve this challenge and that in order to make real progress, significant decision making power would need to be in the hands of those landowners and ranchers who had to confront the daily reality of living with bears.

There were five general methodological phases in this effort. First, FWP met with the Blackfoot Challenge’s Executive Committee to see if there was interest in creating a wildlife committee – that is, a community-driven sounding board for wildlife management. The BC agreed to form a

committee with the understanding that the initial emphasis would involve grizzly bears. Second, the BC conducted a survey of thirty-five ranchers, outfitters, and small, “hobby” ranch operations in 2002-2003 to get a better understanding of people’s perspectives of grizzly bears and possible ways to coexist with them. Third, these data helped us to frame or define “problems” as perceived by residents whose livelihoods could be affected by grizzly bears. Fourth, we used geographic information systems (GIS) to map land use practices, bear attractants, and other relevant features in the region (Wilson 2005). FWP provided data on verified and reported grizzly bear conflicts and observations (1998-2004) that helped us to develop a GIS spatial dimension to bear activity and human-bear conflicts. From this, we determined the parts of the watershed in which ranchers were experiencing the most bear problems, the areas where future problems were most likely, and the locations and types of conservation investments that should be made. Last, we brought this information back to the community and worked on the ground in diverse management activities to address problems over the ensuing years. Conflict reduction efforts have been focused on the middle portion of the Blackfoot watershed (Figure 1). Progress has been remarkable: a 96 percent reduction in reported and verified human–grizzly bear conflicts in the project area (from 2003-2010) and a downward trend in known grizzly bear mortalities (Figure 1).

CONTEXT AND PROBLEM DEFINITION

The Blackfoot River watershed is about 1.5 million acres in area, nestled just south of the Bob Marshall and Scapegoat Wilderness Areas and north of the Garnet Mountains (Figure 1). Land ownership in the watershed is approximately 49 percent federal, 5 percent state, 20 percent Plum Creek Timber Company, and 24 percent other private owners. Public lands and significant portions of Plum Creek Timber Company lands generally make up the forested, mountainous areas, while other private lands comprise the lower foothills and valley bottoms.

Grizzly bears were historically found throughout much of western North America, ranging from Canada to northern Mexico. Prior to European settlement, possibly more than 50,000 grizzly bears lived in the western United States (USFWS 1993). With western expansion and development, grizzly bear populations declined dramatically by the turn of the 19th century. By 1975, the grizzly bear was listed as a threatened species under the Endangered Species Act (ESA; 16 U.S.C. 1531-1544) and protections were put into place to begin the process of recovery. A formal recovery program was instituted in 1981 (Servheen, 1998), and over the past three decades grizzly bear numbers have gradually increased in both Glacier and Yellowstone National Parks and the surrounding ecosystems. By 2007, the U.S. Fish and Wildlife Service declared the Yellowstone ecosystem population recovered and removed grizzlies from the Endangered Species List. This decision was legally challenged by several conservation groups and by 2009, the U.S. Ninth Circuit Court of Appeals enjoined and vacated the delisting of the Yellowstone population. At the time of writing this chapter, all grizzly bear populations in the United States are considered threatened under the ESA, but population increases bode well for future viability. Unfortunately, increases in grizzly bear populations also mean increases in the potential for conflicts in places like the Blackfoot watershed.

Ecological Setting and Key Stakeholders

Ecological Setting. The landscape context of the Blackfoot watershed is unique. To the north are large wilderness areas that provide a source population of grizzly bears and to the south the Blackfoot Valley provides high quality grizzly bear habitat. Grizzly bear activity and events associated with dispersal have been on the rise in the watershed since the early 2000s. The U.S. Fish and Wildlife Service (FWS) and Montana FWP have documented grizzly movements throughout the area (Jonkel 2002, 2006).

The Northern Continental Divide Ecosystem (NCDE) of Montana, an area that includes the Blackfoot watershed, shows grizzly bear population growth and expansion into formerly unoccupied habitat largely on private lands (Kendall et al. 2009). The State of Montana suggests that the NCDE grizzly bear population has grown at approximately 3 percent per year since population trend monitoring began in 2004. In 2004 the U.S. Geological Survey's Northern Divide Grizzly Bear Project identified a minimum of 29 grizzlies in their sampling area that overlaps with the Blackfoot watershed. The Blackfoot Valley is functioning as habitat for a resident population of grizzlies and as a linkage or "stepping stone" habitat for grizzly bears that disperse to the south.

The geologic and hydrologic characteristics of the Blackfoot watershed have produced a rich mix of habitats; particularly wetland features like glacial lakes and ponds, bogs, fens, spring creeks, riparian swamps, and extensive cottonwood forests. This diverse mosaic of upland foothills, glacial outwash plains, and extensive creek and river bottoms is ideal habitat for a wide array of wildlife including grizzly bears. The Blackfoot has remained largely undeveloped and is sparsely populated. Being located at the southern end of the NCDE, the watershed has been a natural location for grizzly bears to re-colonize former habitat. The ranching community has had to confront living with bears again since the early 2000s and is dealing with the associated costs of conflicts.

Key Stakeholders. Stakeholders in grizzly bear conservation in the Blackfoot include ranchers, newer non-ranching residents, the state and federal governments, and conservation groups. There are approximately 2,500 households in seven small communities in the watershed. The dominant land use is agriculture, primarily family owned cow/calf ranching operations and some small-scale forestry. Cow/calf operations have cows and bulls used for breeding stock, and calves are sold annually at six to eight months of age for beef production. Landowners in the Blackfoot value their rural way of life and have worked together since at least the mid-1970s to preserve their agricultural traditions and livelihoods. The first conservation easements established in the state of Montana were in the Blackfoot. The ranching community is characterized by a desire to be independent, yet maintain strong neighborly relationships. Ranchers tend to believe in the sanctity of private property rights and they emphasize their need to maintain economically viable operations. It was not initially easy for the ranching community to adapt to the return of grizzly bears. Bears were perceived as unwelcome visitors that threatened livelihoods and human safety, and bear conservation efforts challenged notions about private property rights and the rights of ranchers to protect their livestock.

While ranching is still a dominant land use in the Blackfoot and the cultural norms of ranchers have permeated the overall character of the valley, new residents have increasingly been moving to the region over the past two decades. In many cases these new residents are "amenity

migrants,” who have been drawn to the Blackfoot for its quality of life, solitude, and outstanding recreational and wildlife resources. These new residents are typically quite tolerant of grizzly bears and wolves, but may not have had much experience in actually living with these animals. However, new residents have been willing and, in certain cases, enthusiastic, about participating in the grizzly bear projects of the BC.

Montana FWP plays the main formal role in grizzly bear management in the Blackfoot watershed. FWP is responsible for day-to-day management of grizzlies (conflict responses, monitoring, etc.) in consultation with the U.S. FWS under the Interagency Grizzly Bear Committee guidelines (IGBC 1986). FWP has actively embraced the collaborative nature of the BC partnership concerning grizzly bear management. FWP has shown respect for traditional ranching livelihoods in Montana and actively supports projects that help maintain rural ranching, through economic incentives and technical support.

The U.S. Forest Service, U.S. Bureau of Land Management, and Montana State Department of Natural Resources and Conservation play minor consultative roles in bear and habitat management, and have taken part in the BC efforts on an as needed, project-by-project basis, since the bulk of the BC work on grizzly bear problems has focused on private lands.

Conservation groups have also been active participants in the efforts of the BC partnership (e.g., the Nature Conservancy, Defenders of Wildlife, Brown Bear Resources, the Great Bear Foundation and the Living with Wildlife Foundation). The Nature Conservancy has played a major role in habitat conservation in the Blackfoot watershed by procuring conservation easements, and has recently undertaken a significant project with Plum Creek Timber Company and the BC that will protect nearly 88,000 acres of land, much of which is critical grizzly bear habitat.

Understanding Conflicts between Humans and Bears in the Blackfoot

Conflicts with grizzly bears are partly a technical biological problem, but these conflicts are also very much grounded in what people do in a given landscape. People’s behaviors and practices often cause or contribute to conflicts with bears, and the level of conflict can be severe when bear populations grow, individual bears disperse to re-colonize former habitats, and human communities are confronted with the challenges of living with these large carnivores.

As bear activity has increased in the Blackfoot watershed, so have human-grizzly bear conflicts and livestock losses. By the mid-to-late 1990s, several ranches in the Blackfoot had experienced confirmed losses of cattle or sheep to grizzlies. This became a focal point for other livestock producers in the watershed, although they actually may have had few if any incidents with grizzlies on their own properties. Unfortunately, a human fatality occurred during a hunting outing in 2001 and this acted as a tipping point that galvanized the community. This fatality and the general increase in grizzly bear observations and reported and verified conflicts on private lands stimulated strong concern among residents.

Not surprisingly there were multiple perspectives or definitions of what exactly the “problem” was. For example, some people felt that there were simply too many bears, some celebrated the

new grizzly bear activity, some defined the problem as primarily one of risk to human safety, and still others viewed the problem symbolically, linking the recolonization of bears to an erosion of personal rights and freedoms exacerbated by the regulatory burdens of the Endangered Species Act. It was clear that these competing perceptions of the problem, rooted in differing beliefs, attitudes and values concerning grizzly bears, would make coherent goal setting difficult. Grizzly bears presented both an ideological and material perturbation to an agrarian-based system of traditional Western held values, largely centered on utilitarianism and a dominionistic view of grizzlies as predators. Nonetheless, we saw an opportunity to improve the situation for both people and bears. This meant organizing an effective and inclusive decision-making process focused on empowering local community members, finding solutions for people and reducing conflicts with bears.

GRIZZLY BEAR MANAGEMENT DECISION PROCESS

Grizzly bear management, like other decision making processes, is mainly about people: what we value, how we interact, how we make choices, and how we set up and carry out our day-to-day practices. Essentially, we are making decisions about how we manage ourselves as well as how we deal with bears. This includes understanding and possibly changing our behaviors and actions that can lead to problems with bears. Outcomes of this decision process affect what happens to bears, people and the land. Ideally, a sound decision process should be open, factual, fair, and produce results that work.

Decision-Making Functions

Any complete decision-making process includes a set of distinct functional activities or stages. First are the activities that lead up to a decision. This includes the gathering, processing, and dissemination of information about the issue at hand (the *intelligence* activity), and the development and debate of alternatives designed to address the issue (the *promotion* activity). These pre-decision activities are followed by a decision, such as committing to a plan of action(s), law, regulation, policy or program (the *prescription* activity). Prescriptions must be specific and realistic enough to work in practice, and ideally should have enough support from those affected, or be backed by enough authority, to be carried out and enforced. Once a decision has been made resulting in a prescription, several post-decision activities typically take place. First, the prescription must be initially instituted (the *invocation* activity), and then perhaps further interpreted and enforced (the *application* activity). Invocation and application are often referred to together as “implementation.” Implementation must come to grips with all the realities of the actual situation on the ground, and all the administrative and other actions needed to put in place the selected prescription. The next step is to monitor and evaluate implementation of the decision and its outcomes (the *appraisal* activity). Good appraisals go beyond just evaluating outcomes to examine the processes through which decisions are made. If corrections are needed based on the results of appraisal, then they can be made by changing course and partially or completely ending the previous policy or program (the *termination* activity). Taken together these seven activities make up any complete decision process. Each activity, as well as the overall decision process, has standards that can be used to evaluate actual cases. In the rest of

this section we use this framework of decision making activities and associated standards to evaluate the BC grizzly bear management decision making process, with attention given to conditions before and after formalization and engagement of the BC partnership.

Gathering Relevant Information (Intelligence)

The intelligence gathering activity should be dependable, comprehensive, selective, creative, and open (Lasswell 1971; Clark 2002). The BC grizzly bear program included six main strategies oriented towards improving the intelligence activity: initial engagement between Montana FWP and the BC, which led to the formation of the BC Wildlife Committee; a survey of community members' perspectives; meetings with community members to share information and explore understandings of the problem; participatory spatial mapping of conflicts and potential attractants; regular reporting of grizzly bear activity and management actions; and working together to identify shared goals, which directed all of our initiatives and eventually provided the foundation for a formalized sub-basin management plan.

Initial engagement and formation of the Wildlife Committee. In 2000, the Region 2 Supervisor and bear manager for Montana FWP met with the Executive Committee of the BC to discuss the possibility of cooperating on grizzly bear management issues. Both organizations were concerned about the increase in grizzly bear conflicts in the Blackfoot Valley and were interested in exploring the possibility of a new approach to the problem. After lengthy discussions, the Executive Committee agreed to work with FWP on a trial basis, and then in 2002 established a formal committee of the BC to oversee issues involving grizzly bears.

Survey of perspectives on grizzly bears and grizzly bear management. Informal meetings in 2001 and 2002 organized by local community members and Montana FWP regarding the presence of grizzly bears in the Blackfoot watershed were characterized by strongly negative reactions to grizzlies. We saw an opportunity to improve the *dependability* and *comprehensiveness* of the intelligence activity by learning more about people's attitudes, values and beliefs about bears and bear management. During 2002-2003 we conducted a survey of 35 active ranchers, outfitters, and small "hobby" ranch operations (Table 1). Perceptions of grizzly bears were varied and complex. Of those who agreed that private landowners had a responsibility for protecting grizzly bears (42 percent), some respondents explained that grizzly bears were "part of the territory" and that it made common sense to take responsibility for running an efficient ranch that would not attract grizzly bears. Others suggested that bears played a role in the ecosystem and it was prudent to maintain those functions (e.g., regulation of prey populations). Of those who disagreed that private landowners had a responsibility for protecting grizzly bears (58 percent), there were three main explanations that emerged. First, some respondents felt that responsibility for grizzly bear management was clearly the role of wildlife management agencies, not landowners. Second, other respondents explained that bears should be geographically separated from humans and should not need to use private lands. Third, some respondents believed that environmentalists were a large part of the problem since the protective and legalistic actions of environmentalists on behalf of grizzly bears had contributed to population increases and had led to unnecessary problems for ranchers.

[INSERT TABLE 1]

When respondents were asked about whether the Blackfoot would be a better place to live without grizzly bears on private lands, 52 percent agreed, and two themes emerged: (1) fear for personal and family safety and (2) risk to livelihoods and property. Of the 42 percent who disagreed with the statement that the Blackfoot would be a better place to live if there were no grizzly bears on private lands, explanations fell into three themes: (1) biodiversity, (2) place and lifestyle, and (3) biocentrism. The biodiversity theme was consistent with earlier sentiments suggesting that bears play a role in the system that should be valued. The place and lifestyle theme was characterized by the notion that grizzly bears help make the Blackfoot a special and unique place and that grizzly bears help to define the rural lifestyle. The biocentric theme involved the recognition that humans are one species among many, all of which have value, including grizzly bears.

Fifty eight percent of respondents agreed with the statement that people shouldn't have to change their habits to accommodate grizzly bears that use private lands. Three overarching themes emerged. These were: (1) loss of freedom(s), (2) fear and anxiety about injury by bears, and (3) risk to livelihoods and property. The loss of freedom(s) theme was characterized by the concern that use of private lands by grizzly bears was limiting personal management authority and the ability to run an efficient ranching operation. This was accompanied by fear and anxiety about potential injury by bears, particularly in ranch management situations where ranchers might have to contend with grizzlies during fence repair, irrigation set-up, livestock monitoring in remote settings, or during the calving season (particularly during night work). The perception that grizzlies could impact livelihoods and destroy private property was reiterated here in the context of ranchers not wanting to change their habits to accommodate bears because they perceived this as meaning that they would have to change their traditional rural lifestyles and practices.

One finding from the survey that was particularly important for the development of the BC grizzly bear program was that 90 percent of respondents agreed that private landowners should take precautions to reduce conflicts with grizzly bears. At the same time, 90 percent of respondents disagreed with the proposition that grizzly bears should remain off limits to hunting. Finally, respondents were split over the statement that "grizzly bears are a serious threat to my livestock," with 45 percent agreement and 55 percent in disagreement.

The survey concluded by asking about the most important issues that needed to be addressed so that grizzly bears and people might coexist in the area. Responses fell into two broad categories representing solutions that emphasized changing human behaviors versus those that emphasized changing grizzly bear numbers and bear behaviors. This breakdown of responses was a simple yet effective way to gain insights about how local residents thought about the problem and what they offered as possible solutions (Table 2).

[INSERT TABLE 2]

Meetings with community members. The survey responses and other discussions with community members revealed a need for a more *open* and *creative* intelligence gathering process for decision making about grizzly bears in the Blackfoot. It was apparent that local residents sought to develop strategies, understand the system, and receive valid information from wildlife managers. It was also clear that many locals recognized that human-based changes could occur

to reduce conflicts with grizzlies. These types of solutions to the issue were more likely to be identified and brought into practice if there was an organized venue in which to share information, discuss creative alternatives, and make decisions.

To meet this need, the BC partnership organized a series of meetings and discussions with private ranchers, residents, Montana FWP, the US Fish and Wildlife Service, conservation groups, and Allied Waste Services (western Montana's largest waste hauler). These early meetings allowed the BC group to further explore the ways people defined the problem and to identify shared perspectives. The BC agreed to develop a formal Wildlife Committee to serve as a forum to continue to bring participants together for regular communication, information sharing, and decision-making.

A key task at this point was to make sense of “the problem.” Based on the survey results and discussions in group meetings, we could see that there were multiple and complex perceptions of just what the problem was, as local residents confronted the reality of an expanding grizzly bear presence. It was important for all of us to understand that competing definitions of the problem fell into ideological and symbolic realms. For example, the notions that grizzly bears should be completely geographically separated from human activities, or that there were simply too many bears, or that environmentalists were largely to blame for the situation, posed serious barriers to constructive discussions about how best to respond, since there were no feasible solutions available if the problem was characterized in these ways. There were other problem definitions apparent, however, that were quite practical in nature. These reflected concerns about human safety, property, and livelihood interests—all areas that theoretically could be addressed by understanding the problem as one of risk management. This provided an avenue for productive discussion during initial goal setting.

Participatory spatial mapping. The fourth initiative oriented towards improving the intelligence activity was to bring a spatial dimension to the collective understanding of the problem of grizzly bears on private lands in the Blackfoot. We organized mapping workshops to demonstrate how Geographic Information Systems (GIS) could help to understand the problem of human-grizzly bear conflicts from a spatial perspective. Using GIS, it was possible to visually display grizzly bear activity and conflict locations, and demonstrate that human-bear interactions were occurring across ownerships comprising more than 650,000 acres. This illustrated that potential solutions might require a community-level response to match the scale of grizzly bear home ranges and conflict locations.

From experience in previous research conducted in Montana's Rocky Mountain Front it was evident that asking ranchers to talk about their ranching operations and to digitally map out their livestock pasture arrangements was a powerful way to collect meaningful data in a non-threatening manner that also helped invest ranchers in the process of data generation (Wilson et al. 2006). The mapping workshops in the Blackfoot demonstrated the participatory nature of GIS mapping and showed how locations of agricultural and other human-related attractants could be compared with known conflict locations and grizzly bear observations collected by Montana FWP. The hope was that by *opening* up the intelligence process and *selectively* focusing on conflict locations, attractants, and preventative techniques, we could diminish the polarization and symbolic rhetoric often associated with the presence of grizzly bears in ranching country,

and work on tractable and feasible solutions to reduce conflicts. The objective was to get a better understanding of where regular conflicts were occurring (current conditions), share this with the community, then jointly discuss trends and projections, and offer some possible solutions. At these early workshops, local FWP bear managers discussed preventative techniques, including the electric fencing of calving areas and other proven tools that they had used over several decades of experience. Collectively, ranchers and residents showed an interest in building on the existing proactive efforts of FWP and using GIS data-collecting efforts to guide and augment these efforts.

The participatory and interactive nature of mapping as proposed to the ranching community was important for stimulating people's interest and asking for their direct involvement in solving the problem. Mapping reverses the traditional flow of information in practical problem-solving, so that rather than flowing from the "experts" to the local people, information flows from the local people to the experts. Further, this approach created the opportunity for mutual learning. This is distinctly different from traditional approaches to land and wildlife management, where, for example, rural people have endured heavy-handed regulation or have resented being told what to do (Brick and Cawley 1996).

With the aid of maps, participants were able to explain their management practices readily. When ranchers located calving or lambing areas, they often explained why they had chosen specific pastures for their livestock or why they had selected a portion of their ranch for livestock carcass disposal. For example, during the calving season, ranchers lose some calves to natural causes. Since the calving process is labour intensive and requires constant management, it is typical for "boneyards" or "dead piles" to be located near calving and lambing areas, serving as a labour saving technique for the disposal of dead animals, but also increasing the risk that scavenging grizzly bears could come into conflict situations. Mapping produced spatial data sets that included the underlying explanations that ranchers helped generate and that led to other insights regarding management practices and, perhaps most importantly, developed trust and credibility. The integration of livestock management practices and known locations of grizzly bear observations and conflicts allowed us to produce maps of conflict hotspots using a variety of geospatial analysis techniques (Wilson et al. 2005, 2006). This enabled us to prioritize specific locations in the landscape to focus on in possible management and conservation actions with landowners.

Reporting of grizzly bear activity and management actions. The fifth intelligence-oriented initiative of the BC project was to make *dependable* information on grizzly bear behavior and management actions more available. In addition to the GIS mapping and risk assessment work, the formation of the Wildlife Committee offered a powerful means for the Montana FWP grizzly bear management specialist to provide a factual accounting of grizzly bear activity and management actions on a regular basis. This was a critically important step that allowed landowners to have regular contact with a wildlife manager and to learn about grizzly bear foraging activity, when to expect emergence of grizzly bears from their dens, what travel routes were preferred by bears, and other insights on bear behaviour and life history needs.

Regular communication with FWP also provided landowners with detailed information about grizzly bear management activities. For example, seasonal updates were provided on the causes

of human-bear conflicts, the number of grizzlies outfitted with radio telemetry, the numbers of grizzlies trapped due to conflicts, and the locations to which these bears were moved. These data from FWP helped to minimize the likelihood of false information being disseminated into the community and maximized opportunities for FWP to provide factual and comprehensive information about grizzly bear activity. This information included FWP's finding that in the period from 1998 to 2005, about 59 percent of conflicts in the Blackfoot area (known as Region 2) resulted from poorly contained residential and agricultural attractants, and that more than a third of known human-caused grizzly bear mortality in the region arose from attractant-related incidents and repeated livestock depredations (Jonkel 2006).

Setting goals. By integrating expert and local knowledge through regular meetings about the social and ecological factors contributing to human-grizzly bear conflicts, the BC program *opened* up the intelligence activity and provided an atmosphere that was more conducive to generating shared goals. The group eventually settled on the following goals: (1) to formalize community-supported management of human-wildlife interactions in the Blackfoot; and (2) to address human-grizzly bear conflicts and grizzly bear-livestock conflicts by emphasizing preventative techniques, protecting human-safety, and helping to maintain rural livelihoods by reducing risk of livestock losses. These goals were generated within the community and they complement national goals of grizzly bear recovery by focusing on reducing bear mortalities by reducing conflicts. Moreover, these goals were powerful in that their development and linguistic framing supported rather than threatened the personal identities of local people involved in understanding the problem and ways to confront it. The process of clarifying a shared sense of the problem and developing community-supported goals was time consuming, costly, and required a great deal of patience. However, this process helped to develop trusting relationships for sharing information, and a shared sense of responsibility for working towards viable, common sense solutions that benefit both people and bears.

One ongoing difficulty with the intelligence activity for the BC grizzly bear program is that, despite concerted efforts to have open and inclusive meetings, a small group of Blackfoot ranchers have elected not to actively take part.

Developing Support for Action (Promotion)

In addition to its involvement in the intelligence activity, the Wildlife Committee of the BC has been actively engaged in the promotion activity. Ideally, promotion should be rational, integrative and comprehensive (Lasswell 1971; Clark 2002). The Wildlife Committee was structured to encourage the involvement of a wide range of values and interests in its decision making activities. Afternoon meetings of the full group are held quarterly, and are supplemented by quarterly meetings of an evening work group called the Landowner Advisory Group. Together, the Wildlife Committee and the Landowner Advisory Group represent both communities of interest and communities of place, thereby contributing to more *comprehensive* and *integrative* development and debate of alternative strategies for action. For example, meetings of the full Wildlife Committee are heavily attended by both state and federal agency personnel and several prominent, national-level conservation groups like Defenders of Wildlife. One factor that contributes to attendance by these groups at these daytime meetings is that many agency interests or conservation NGOs have the ability to meet during the day and are, in effect, paid to do so. These agencies and organizations broadly represent larger, national-level

communities of interest regarding threatened and endangered species conservation and hold values that may not be shared by many local residents. Conversely, the Landowner Advisory Group allows for broad local geographic representation from key opinion leaders, business owners, and respected ranchers throughout the Blackfoot watershed, who represent a community of place. Being able to coordinate, balance, and include the multiple and sometimes competing value demands that participants bring to discussions about grizzly bears through these multiple decision-making fora has been challenging, but it is critical for mutual learning, developing shared goals, and promoting strategies that are *rational* – in that they advance shared goals – and effective in achieving on-the-ground successes.

Our experience in the BC provides further evidence that inclusiveness is absolutely fundamental to progress in contested conservation settings. The Wildlife Committee and the Landowner Advisory Work Group offer multiple opportunities for broad representation of different value systems and perspectives. In an ideal world there might be one overall committee coordinating all the various interests (all of the other BC committees operate in this way). However, if certain individuals such as ranchers prefer a small group setting and can only attend meetings during the evening because they are working during the day, then it is important to attend to these details. Open and frequent communication through multiple means for all participants is a key factor for managing competing value demands and finding ways to arrive at solutions that are in the common interest.

Although having these two sets of meetings has been critical to ensure broad participation in the BC grizzly bear program, there are also some drawbacks. The process is time consuming and delicate in terms of maintaining a neutral stance. Ideally, one forum would simplify the task of managing and integrating competing values and would bring more efficiency to the decision making process. However, it appears that members of the Wildlife Committee are satisfied with the current structure and appreciate the role of the Landowner Advisory Group. Regular dissemination of information to all stakeholders has been critical for integrating multiple values as well as annual field tours where different projects are highlighted.

The Wildlife Committee was also involved in a community-wide, sub-regional planning process led by the BC and the Nature Conservancy to develop an overall conservation plan for the watershed. The Wildlife Committee focused on developing a set of conservation targets for grizzly bear habitat conditions, conflict and mortality thresholds, and a strategy for achieving those targets. This effort brought additional community members into the decision making process and helped to formally document the Wildlife Committee's plans and strategy for long term grizzly bear conservation under the larger, sub-regional plan for the watershed.

Making Decisions (Prescriptions)

The Wildlife Committee and the Landowners Advisory Work Group fostered civil discourse and rational discussion of various programs (prescriptions) for ameliorating human-grizzly bear conflicts in the Blackfoot. The two groups looked for prescriptions that were pragmatic, non-threatening, and participatory. They selected four: electric fencing, livestock carcass removal, a neighbor-to-neighbor communication network, and a waste management program. These initiatives used tools that had been proven to work in other settings, provided ranchers with a

central role in making decisions, and involved cost-sharing among ranchers, beekeepers, and residents.

Standards for the prescription activity include effectiveness, rationality, and comprehensiveness (Lasswell 1971; Clark 2002). The BC partnership intentionally focused on modifying management practices and human behaviors rather than killing bears or attempting to change value systems. As a result, decisions have been highly *effective* – they have met the expectations of, and have been supported by, all partners. For example, small changes in ranching practices like shifting from traditional barb-wire to electric fences around calving areas, or eliminating dead cows and calves from a ranch during the calving season, are concrete ways to prevent and reduce conflicts with bears and avoid livestock depredations. Although the *rationality* of recognizing the livelihood interests of ranchers and honey producers may seem obvious, close attention was paid in the BC to making programs and practices more *comprehensive*, by tailoring them so that in addition to the direct benefits of capital investments in non-lethal deterrence of bears and other predators, there were indirect economic benefits to ranchers. For example, several of the fences built around calving areas also deter elk from hay stacks, helping ranchers to maintain adequate supplies of winter feed for their cattle. Many of the electric fences installed in the Blackfoot also protect grain storage facilities, household garbage, pet foods, and other attractants associated with ranch operations.

Some of the risks of ranching, such as disease, fire, land use change, weather-related calf mortality, or global market fluctuations in cattle prices, are largely beyond the control of livestock producers. However, providing incentives to modify existing land use practices is a non-threatening way to help ranchers manage risk better, without demanding that they give up control over their operations. Initially, some ranchers in the Blackfoot were reluctant to adopt new practices like electric fencing or livestock carcass removal because these innovations challenged traditional norms. However, the results of our initial trials encouraged broader participation. For example, once some of the first fencing projects successfully deterred grizzly bears from calving areas and greatly reduced bear activity, many ranchers began to openly acknowledge the benefits of the fencing.

Implementation (Invoking and Applying Decisions)

Implementation consists of invoking (initially instituting) and applying (further interpreting and enforcing) decisions. Implementation should be timely, dependable, rational, non-provocative (non-threatening), realistic and uniform (Lasswell 1971; Clark 2002). As discussed above, the programs implemented by the BC partnership included electric fencing, livestock carcass removal, a neighbor-to-neighbor communication network, and a waste management program. All of these efforts were directly related to the original goals of addressing human-grizzly bear conflicts through preventative techniques, protecting human safety, and reducing impacts to rural ranching livelihoods.

First, during 2003-2010, 61,000 linear feet of electric fences were constructed around 14 calving areas, a rural livestock transfer site, a composting facility for dead livestock and deer, and 16 apiaries. Electric fences non-lethally deter grizzly bears from attractants like calves, garbage, or beehives. All projects were paid for using funds from public and private foundations, which provided ranchers and beekeepers with substantial cost-savings on the capital investments.

Ranchers and beekeepers helped share the total costs by providing in-kind donations of labor to prepare sites and remove old fences.

Our early experience with the electric fencing project serves as a good illustration of how the implementation of a new program can be perceived as threatening. At first, some ranchers were concerned that electric fences would require excessive maintenance or would be susceptible to ungulate damage. In some cases, ranchers were unfamiliar with the technical aspects of electric fencing, and the adoption of this new technology challenged traditional norms, such as ranchers' pride in their self-reliance regarding routine work like fixing traditional barb wire fences. We have worked closely with ranchers to monitor and maintain electric fences so that they are functional and of little cost to ranchers.

Second, the livestock carcass pick-up program was designed to remove the cows, calves, ewes, and other livestock that naturally die on ranches during the calving and lambing season during mid-February through mid-May, so that carcasses would not be found by foraging grizzly bears and other predators. Cow-calf ranches in the project area are characterized by winter feeding, centralized and spatially fixed operations, irrigated hay production, and docile breeds of cattle (Dale 1960; Jordon 1993). The calving season on these ranches typically overlaps with the emergence of grizzly bears from their dens in the early spring. Bears routinely visit calving areas, and the traditional practice of dumping dead livestock into spatially fixed bone yards (carcass dumps) can lead to chronic livestock-grizzly bear conflicts. Grizzlies that are drawn onto a ranch because of livestock carcasses may be tempted to kill live calves or lambs or find other foods like grain, protein licks, pet foods, or bird seed. The BC grizzly bear program has been responsible for the removal of more than 1,700 livestock carcasses from our project area since 2003.

Our initial efforts to remove livestock carcasses generated considerable concern as ranchers did not want to have the numbers of deaths of calves and cows on their ranches disclosed to neighbours, for fear of being stigmatized for poor animal husbandry. This concern was addressed by establishing centralized drop-off locations outside of home ranches, where ranchers could bring carcasses for pick-up. Since 2007, composting of livestock carcasses has proven to be a highly effective disposal method, and has been widely applauded by the ranching community as a more appealing method of disposal than past practices of depositing carcasses at landfills on their properties.

Third, the "Neighbor Network" initiative of the BC partnership connects local residents together so they can help each other to reduce and prevent human-bear conflicts. The network consists of over 120 residents who work together to accomplish the following: (1) minimize the availability of human-related attractants, (2) communicate among neighbors about grizzly bear and wolf activity using phone-trees and e-mail alerts, and (3) report to a designated area coordinator any incidents or observations of bear or wolf behavior that may pose problems. The goal of this program is to improve communication among neighbors and with Montana FWP in order to prevent conflicts with carnivores from starting in the first place. Nine networks have been set up in the project area, each with a coordinator, to help facilitate communication among neighbors and to FWP when there is grizzly bear or wolf activity. A free check-out program allows

residents to borrow bear resistant trash cans, portable electric fencing, electrified bird feeders, and other non-lethal deterrent tools that help residents reduce conflicts.

Fourth, the BC program also focuses on common sense management of waste and household garbage for all residents of the Blackfoot. Waste haulers and residents use bear resistant garbage cans or take simple precautions to keep garbage secure from scavengers. These efforts are integrated with the neighbor network.

Participants in the BC have worked extremely hard to deliver all of these projects in an efficient, *dependable* and *timely* manner. Demonstrations and one-to-one discussions with ranchers have helped to overcome fears and suspicions about innovative projects, making implementation less *provocative*. Moreover, our efforts have been open and available to anyone in the Blackfoot, including ranchers, landowners, and new residents (*uniform*). One key to effective implementation has been to have a representative of the BC program available on short notice to respond to and deal with questions or problems as they arise. We have made extensive efforts to be highly responsive to landowners and their needs. Often a telephone call or personal visit is used to assess the situation and take necessary steps to alleviate any issues. As a result of all these factors, participants appear to be satisfied that program delivery is *rational*, in that it serves the broader, common interest in the Blackfoot watershed and nationally.

Although the BC partnership has made good progress with implementation of its grizzly bear projects, we anticipate future challenges with funding. Initial funding was provided for virtually all projects from public and private foundations, which provided a strong economic incentive for ranchers to participate. To date, there has been fairly limited direct financial contribution to ongoing projects by ranchers, although they have made in-kind contributions of labor. Programs like livestock carcass removal are clearly valued by ranchers as an important service, but the long term sustainability of these benefits is not secure, considering the small, annual contributions of actual funds (less than \$1,000 in total) by ranchers to a program that costs approximately \$14,000/year.

Monitoring and Evaluating Decision-Making Processes and Outcomes (Appraisal)

Criteria for the appraisal activity include dependability, rationality, comprehensiveness, selectiveness, independence and continuity (Lasswell 1971; Clark 2002). Thus far, evaluation of the BC grizzly bear effort has been informal and internal, without the involvement of an *independent* third party. Although the present chapter *rationally* evaluates the decision making processes of the BC partnership using explicit criteria (summarized in Table 3), this is still an internal evaluation because the authors are all involved in the program. Nonetheless, the Wildlife Committee and the Landowner Advisory Group of the BC were structured to be as inclusive as possible and to provide opportunities for broad community representation, so the self appraisal that has taken place incorporates a variety of perspectives (contributing to *dependability* and *rationality*). Although appraisal has not been *continuous*, the BC program does regularly assess its projects and look for opportunities for improvement. These informal appraisals typically focus *selectively* on specific projects, in contrast to this chapter, which is a more *comprehensive* evaluation of the program as a whole.

Participants are justifiably proud of the outcomes of the BC grizzly bear program. From 2003 to 2010, there has been a 96 percent reduction in reported and verified human-grizzly bear conflicts in the BC project area. There has also been a downward trend in known grizzly bear mortalities in the Blackfoot watershed. In 2003 there were 5 grizzly mortalities in the watershed, and in 2004 there were 3 known mortalities, one resulting from a hunter-related incident, one from an illegal kill, and one from a vehicle collision. In 2005 there was one road-kill mortality of a sub-adult grizzly of unknown sex. In the same year, no grizzly bears were trapped in the Blackfoot for conflict management purposes nor were there any management-related conflicts or mortalities in 2006. In 2007, human-bear conflicts continued to decline with fewer than five reported conflicts reported that year. There were two hunter-caused mortalities (1 adult male, 1 adult female) in backcountry settings outside the project area and one adult male grizzly killed by a vehicle collision outside the project area. In 2008 there were no grizzly bear mortalities and twelve minor, attractant related conflicts. In 2009, only five reported conflicts occurred and there were no grizzly bear mortalities. In 2010 there were low numbers of conflicts in the project area (3) but several grizzly bear mortalities on the outside edges of the project area due to garbage related attractants.

Recent population analysis by the US Geological Survey, which used DNA hair-snare methods, reported approximately 29 individual grizzlies in the Blackfoot area in 2004 and population estimates by FWP suggest that the NCDE population is growing at approximately 3 percent per year. We recognize that the downward trend in conflicts may partly be a result of there being fewer ‘problem’ bears, or changes in bear foraging behaviours, or the heightened awareness of local residents, who may report conflicts less often. However, the combination of targeted prevention efforts—electric fencing, carcass removal, improved decision making, and citizen-based monitoring—are clearly helping to reduce conflicts between humans and grizzly bears. Ongoing FWP monitoring of grizzly bear activity, conflicts, and bear mortality will help to evaluate the long term outcomes of this initiative.

Ending or Changing Programmatic Direction (Termination)

The grizzly bear conflict work of the BC grizzly bear program is now entering a monitoring and maintenance phase. The past five years have resulted in the development of several successful initiatives and dozens of on-the-ground projects. Monitoring and maintaining the investment in a coexistence infrastructure in the Blackfoot watershed is the next task ahead. While the grizzly bear work is certainly not completed, new projects will be initiated on as as-needed and overall direction will be guided by the grizzly bear strategy in the sub-regional plan.

The BC partnership is now shifting energy, skills and resources to the challenging issue of wolf-livestock conflicts, with the hope that the decision-making systems put in place for grizzly bear management will enable a proactive response to the emerging and contentious issue of wolves. Initial efforts suggest that the BC will again have to contend with widely differing definitions of the problem, including differing perceptions regarding wolf numbers, management authority, direct and indirect impacts of wolves on livestock, impacts on ungulate numbers and hunter opportunity, and levels of lethal control. The BC has elected not to take an advocacy position on wolf management or the recent re-listing of wolves as an endangered species, and a small number of individuals have formally withdrawn from the BC partnership over this issue.

MOVING FORWARD: LESSONS AND RECOMMENDATIONS

The success of the BC grizzly bear program shows that a community-based initiative that attends to principles of good decision making can be effective in building social capacity and reducing conflicts with grizzlies. By opening up the intelligence and promotion activities, developing more reliable information about important social and biological trends, and selectively focusing on practical ways of managing attractants and reducing conflicts, the BC has helped to promote coexistence between grizzlies and humans in the Blackstone Valley. In this section we identify field-based lessons for managers from our experiences, and then discuss general recommendations for designing and improving decision making processes in this and other complex conservation programs.

Lessons for Managers

Our field-based lessons for managers are not meant to be an exhaustive inventory, but merely an attempt to share some of the most important and useful lessons reflecting our collective experience with the BC. These lessons are summarized in Box 1 and discussed below.

[Insert Box 1]

Build on Existing Institutional Capacity. When this effort started it was clear that it would be foolish to ignore the existing institutional capacity of the BC. The long-term commitment that ranchers, residents, and other landowners in the Blackfoot have made to preserve rural ways of life has resulted in strong working relationships within the community and across multiple natural resource agencies and other government entities. This history of collaboration has generated and maintained a stock of social capital (Putnam 2001), which has been drawn upon successfully from time to time to confront complex issues like drought, invasive plants, and landscape scale habitat conservation. It made sense that if the BC was willing to work on the grizzly bear issue we should build on and expand this existing institutional capacity.

Take a Proactive Approach. While it is not always possible to take a proactive and preventative approach to natural resource issues, we did so in this case. A few human-grizzly bear conflicts and livestock losses to grizzlies had already occurred when the BC grizzly bear program began in the early 2000s, but it is likely that without a collective proactive and preventative response at that point the intensity and frequency of grizzly bear conflicts would have increased substantially. The use of GIS analysis helped us to predict and target areas that were at greatest risk for conflicts in the future, thereby avoiding the need to “bear proof” the entire landscape. If the expansion of grizzly bear activity and the population of grizzlies continues on private lands in this area, it is hoped that these proactive efforts will enable the community to stay well ahead of the problem.

Develop a Broad Understanding of “The Problem.” Considerable time and research was invested in understanding how “the problem” was perceived by key stakeholders and how these perceptions were grounded in the local context. The spatial and biological dimensions of grizzly bear activities, and the opportunities for managing attractants, were important considerations that

the group learned about collectively. Care was taken to be holistic and to understand that a long-term solution to the problems associated with grizzly bears would depend on finding common ground across multiple stakeholders.

Be Patient and Listen. While it may appear obvious that patience is an important skill to bring to collaborative efforts, this skill is critical in rural, agrarian contexts. Participatory efforts are time intensive and costly, but developing inclusive and meaningful decision-making processes greatly increases the likelihood of achieving desired outcomes – the process can be as important as the end product. Well developed listening skills are also essential. We have found that people involved in our efforts have different ways of communicating important information. Some are direct, others are more subtle. For example, it is common for ranchers to refer to themselves in the third person (e.g., “a guy could do such and such,” to describe what they might actually be willing to do when confronted with a decision). The use of an absent referent for “self” may serve as a way to deliver positions in a thoughtful and non-threatening manner, and may have origins in agrarian colloquialisms grounded in the need for neighborly communications to help each other maintain viable ranching operations. The notion of being a good neighbor is also born out in other colloquialisms. For example, we have observed that ranchers occasionally use the noun, “neighbor”, as a verb, as in, “he knows how *to neighbor* well.” There are unique complexities in the ways people in different settings communicate, and being attuned to this by being a good listener is essential to comprehending the situation and being effective.

Share Power. Power-sharing arrangements can be difficult to create and manage. Nonetheless, our experience with the BC partnership demonstrates that power sharing among stakeholders, specifically in making decisions on both a tactical level (project-based) and strategic level (type of management and conservation approach to take) are beneficial. The willingness of Montana FWP and other agencies to invest in the BC effort and actually *give* and *take* direction from landowners, ranchers, and residents involved in our efforts shows that the BC developed a high degree of trust among stakeholders. This has resulted in stakeholders who are willing to participate on a long-term basis and who know that their values are being incorporated into decisions. The BC partnership will need to work to maintain this level of trust as it tackles the highly divisive issue of wolf management.

Scale Matters. One explanation for the downward trend in conflicts between bears and humans is likely the fact that our programs were designed (e.g., carcass removal, electric fencing, and neighbor network) to match the biological scale of grizzly bear activity. For example, the carcass pick-up and removal program covers ranches across nearly 650,000 acres. This scale is commensurate with grizzly bear home ranges and their 24-to-48-hour foraging bouts. By having dozens of ranchers participating in this program, there is a collective benefit realized from individual participation. If only a handful of ranchers had taken part in the program, grizzlies would likely have found and exploited carcasses on the ranches of non-participants, eventually creating “spill-over” conflicts across our project area.

Recommendations

In addition to these lessons for managers, there are three main recommendations that emerge from this case study for designing and improving community based approaches to large

carnivore conservation and other complex natural resource cases: (1) build and maintain partnerships, (2) communicate effectively, and (3) strive for long-term sustainable outcomes.

Build Partnerships. Beginning with the intelligence activity and continuing through all the decision making activities of the BC program, at the core of our success has been a strong partnership. This has enabled us to bring a diverse group of stakeholders together to capitalize on our collective knowledge, skills, and financial resources. Integrating local and expert knowledge in the intelligence and promotion activities was a powerful means to develop a holistic understanding of the problem of coexisting with grizzly bears. The people involved in our efforts have multiple skill sets—from bear monitoring to interpersonal communication, fund raising, facilitating meetings, and ranch management. These skills, and many more, constitute a “skill network” that can be readily tapped on a project-by-project or issue-by-issue basis to advance the goals of the partnership. In addition, funding institutions (both public and private) are often interested in supporting partnerships, which has helped the BC partnership to garner substantial financial resources to implement key programs.

Communicate Effectively. Effective communication is critical to carnivore conservation programs in both formal and informal settings. The formal communication structure that we put in place using the Wildlife Committee and the Landowner Advisory Group provided all invested stakeholders a voice to share information and exchange ideas. This opened up the intelligence and promotion activities, giving participants access to better data about social as well as biological trends, and helping them to settle on a tractable definition of the problem. Both communities of place and of national interest were given representation and encouraged to communicate with each other to make decisions. The ability for national level conservation groups to understand the local reality of living with bears has been particularly helpful in crafting approaches that are locally supported and practical but also benefit the national goal of conserving grizzly bears.

At the informal level, the network of partners that organized under the BC has helped to provide options for communication in decision making based on trusting relationships. For example, certain individuals in this partnership have known some of the ranchers in the Blackfoot for more than three decades, which makes it possible to present new ideas or grapple with sensitive subjects initially in one-on-one informal settings. Being able to broach sensitive issues at the individual level prior to group settings can be an important way to probe or test out new ideas in a non-threatening manner. In these types of cases, testing or prototyping a new type of innovation (e.g., fencing) is possible and presents a low risk way to try new approaches.

Additionally, we recommend that communication should be based on non-threatening language choices and a “non-advocacy” approach to discussing the issues, and that, at least in the Blackfoot watershed, the communication flow should be largely upward from the grassroots. Being highly attuned to the values and needs of landowners and ranchers through regular communication, and being willing to “listen from the ground up” has been an important way to frame communication strategies.

Strive for Long-Term Sustainable Outcomes. Sustainable coexistence with large carnivores like grizzly bears in the long term will ultimately depend on local people’s tolerance for these

animals, and whether people are willing to exert a degree of ownership—in the sense that there is shared responsibility for wildlife management, rather than the traditional model in which people rely wholly on agency action. Ideally, living with carnivores will become part of cultural expectations in these regions. Over the past eight years of our work, people in the Blackfoot have increasingly developed a sense of responsibility for their actions with respect to coexisting with grizzly bears. Our neighbor network is a prime example, where residents have taken an active and participatory role in peer education and reversing the flow of information about grizzly bear activity to Montana FWP. Ranchers are developing their own portable electric fencing systems to non-lethally deter bears and wolves, and across the community the general level of “bear awareness” has increased dramatically.

Table 4 depicts a continuum of local involvement in grizzly bear conservation and indicates the implications for sustainable outcomes. We recognize that in the BC program technical assistance and financial resources were provided to ranchers for many of our programs, and that we have not yet reached the far right of the continuum in terms of local ownership of grizzly bear conservation. However, the improved decision-making process developed in the Blackfoot is a critical step in reaching this long-term and most sustainable outcome. We also believe that the long term support that this partnership has enjoyed from the ranching community is largely a result of having developed communication fora where local values, needs, and concerns were regularly articulated and responded to in a meaningful way. The future outlook of the effort appears to be sustainable. The state and federal agencies involved recognize that sharing power in decision making has invested local people in the long term success of this effort. However, long term financial sustainability to maintain core programs may require more cost-sharing by ranchers, more investment by local landowners who can act as donors, and continued and diversified support from private foundations. It may also be desirable to develop new legislation that could direct congressional appropriations to support proven tools and techniques as described in this effort.

[INSERT TABLE 4]

CONCLUSIONS

Much of the success of the BC grizzly bear program can be attributed to understanding and communicating effectively with people. In too many cases of natural resources management, undue attention and emphasis are placed on observing, studying, and analyzing the biological processes or problem in question. We have found that how people interact, communicate, and make decisions are the key areas upon which to focus attention. We did not ignore important biological data relevant to reducing grizzly bear conflicts, but we found that focusing our efforts on building non-threatening fora for understanding how the problem was perceived and cogenerated shared goals and solutions has been well worth the investment.

At the beginning of this effort it was expected that the issue of grizzly bears would be perceived differently among interested stakeholders, that there would be multiple and competing value demands made by stakeholders, and that an organized approach was needed to work through this complexity. Doing nothing would clearly have been a poor choice for people and grizzly bears. The BC partnership focused efforts on changing people’s practices and behaviors, not changing

their value systems, and it gave people who had to live with grizzly bears the means to develop coherent goals of reducing and preventing human-grizzly bear conflicts. While not all ranchers and landowners have been involved in the effort, there has been enough core support to make the programs a success. The inclusive and multiple fora to guide decision-making relied on participatory projects, and had the support of wildlife managers who were willing to invest in this collaborative effort. This has produced a strong partnership and enhanced communication and trust among participants, thereby opening up opportunities for innovation and on-the-ground success.

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Table 1. Likert-scaled statements regarding perceptions of grizzly bear activity and appropriate landowner/resident behaviors in the Blackfoot watershed, Montana.

Statement	Agree	Disagree
1. Grizzly bears that use private land are a threat to human safety	71 percent	29 percent
2. I do not feel safe when I am outside on my property because of grizzly bears	45 percent	55 percent
3. There are too many grizzly bears using private lands in this area (Blackfoot)	71 percent	29 percent
4. I am comfortable with the current level of grizzly bear activity in this area (Blackfoot)	32 percent	68 percent
5. Private landowners have a responsibility for protecting grizzly bears	42 percent	58 percent
6. This would be a better place to live if there were no grizzly bears on private lands	52 percent	48 percent
7. People shouldn't have to change their habits to accommodate grizzly bears that use their private land	58 percent	42 percent
8. Private landowners should take precautions to reduce conflicts with grizzly bears	90 percent	10 percent
9. Grizzly bears should remain off limits to hunting.	10 percent	90 percent
10. Grizzly bears are a serious threat to my livestock.	45 percent	55 percent

Table 2. Aggregated responses of respondents when asked about the most important issues that should be addressed that might improve human-grizzly bear coexistence and the relative difficulty of addressing issues.

Key Issues to Be Addressed to Improve Human-bear Coexistence	Less Difficult	More Difficult
Issues characterized by managing human behaviors		
Develop a strategy	✓	
Focus on protecting garbage, grain, bird feeders, etc.	✓	
Stop developments in bear habitat		✓
“Keep a clean camp”	✓	
Better communication	✓	
Truthful communication from wildlife managers	✓	
Better education on how to live with bears	✓	
Protect human safety	✓	
Improve cooperation among landowners and managers	✓	
Issues characterized by managing bear behaviors and numbers		
Know where “problem” bears are		✓
Know what bear population is doing		✓
Reduce the bear population		✓
Manage “problem” bears more aggressively	✓	
Institute a hunting season on bears		✓
Have legal right to protect livestock from bears		✓
Improve bear monitoring	✓	
Increase bear relocation distances		✓

Table 3. An overview and appraisal of the grizzly bear management decision process in the Blackfoot River Watershed, Montana (standards adapted from Lasswell 1971, Clark, 2002).

<p style="text-align: center;"><u>Decision Activities and Effectiveness Standards</u></p>	<p style="text-align: center;"><u>Grizzly Bear Management Decision Process</u></p>
<p>INTELLIGENCE <i>Recognizing the problem and gathering information</i></p> <ul style="list-style-type: none"> ▪ Dependable ▪ Comprehensive ▪ Selective ▪ Creative ▪ Open 	<p>Pre-Engagement (1997-2001): FWP data on bear numbers and activity were perceived with some skepticism by the community and viewed as undependable; bears were perceived as great threats to human safety and livelihoods; data were needed to integrate land-use practices, attractants, and conflict location data to create a comprehensive and integrated understanding of the problem while selecting or targeting key practices (e.g., calving areas, livestock carcass management) that would influence conflict probability; information gathering was traditional and limited in scope (emphasis on monitoring movements of a small number of collared bears) or uncreative and was not widely available or open to the community.</p> <p>Engagement (2002-present): Analysis and clarification of the “problem” of having grizzly bears return to private lands helped to elucidate that ideological and symbolic problem definitions would be difficult to solve and led to general support by the community to focus on understanding what human behaviors and practices would reduce the risk of conflict; a spatially explicit and more comprehensive understanding of conflict was generated with the support of FWP and ranchers through data sharing and valuing local knowledge; the process of data collection, open dissemination of information, and regular communication with FWP and ranchers helped to create trust in data (dependability) and opened opportunities to find solutions that respected ranchers’ exclusive interest in property while attending to inclusive national interests of reducing grizzly bear human-conflicts and bear mortality.</p> <p>Key Challenges: Problem definition clarification process is time consuming and costly; power sharing and generating the trust and support of FWP was a time consuming and delicate process that required patience; a small, vocal minority of ranchers have refused to take part in any information generation or sharing activities since 2002.</p>
<p>PROMOTION <i>Open debate, in which various groups advocate for their interests or preferred policy</i></p> <ul style="list-style-type: none"> ▪ Rational ▪ Integrative ▪ Comprehensive 	<p>Pre-Engagement (1997-2001): Forums for rational and open discussion and debate were limited; disparate values were simultaneously promoted and dismissed by various stakeholders with little or no integration or synthesis; special interests were largely dominating informal discussions at the community level.</p> <p>Engagement (2002-present): The BC provided structure to elevate the discussion and debate to a more rational and comprehensive level that integrated place-based and interest-based values through multiple communication forums.</p> <p>Key Challenges: Multiple communication forums require intensive coordination (time-consuming); Ideally, the BC would have a single committee to debate and discuss grizzly bear management.</p>

<p>PRESCRIPTION <i>Setting the policy, rules or guidelines</i></p> <ul style="list-style-type: none"> ▪ Effective ▪ Rational ▪ Comprehensive 	<p>Pre-Engagement (1997-2001): Ranchers and landowners were concerned that state and federal management actions would trump or ignore local decision making and limit property rights; FWP was understaffed and underbudgeted.</p> <p>Engagement (2002-present): Committing to specific decisions was carried out in a collaborative manner with co-generation of voluntary plans deemed rational or balanced by ranchers; the expectations of ranchers that they should have a central role in decision making were met and helped build support of existing FWP management plans and led to new, voluntary projects (characterized by economic incentives and risk reducing practices) furthering a comprehensive approach to the problem that was proactive; funding and personnel were acquired to expedite project delivery.</p> <p>Key Challenges: Initially, ranchers were skeptical about the efficacy of certain proposed actions such as electric fencing and livestock carcass removal since adoption of these practices challenged traditional cultural norms.</p>
<p>INVOCATION AND APPLICATION <i>Implementation, enforcement and dispute resolution</i></p> <ul style="list-style-type: none"> ▪ Timely ▪ Dependable ▪ Rational ▪ Nonprovocative (non-threatening) ▪ Realistic ▪ Uniform 	<p>Pre-Engagement (1997-2001): Efforts by FWP to efficiently manage grizzly bears were existent but funding and personnel shortages made progress slow; efforts were not systematically organized.</p> <p>Engagement (2002-present): The existing institutional capacity and ability of the BC were used to catalyze new partnerships and synchronize state, federal, and NGO involvement, leverage significant funds, and to helped to efficiently (timely) and dependably deliver on projects in a nonprovocative manner; widespread support of the ranching community for project ensued; efficient and reliable project implementation may have resonated with the work ethic of ranchers whose survival is dependent on a problem solving and solution oriented practice; the institutional capacity of the BC to efficiently implement projects has created efficiency and rationality in program efforts that is perceived as a favorable private sector solution that served common interests (rational).</p> <p>Key Challenges: The use of economic incentives that have resulted in relatively low-to-no-cost projects may have created expectations of conservation subsidies and could jeopardize the ability to sustain core programs in the long term if some proportions of costs are not born by the ranching community.</p>
<p>APPRAISAL <i>Review and evaluation of the activities so far</i></p> <ul style="list-style-type: none"> ▪ Dependable ▪ Rational ▪ Comprehensive ▪ Selective ▪ Continuing ▪ Independent 	<p>Pre-Engagement (1997-2001): Initial efforts by FWP to address the grizzly bear issue were largely based on traditional, expert-driven wildlife management and self appraisal with limited engagement of the local community in decision making.</p> <p>Engagement (2002-present): Although the appraisal process presented here is informal (no external third party has yet evaluated this effort), systematic, regular, and coordinated communication among all stakeholders has helped create a dependable and rational process that appears to be generally supported by those invested in the issue; the comprehensive approach to identifying and properly selecting and removing/securing attractants has helped reduce conflicts with grizzly bears by 93% from 2003 to 2009; a downward trend in grizzly bear mortality has been observed in the project area and no known livestock kills have been attributed to grizzly bears since 2004 while FWP reports a slowly expanding (1-3%/year) grizzly bear population in the NCDE. FWP monitoring of grizzly bear activity, conflicts, and bear mortality will help evaluate</p>

	<p>the long term success or failure of program(s). Independent appraisal might generate new ideas for improvements.</p> <p>Key Challenges: Re-colonization of wolves in the Blackfoot watershed beginning in 2007 has generated widespread concern among the community—not unlike the negative perceptions of grizzly bears described earlier in this chapter that were common in the late 1990s and early 2000s. However, the widely differing problem definitions among stakeholders in the Blackfoot watershed regarding wolf numbers, management authority, direct and indirect impacts to livestock, purported impacts to ungulate numbers and hunter opportunity, levels of lethal control, and the BC’s non-advocacy position on wolf management or recent re-listing as an endangered species have led a small number of individuals to formally withdraw from BC activities.</p>
<p>TERMINATION/ SUCCESSION <i>Ending or moving on</i></p> <ul style="list-style-type: none"> ▪ Timely ▪ Comprehensive ▪ Dependable ▪ Balanced ▪ Ameliorative 	<p>Pre-Engagement (1997-2001): Previous land use practices (e.g., livestock carcass management, unprotected calving areas) led to increased conflicts.</p> <p>Engagement (2002-present): Previous practices that led to conflicts were abandoned in favor of new practices that helped ameliorate conflicts in a timely manner; the process of stopping specific practices and shifting to alternatives was collaborative and sought out balanced and comprehensive solutions. With a strong downward trend in conflicts and bear mortalities observed in the project area, specific programs like electric fencing of calving areas and beehives have been terminated since the bulk of the high risk areas are now secure; livestock carcass removal requires long term maintenance; overall, the grizzly bear management approach is now characterized by monitoring and maintenance, and additional projects will be implemented on an as needed basis.</p> <p>Key Challenges: Maintaining funding to sustain the annual costs of livestock carcass removal may be difficult.</p>
<p>OVERALL STANDARDS</p> <ul style="list-style-type: none"> ▪ Honest ▪ Economical ▪ Technically Efficient ▪ Loyal and Skilled Personnel ▪ Complementary and Effective Impacts ▪ Differentiated Structures ▪ Flexible and Realistic in Adjusting to Change ▪ Deliberate ▪ Responsible 	<p>Throughout all decision making, honesty and trust have been hallmarks of this effort; regular communication among wildlife managers, researchers, landowners, and ranchers have generated trusting relationships among key stakeholders; the use of economic incentives facilitated adoption of new land use practices, yet the long term financial sustainability of core programs and willingness of ranchers to defray future costs will remain a challenge; the partnership that was created by the BC relies on diverse skill sets of technically trained personnel that can rely on one another to address diverse problems as they arise; this group of stakeholders has come to a place where loyalty and responsibility is largely invested in the decision process itself, not situated at individual agency or institutional levels, which has helped to prevent any one individual or organization from attempting to disproportionately appropriate success of the effort.</p>

Box 1. Emerging lessons for managers from the Blackfoot Valley case.

<ul style="list-style-type: none">• If possible, integrate desired management and conservation actions with existing institutional capacity to accelerate all decision-making functions and generate strong local support for efforts.
<ul style="list-style-type: none">• Strive to take a future-oriented or proactive approach to the current problem and avoid reactive approaches when possible.
<ul style="list-style-type: none">• Develop a holistic understanding of how people's perceptions of the problem are conceived; typically this is a function of historic and current ecological, social, and political conditions.
<ul style="list-style-type: none">• Do not rush decision-making processes in rural contexts; recognize that developing trust and support takes time; recognize that participation by most stakeholders is contingent on satisfying their livelihood interests first.
<ul style="list-style-type: none">• Recognize that highly attuned listening skills are necessary--important information is often delivered in subtle or discreet ways.
<ul style="list-style-type: none">• Share decision-making authority and intellectual ownership of the issue with engaged participants to improve creative problem-solving and fully supported outcomes.
<ul style="list-style-type: none">• Understand biological scale of key processes to be addressed and match human response accordingly.

Table 4. A continuum of local involvement in grizzly conservation and implications for sustainability of carnivore populations and conservation programs (adapted from Wilson et al, 2007).

⇨ Increasing Sustainability of Carnivore Populations ⇨					
Form of local involvement	“You’re on your own”	“Tell them how”	Expert dependency model – “do it for them”	Technology transfer – “show them how”	Ownership – Peer-educators
Outcome	People eliminate large carnivores	People slowly eliminate large carnivores	Program may be successful in the short term but costly and likely unsustainable	More sustainable	Coexistence becomes part of local culture

Figure 1. Location of case study in the Blackfoot River watershed, Montana.

