



RANCHING IN BEAR COUNTRY

Conflict and Conservation

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The arrival of livestock operations in the West changed the human-bear relationship from one of occasional, localized conflict to a generalized opposition to bear presence and survival. By the 1920s and 1930s, grizzly bears were extinct or extremely rare throughout the West. Today, livestock-related conflict is still a leading cause of bear mortality, and government agencies do not act effectively to reduce bear deaths. Livestock also have impacts on bear habitat, further stressing bear populations.

Public land managers must prioritize bear survival and habitat needs over those of livestock.

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Recorded conflict between bears and humans and their livestock in North America dates back to the first appearance of Europeans. Early European occupants of western North America brought with them an attitude, based largely on fear and lack of knowledge, of little tolerance and no mercy for bears. Settlers killed bears indiscriminately,¹ whether the encounters were haphazard or whether they resulted from pursuit of bears for food and fur. Explorers and settlers had horses and small numbers of cattle for subsistence. Livestock-related conflict between humans and bears at this stage in the settlement of North America was localized and sporadic, with limited impact on bear populations outside inhabited regions.

Even though bear numbers were depleted locally by hunting for food, including market hunting, and in “defense” of settlement, a fundamental shift in the nature of the conflict between humans and bears in the West began when livestock proliferated with the appearance of large-scale commercial operations in the latter half of the nineteenth century. Three substantial changes ensued, resulting in a major escalation in human-bear conflicts. First, bears, which have always exploited every available food source, now routinely found themselves in contact with livestock and those who protect livestock; few safe havens remained. Second, poison and baiting were introduced, efficiently exploiting the basic survival strategy that had made bears so successful—their inclination to eat just about anything. And third, through the permanent occupation of land by residency or through permits issued by public land managers, stockmen conceived it their right to make the land safe for their possessions.

As ranchers settled in, they systematically set about cleansing the environment of “obnoxious” animals. They did so through direct intervention, through political pressure on government to hire hunters, and through private employment of bear hunters. Political reward and/or commercial gain for killing bears meant that pursuit was no longer a function of diminishing effort and diminishing return. With taxpayer support, bear hunting took on a life of its own and resulted in the destruction of the very last bears in much of the U.S. West.

Young grizzly bear.

In roughly one hundred years, these circumstances led to the extinction of the grizzly bear in the Southwest. The last grizzly in New Mexico was killed by stockmen in 1931. The last grizzly in Arizona was killed in 1935, in response to a depredation complaint. At that time it was estimated by the U.S. Forest Service that between 10 and 28 grizzly bears survived in other parts of the Southwest; yet even in those areas “there is an undercurrent of feeling among stockmen that bear should be taken off the protected list, due to their resentment of being forced to first secure a permit from the State Game Department before we will attempt to take bear.”²

In western Canada, the story was not much different; by 1880, prairie grizzly bear populations had been exterminated by a combination of overhunting, human settlement, and protection of livestock and grain fields. Grizzlies remained only in the foothills and mountains—public lands occupied by tens of thousands of cattle, horses, and sheep—and they were in constant danger.

By 1920, from what had been more or less continuous distribution of bears across the U.S. West, there remained but forty-three disjunct grizzly bear populations left in the lower United States,³ most of them proving to be nonviable relics—“the living dead” occupying isolated islands of habitat. By 1970, all but five populations (Greater Yellowstone, Northern Continental Divide, Cabinet-Yaak, Selkirk, and North Cascades)—or possibly seven if the Selway-Bitterroot and Kettle populations are included—had become extinct.

The timing was perhaps good fortune—combined, I suspect, with foresight—but the science of grizzly bear conservation dawned in 1957, when brothers John and Frank Craighead began their investigations of grizzly bear behavior and ecology in the Yellowstone ecosystem. These pioneering efforts led to realization of the precarious state of grizzly bear populations in the lower forty-eight states and eventually resulted in the recognition of grizzlies as a threatened species in 1975. So began what I term the “modern era” of livestock–grizzly bear conflict.

This essay focuses on what we currently know and where we must go to end, or to reduce to manageable levels, the conflict between public and private interests: bears and the people of the United States and Canada on one side, on the other, livestock owners and the land and wildlife management agencies, legislatures, and occasionally universities that support them.

We know that the level of mortality that bears can sustain is very low (3 to 7 percent) and that cumulative impacts as a consequence of livestock-related conflict are rarely sustainable. There is also substantial evidence that livestock have a wide array of direct and indirect impacts on the ecology of both black bears (*Ursus americanus*) and grizzly bears (*Ursus arctos*), their habitat and behavior, and the dynamics and viability of their populations. Together the ecological and mortality impacts of livestock production on bears fall into two broad categories and various subcategories that are not mutually exclusive:

I. Mortality impacts

A. Direct killing of bears by livestock owners due to:

1. Real and perceived depredation of livestock, resulting in intense bear “management”
2. Threats to human safety when bears are in close contact with agricultural activities

3. Bear attractants, such as bone yards, livestock concentrations, and garbage, which bring bears, often from long distances
 - B. Relocation of bears (for the above reasons), which removes them from a population or results in their death elsewhere
- #### II. Ecological impacts
- A. Habitat degradation (changes in abundance, diversity, and distribution of vegetation), including:
 1. Introduction of nonnative plants
 2. Forage competition from livestock for important bear foods
 3. Reduction in cover and declining security
 4. Impacts on populations of mammals, fish, and birds that are or were a natural part of bear ecology
 - B. Habitat destruction, in which natural features of use to bears are destroyed or altered
 - C. Displacement of wary, free-ranging bears that avoid humans, leading to alienation of bears from suitable habitat

Losing Bears: Mortality and Relocation

The most obvious impact of having cattle, horses, and sheep in bear habitat is mortality and direct removal of bears from the ecosystem as a consequence of defense of livestock by humans. An extremely important aspect of this issue is that there is no predictable correlation between bear numbers and livestock conflicts or livestock operator complaints, except that there would be no livestock-related complaints if there were no livestock.

Complaints by livestock owners can lead promptly to very high levels of mortality or relocation of grizzly and black bears, even when a bear population’s status is recognized as threatened. Intolerance of bears by livestock interests is the largest single source of reported conflict with bears in rural areas. For example, livestock concentrations represented 30 percent of the attractants leading to human-bear conflicts reported in one study⁴ on the east side of the Rocky Mountains in Montana, but these conflicts accounted for 44 percent of reported bear complaints.⁵ A summary of the source of conflicts between humans and grizzly bears in the ranching country on the east side of the increasingly urbanized Northern Continental Divide ecosystem in Montana between 1986 and 1990 revealed that 39 percent and 30 percent of 129 incidents involved cattle and sheep, respectively.⁶

A study of cattle-, sheep-, and swine-related conflicts with black bears in Alberta highlighted one of the erroneous and negative responses to bears that still persists: the long-standing practice of assuming that “missing” animals have been killed by bears. In this study, which covered conflicts in the period 1974–1979, 39 percent of the losses for which black bears had been blamed were actually stock that had simply “gone missing.” When Fish and Wildlife officers investigated, they were able to associate black bears with only one-third of the claims made by stockmen.⁷ Even on more remote public land leases, where 180,000 cattle grazed, only 28 head of livestock (14 percent of claims for lost animals) were confirmed as black bear kills.

These numbers reflect similar situations in the United States. In Wyoming and Montana, for example, 5.2 million cattle and calves grazed in 2000, but fewer than 200 were killed by bears.⁸ Other causes of death accounted for 134,000 animals. These large losses should draw attention to the serious consequences of inadequate husbandry practice and caretaking. Management errors—such

as inadequate herding, fencing, and salting; lack of veterinary care; and improper stocking levels, age classes, and dates of entry—lead to much higher levels of livestock mortality than do bears.⁹

Sheep and swine, by virtue of their smaller size and more limited mobility, are more susceptible to black bear predation than are cattle. They are highly social, and evidence of their presence is concentrated and readily detected by both black and grizzly bears. Protection of sheep on public lands is difficult: they must be herded daily to find fresh forage, but they must also be confined at night so they can be defended. Both sexes and all ages of sheep are susceptible to bear mortality.¹⁰

Retribution against bears by land users and wildlife and land managers for real or suspected livestock deaths can be severe. An estimated 62 black bears were killed in the Yellowstone ecosystem on Wyoming national forests over an eight-year period in the 1970s because of perceived livestock conflict.¹¹ From 1996 to 1998, sheep- and cattle-related incidents in national forests in Wyoming resulted in capture and relocation of 8 adult grizzly bears (2 females, 6 males).¹² On Montana's Rocky Mountain East Front between 1986 and 1990, 77 of 100 so-called nuisance incidents involved livestock and grizzly bears; 7 bears were relocated and 4 were destroyed.¹³

In a small Alberta corner of the same ecosystem, a very high level of mortality and relocation of grizzly bears has persisted for decades, resulting often from alleged conflict between cattle and bears. In the 1970s and 1980s, at least 77 grizzly bears and an unknown number of black bears were removed from this international population.¹⁴ Livestock conflicts continue to deplete this population: 37 grizzly bears were captured and relocated between 1990 and 1997; of these relocations, 27 were due to livestock-related incidents.¹⁵ In British Columbia, I estimate that a minimum of 85 black bears and 5 grizzly bears were destroyed annually between 1992 and 1996 because of livestock-related conflicts.

Bear destruction and relocation by livestock owners and wildlife managers is often indiscriminate. Individual bears are not easily identified and are difficult to “target.” In northwest Alberta, between 1974 and 1979, Fish and Wildlife officers killed 60 black bears as presumed predators, but only 18 of these fit criteria defining them as offenders.¹⁶ Even under cases of intensive “management,” the impact on bears can be substantial. Few jurisdictions have, or can be expected to have, adequate knowledge of individual bears. In the context of a combined “protection of private property” and “liability reduction” strategy, there is intense pressure to remove “problem” bears. Under these circumstances, nonoffender casualties can be expected to be high.

Extreme reaction in defense of livestock is not uncommon. In response to the suspected killing of four cows (only one confirmed kill) by a grizzly bear, the Alberta Fish and Wildlife Division spent twenty-three days over two years, engaged up to four conservation officers for at least seventy-six workdays, employed helicopter assistance, imposed two area closures on public activity, laid thirteen legal charges against the public in relation to the closures, and handled three nontarget black bears.¹⁷ I estimate taxpayers paid over \$20,000 for this extravaganza.

Indirect and progressive effects on bears involved in livestock conflicts cannot be discounted. For example, young bears learn food habits and foraging

behavior from their mother. In recent depredations in Wyoming, one female grizzly was accompanied by four cubs (two litters).¹⁸ We can expect that these young bears learned a great deal about, and probably adopted at least some aspects of, this artificial lifestyle. Consequently, the prospect that they will live long and natural lives is dim.

In some cases, few bears participate in livestock depredation, and among those who do, the majority do so only occasionally. Of 7 radio-collared grizzly bears recently monitored in Wyoming, 2 adult males were suspected of sixteen depredations each, 1 was suspected of five depredations, and 4 were suspected of only one depredation each.¹⁹

The prospects that a “culture of depredation” on livestock can be created within bear populations cannot be dismissed. In areas where individual grizzly bears are not marked and the composition, size, and dynamics of the population is poorly known, bears that are not now preying and that may never have preyed on livestock are often killed or captured and relocated. Those who survive become inappropriately labeled as “management” bears, often negatively changing the way they and their young are perceived and dealt with from that point onward.

As is to be expected from animals whose young accompany their mother for any length of time, livestock allotments become part of the offsprings' home range, and some young bears will learn to associate with and prey on livestock, sharply increasing their risk of lethal contact with humans. If females with young seek a degree of security by moving into areas from which males have been removed²⁰ for alleged or known depredations, heavy-handed management of male bears may intensify conflicts between females and livestock.

Domestic livestock use of public lands occurs in seasons when native wildlife carcasses, most of which result from late winter mortality, are rarely available; thus, the presence of domestic livestock carcasses creates an unnatural distribution and concentration of bears, leading to increased mortality rates and greater danger to long-term population viability. The unnatural presence of livestock and livestock carcasses beginning in spring and continuing through fall exposes young cubs to scavenging, and perhaps preying on, livestock.²¹

The impacts of livestock on vegetation further marginalize bear habitats, some of which are not highly productive even under natural conditions. With decreased foraging opportunities, bears are forced to search for alternative foods, to exploit livestock or garbage, and to expose themselves and their young to risk in the process. In addition to the direct impact the decrease of foraging opportunities has on bears, it also contributes to the inappropriate labeling of bears as “nuisance.” The connotations of this label degrade the public's vision of free-ranging and wild bears.

The cumulative effect of all the preceding livestock-related impacts is to push bears and ecosystems to a state I refer to as ecological overload.

In 1927, the biologist who first directed the U.S. Predatory Animal and Rodent Control Branch, Stokely Ligon, observed:

As a group, bears are not livestock killers but individuals, especially among the grizzlies, *occasionally* vary from traditional habits and become

serious destroyers of sheep and cattle. Poverty stricken ranges, as result of *excessive range utilization*, and drought often render their usual food so scanty that out of *need* bears become killers; hence, as respects losses from bears, forage conservation would result in increased saving of cattle and sheep.²²

This observation has been with us a long time, but it is one that present-day management consistently overlooks. Many years later, a study of the feeding ecology of Yellowstone bears noted “the apparent fidelity between vegetatively deficient habitats, predation, and use of garbage.”²³ It is this human-influenced relationship, established in areas with a long history of livestock presence and management intervention—including disproportionate reliance on data from “marked” bears, many of which are also “management” bears—that has produced observations that a high proportion of the bear population is involved in livestock conflicts.

Killing or removing bears that are, or are perceived to be, predators of livestock creates a mortality sink for the regional bear population. Even occasional removal of bears at localized sources of conflict, a common management practice, can have far-reaching negative implications for endangered or threatened populations.

Bears in the Yellowstone ecosystem are a perfect example. Recovery to a size and distribution necessary to assure long-term population persistence is a legal obligation under the Endangered Species Act, but that process is hampered by a legally defined “recovery area” that is inadequate in the context of existing human use in and near that zone. The state of Wyoming’s “new” guidelines, which allow “lethal take” of grizzly bears²⁴ on public lands outside the existing recovery area, continues the long-standing practice of dealing with grizzly bears in the face of domestic livestock demands as “nuisance” bears.²⁵

In the absence of a determined strategy to relocate or remove livestock from public lands, the “nuisance bear” reaction by managers and livestock operators appears to be but a variation of the reaction that exterminated grizzly bears in the U.S. Southwest over seventy years ago.

Destruction of a bear that occasionally preys on livestock can lead to immigration (replacement) by a more aggressive or less wary bear and a subsequent sustained or higher rate of predation.²⁶ A relatively sophisticated knowledge of individual bears and of the seasonality of conflicts is important if managers are to deal with bears in a scientifically sound manner; this is information rarely available to management agencies.

In high-priority, public grizzly bear habitat, the continued presence of cattle and sheep is not compatible with grizzly bear population viability or recovery. The susceptibility of calves and sheep to predation, with consequences for bears of subsequent management actions, appears also to be a sound and necessary reason to exclude these classes of livestock from most, if not all, grizzly bear habitat.

Ecological Impacts of Livestock on Bear Habitat

Riparian habitats have historically provided travel corridors and security and feeding areas for grizzly bears.²⁷ In much of the West, use of these areas by bears has declined, partly because vegetation has been dramatically impacted,

and partly because many of these habitats are now in private ownership, a situation that has led to intensive and often year-long use by humans and livestock. Paradoxically, in some areas, bears are attracted to riparian zones by heavy saturation of livestock odors and remnants,²⁸ even when these habitats are ecologically degraded.

On Montana’s Rocky Mountain East Front, grizzly bears appear to have increased use of low-elevation “shoestring” habitats, many of which are on private land.²⁹ In these situations, grizzlies are more nocturnal than bears on adjacent wilderness and publicly owned habitat.³⁰ In addition, the presence of domestic livestock alters the distribution and grazing preferences of these bears, which display a preference for ungrazed areas. Only 10.8 percent of the area was ungrazed, but that area received 20.2 percent of use.³¹ These figures indicate that, at times, some bears are avoiding humans and livestock and are altering their habitat use and activity in doing so. Research with black bears indicates they rely “greatly on sight to locate and obtain food,” particularly such food as berries, nuts, and insects.³² Bears, particularly grizzlies, have historically been active during daylight hours because it was beneficial to do so. Consequently, it is probable that bears feeding at night and under pressure of disturbance are less energetically efficient.

Cattle and sheep compete with grizzly bears for forage, particularly in riparian areas. All select the most nutritious and digestible forage available, but through sheer numbers and extended presence, livestock deplete the standing crop of the most nutritious plants. Prolonged use also results in a loss of productivity and diversity, with preferred species the first to be affected. The absence of succulent forbs such as *Heracleum* spp., *Angelica* spp., and *Osmorhiza* spp. in the diet of grizzly bears in Montana’s Rocky Mountain Front, as a consequence of overuse by livestock, was termed “alarming” by bear researchers, who concluded that “[t]he denudation of riparian plant communities, and the resultant inability of grizzly bears to utilize them, could be a major factor limiting grizzly bear communities in the lower 48 United States.”³³

In another study, long-term sheep grazing over more than a hundred years eliminated preferred species and made aspen communities on the Rocky Mountain Front unproductive of black bear foods by converting understory vegetation to unpalatable species. Remaining fruit-bearing shrubs were stunted and unproductive. These shrubs were considered “influential to long-term population health, reproduction, and survival of black bears.”³⁴

A significant element in the altered ecology of riparian and wetland vegetation is trampling of vegetation and soils by livestock.³⁵ While compaction of upper soil layers is a serious problem in a hydrological context, it is also an issue in grizzly bear feeding ecology. Bears are known to select root feeding sites where soils are more porous and thus more easily dug.³⁶ Compaction of soil by livestock can also degrade site characteristics conducive to the existence of important bear foods. For example, cow parsnip (*Heracleum lanatum*) is often found in moist, depositionally disturbed sites³⁷ characterized by permeability and water retention—qualities that deteriorate with use by cattle.

Livestock indirectly affect bears through their influence on the number and distribution of native ungulates, such as deer, elk, moose, and bighorn sheep. Bear populations that have a higher proportion of meat in their diet, be it through predation on young ungulates or scavenging of winter-killed carcasses, are more productive and occur at higher densities.³⁸ Livestock are rou-

tinely allocated a considerable portion of the forage on public lands, including crucial winter ranges.³⁹ The implications are reduced wild ungulate numbers and altered distribution and movement dynamics,⁴⁰ all potentially important aspects of bear ecology. The consequences for bears may be dramatic.

In summary, intensive and/or long-term grazing by domestic animals has altered the diversity and productivity of native plant communities and habitats,⁴¹ suppressed regeneration of shrubs and trees important for bear food and security, depressed native ungulate populations and altered their distribution and movement dynamics, and created additional risk of negative and often lethal interaction between bears, livestock owners, and public land managers across western North America.

The Public Interest and Regulatory Solutions

Public lands need fundamental protection through legislation to protect biodiversity. With this essential foundation land managers and the public could assess livestock production practices in their proper and complete context, which would include the recovery and viability of grizzly and black bear populations. Solutions will almost certainly have to conform largely to the following practices:

1. *Removal of domestic sheep from publicly owned bear habitat.* Evidence shows clearly that the presence of domestic sheep is not compatible with bear population viability.
2. *Expansion of grizzly bear recovery areas.* The continued presence of cattle in recovery areas for threatened and endangered grizzly bear populations is not compatible with population viability or recovery. Existing recovery areas appear to be inadequate and require expansion to increase probability that long-term recovery will occur. It will be necessary to incorporate buffer areas and potential grizzly bear habitat on adjacent public lands. Management of livestock on these lands must be consistent with recovery objectives.
3. *Routine evaluation of livestock use of grizzly bear habitat.* Where grizzly bear populations are reduced in density and distribution from historical

levels, but are not known to be endangered or threatened, livestock use must be routinely evaluated to eliminate unsustainable bear mortality and habitat degradation. Livestock use of less productive or substantially impacted bear habitats may be something bear populations cannot afford.

4. *Exclusion of calves from grizzly bear habitat.* The susceptibility of calves to predation, with subsequent bear management actions, is a sound reason to exclude calves from grizzly bear habitat.
5. *No bear relocation or destruction.* As a condition of entry to public lands, livestock permittees will be required to consent that livestock losses to wild carnivores will be on a “live with it or don’t use it” basis. With very infrequent exceptions, there should be no bear relocation or destruction.
6. *Adaptive management of agricultural activity on public lands.* As bear populations recover, it will be necessary to modify existing agricultural activities on public lands in favor of bears and their habitat (adaptive management). For example, strategies to reduce or eliminate the impact of grazing in riparian zones will be necessary.
7. *Protection of native ungulate populations.* Livestock use of native ungulate habitat will have to change to allow protection and management of ungulate populations as significant and natural components of bear habitat.
8. *Reduction of bear attractants on private lands.* Intensive management on private lands is needed to reduce bear attractants. Livestock carcasses are high-intensity focal points for bears; proactive solutions are necessary.
 - a. Bone yards on private lands should be fenced with electrically powered bear deterrent fencing—or, alternatively,
 - b. Livestock carcasses should not be available to bears; a carcass removal program on public and private lands is critical. Carcasses should be hauled to a central bone yard or landfill that is bear-proof.
9. *Intensive management at the interface of public and private lands.* Private lands on which livestock are raised attract bears. An essential element of any bear conservation strategy must be to moderate the friction that develops between public and private interests in these areas. Full-time biologists with a strong public interest mandate, specializing in conflict management and backed by strong agency support and resources, will be required for the long term.

There are those who say that the grizzly had to go, that his presence in the Southwest was incompatible with man’s. There is some truth in this. Certainly there was no compatibility between the grizzly and the livestock industry—not at Southwest stocking levels. Like the wolf, the opportunistic grizzly was not about to forgo a new and readily available food source—not when this new-found prey had depleted the grizzly’s natural food supplies.

— David E. Brown, *The Grizzly in the Southwest*, 1985