

YELLOWSTONE MORTALITY and CONFLICTS REDUCTION REPORT

**Presented to the Yellowstone Ecosystem Subcommittee (YES)
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Executive Summary

The main reasons private individuals killed grizzly bears in the Yellowstone ecosystem from 1994-2003 are self defense (30 or 20% of the total), vandal killing (17 or 11% of the total), and mistaken identification (8 or 5% of the total). The main management causes of mortality from 1994-2003 are removals at site developments (51 or 34% of the total), followed by livestock-related removals (10 or 7% of the total). Site developments and livestock were also the main causes of bear-human conflict leading to management actions such as translocations. We suggest that the highest priorities are actions to address site conflicts, self defense conflicts, and vandal killing. We strongly believe there should be a demonstration area where enhanced management efforts should be focused on reducing site conflicts and associated sanitation issues in order to learn the best approaches and at the same time solve some of these problems in an area where site conflicts are concentrated. We suggest the North Fork of the Shoshone be this demonstration area. Multiagency partnerships are necessary to address these issues. There is a significant role for county governments to be contributors to this effort. Success will require a multifaceted approach. We suggest 33 specific actions to reduce mortalities and bear-human conflicts, and lead agencies for these actions.

Introduction

This report is a result of an assignment by the YES to examine the available information on human-caused mortalities and bear-human conflicts and recommend possible management responses and solutions to reduce preventable mortalities and conflicts. The assignment was made to a task force of personnel identified above. The specific products of the task force were to produce include:

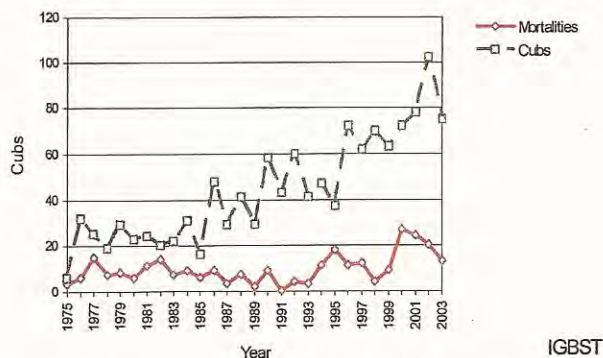
- A refined list of **what problems exist** that result in preventable human-caused mortalities and bear-human conflicts;

- A refined list of **which agencies are responsible** lead agencies to address these preventable human-caused mortalities and bear-human conflicts; and
- A refined list of **actions that can either be enhanced or implemented** to address these various causes of human-caused mortalities and bear-human conflicts.

The group met for 2 days in late January 2004. This report is a result of the work of this task force. The report is organized into sections summarizing the background on the current mortality and conflict situation in the Yellowstone ecosystem; what agencies are currently doing to address the issues of mortality and conflict; the historic and current causes and distribution of mortalities and conflicts; suggestions on agency responsibilities to address these issues; suggestions on specific actions to address these issues; and suggestions on a timetable to implement these actions and a monitoring system to judge the effectiveness of agency actions.

Background on Mortality

The Yellowstone ecosystem currently meets the mortality limits in the grizzly bear recovery plan (Table 1). Total human-caused mortality levels have been fairly constant since the mid-1970s, with a gradual increase in the past 10 yrs (Fig. 1). During this same time, counts of cubs seen with unduplicated females have continued to increase (Fig. 1). This effort to examine mortalities and bear-human conflicts is being done to assure a careful review of current mortality and conflict causes to allow improvement of agency efforts in managing these issues in the best possible way. Mortality control is a key part of any successful management effort, however human-caused mortalities and human bear conflicts can never be eliminated in a dynamic system where 600+ grizzly bears inhabit thousands of square miles of diverse habitat with several million human visitors and residents. Many causes of human-caused mortality and bear-human conflict are manageable to some extent. The YES is interested in assuring that management efforts to address these issues are as effective and as efficient as possible in order to maintain a healthy and recovering grizzly population.



IGBST

Figure 1. Annual counts of cubs of the year at initial sightings of unduplicated females and total known and probable human-caused mortalities, plus mortalities from undetermined cause in the Greater Yellowstone Ecosystem, 1975-2003 (IGBST data).

Background on What Has Been Done To Date on Mortality Reduction

WYOMING

The Wyoming Game and Fish Department (WGFD) created a formal human-grizzly bear conflict management program in July of 1990 to address growing conflicts between humans and grizzly bears. Due to increasing workloads, the WGFD added an additional year-round position in 1997 and one six-month temporary position in 2003. In addition, matching funds from the USFWS State Wildlife Grant program helps support a year round position created in 2002. Currently, the WGFD has one year round position stationed in Cody, Jackson, and Lander, and one six-month position in Cody.

Although the effects conflict management program on human caused bear mortalities is hard to quantify, considerable accomplishments have likely resulted in reduced bear deaths. The program accomplishments include:

A conflict prevention and mitigation program assists the public with human bear conflicts. The program responds to complaints of bear presence or damage, works with the public to manage the damage, including managing bears when needed. The program has installed permanent electric fences around numerous apiaries to reduce damage by bears. The program has assisted hundreds of property owners with managing potential bear attractants including providing over 250 bear proof garbage cans and 30 bear proof dumpsters to residents. Bear proof food storage boxes and meat poles have been placed in many locations on public lands in occupied grizzly bear habitat.

The program manages livestock depredation problems by assisting livestock producers with damage problems. The livestock damage payment program likely reduces illegal mortalities by building tolerance for livestock losses by paying for bear killed livestock. Program personnel regularly meet with livestock producers, Wildlife Service and Forest Service personnel to discuss methods for reducing conflicts involving free-ranging livestock.

The program has also coordinates an extensive information and education program with Department's information specialists to help people avoid conflicts with bears. Fifty-one "Living in Bear Country" workshops that teach skills for co-existing with bears have been attended by over 1820 people in 18 communities in Wyoming. An additional 103 bear education programs have been presented to more than 5,270 participants and 11 "Project Wild" workshops to over 250 teachers. The WGFD has produced 37 public service announcements, six news features, and 28 news releases promoting techniques to co-exist with bears. Grizzly bear encounter management is now a core subject in the basic hunter education course. Outfitters and guides conduct annual bear encounter training for the industry. Bear conflict management techniques are taught to thousands of children that attend the "Wyoming Hunting and Fishing Heritage Expo" each year. Bear conflict information is mailed to all limited quota big game license holders hunting in occupied grizzly bear habitat

Table 1. Annual count of unduplicated females with cubs-of-the-year (COY), known and probable human-caused grizzly bear mortalities within the Recovery Zone and the 10-mile perimeter, 1993-2003. Calculations of mortality thresholds (USFWS 1993) do not include mortalities or unduplicated females with cubs documented outside the 10-mile perimeter (from IGBST data).

Year	Unduplicated females with COY	Human-caused mortality				Human-caused mortality 6-year running averages				Minimum population estimate	Total human-caused mortality		Total female mortality	
		Total	Female	Adult female	Total	Female	Adult female	4% of minimum population	Year result		30% of total mortality	Year result		
1993	19	3	2	2	3.8	1.8	1.0	241	9.6	Under	2.9	Under		
1994	20	10	3	3	4.7	2.0	1.5	215	8.6	Under	2.6	Under		
1995	17	17	7	3	7.2	3.2	2.0	175	7.0	Exceeded	2.1	Exceeded		
1996	33	10	4	3	7.3	2.8	1.8	223	8.9	Under	2.7	Exceeded		
1997	31	7	3	2	8.5	3.3	2.2	266	10.7	Under	3.2	Exceeded		
1998	35	1	1	1	8.0	3.3	2.3	339	13.6	Under	4.1	Under		
1999	32	5	1	1	8.3	3.2	2.2	343	13.7	Under	4.1	Under		
2000	35	16	6	3	9.3	3.7	2.2	354	14.2	Under	4.2	Under		
2001	42	19	8	6	9.7	3.8	2.7	361	14.5	Under	4.3	Under		
2002	50	15	7	4	10.5	4.3	2.8	416	16.6	Under	5.0	Under		
2003	35	11	6	3	11.2	4.8	3.0	416	16.6	Under	5.0	Under		

^a Beginning in 2000, probable human-caused mortalities are used in calculation of annual mortality thresholds.

U.S. Fish and Wildlife Service
Grizzly Bear Recovery Plan mortality thresholds

All reports of human caused bear mortalities are investigated by a team of law enforcement personnel from the WGFD and the USFWS.

MONTANA

Hunting, recreating and living in bear country

Public information plan for MTFWP Region 3

History and Background: Region 3 has been involved in grizzly bear and black bear management and research for more than three decades. On a regional basis, enforcement and wildlife personnel have handled black bear/human conflicts as well as those involving grizzly bears.

Due to increases in human use and grizzly bear activity in the northern Yellowstone Ecosystem within Montana, the need for a grizzly bear management project was recognized in 1992 and implemented in 1993.

Goals/Objectives: The main goals of the grizzly bear management project were to identify and minimize areas of high bear/human conflicts/mortalities; monitor bear and human activities to identify areas with the potential for bear/human conflicts, and to carry out preventative bear management actions. This activity includes providing the public with much needed information and education about proper actions, including food storage and preparedness, to be taken while in bear country. It also directs management agency resources and efforts to ensure the continued recovery of the Yellowstone grizzly bear. The long-term overall goals of this project is to reduce grizzly bear management problems, grizzly bear-caused human injuries, human-caused grizzly bear mortalities, and maintain interagency relations with all responsible agencies for grizzly bear recovery and management. As the grizzly bear population recovers / expands and as human development increases, management (including education) efforts will need to expand into adjacent areas of known grizzly bear occupation.

MTFWP Region 3 Information, Education and Bear Management Activities

Current Actions:

Front country – Grizzly and Black Bear Situations

The following efforts are conducted to minimize bear/human conflicts and to reduce potential bear-caused human injuries and bear mortalities:

- Public Service Announcements (PSAs) – local and state radio, newspaper, national and international television and movie productions. Release local, regional, and statewide PSAs on a scheduled basis as well as during crucial times of bear activity and conflicts. This schedule basis includes, spring emergence (April) of bears, summer (June or July) bear activity –during problem years, fall (August) feeding (hyperphagia) activity, and fall archery (September) and rifle (October) hunting seasons.
- Provide information of bear activity and bear/human conflict potential to the Interagency Grizzly Bear Committee for national news release.
- Work with Sierra Club in recording messages on food storage and other bear-related messages, aired on more than 40 radio stations in the West.

- Consult with authors of bear-related (biology, behavior, and conflict) books and magazine articles.
- Write articles for Montana Outdoors magazine.
- Promote FWP website devoted to bear identification to hunters and recreationists.
- Promote FWP bear identification mandatory testing to hunters and recreationists.
- Deliver presentations to schools, communities, organizations, private businesses and landowners (ranchers, outfitters, and homeowner groups). Deliver presentations on bear biology / behavior, conflict avoidance, and tolerance for bears.
- Instruct educators on bear biology and management at workshops sponsored by the Big Sky Institute – Montana State University.
- Visit with homeowners and seasonal recreationists – (conducted on location, phone, or office visits.)
- Campgrounds and camps – personal contacts and posting of information signs.

Information regarding bear behavior, conflict avoidance, and safety is regularly given to the public at requested (schools, groups, work crews) presentations, MTFWP offices, outdoor trade shows, and during conflict situations.

The following bear information is distributed or loaned to hunters, recreationists, and people who live/work in bear country:

- “BEAR HUNTERS—Know Your Target!” wallet card.
- “Who’s Who? Know Your Bear” brochure.
- “Hiking and Camping in Bear Country” flier.
- “Staying Safe in Bear Country” and “Working in Bear Country”, videos addressing a behavioral-based approach to reducing risk.
- “Living With Grizzlies” brochure.
- “Bears” brochure.
- “Living in Bear Country” – Guidelines for bear-proofing your property.
- “Be Bear Aware” children’s handout.
- “PLEASE DON’T FEED THE BEARS” bumper sticker.
- “Bears and Bees”, a video advising beekeepers on methods to minimize damage of beehives by bears.
- “Living In Bear Country - Guidelines for bear-proofing your property”. This brochure was cooperatively produced by; Defenders of Wildlife, YNP-Bear Management Office, and MTFWP. These brochures have been distributed to all the gateway communities surrounding YNP. These brochures are also distributed at education workshops, to individuals, and educators.
- Write homeowner guide to bears. This guide has been distributed to individuals, homeowner groups and used by the Sierra Club in their education efforts to the general public.
- Information and equipment for electric fencing, to keep bears out of orchards, garbage, grain storage, livestock and bee-yards.

Unsecured food attractants are the leading cause of bear/human conflicts and grizzly bear mortalities in Montana’s portion of the YES. The following efforts have been made to reduce these types of conflicts and will need to expand into other areas as people and bears occupying these areas increase.

- Investigate compliance or implementation of food storage (garbage) ordinances – West Yellowstone, Hebgen Lake Basin, Gallatin Canyon, Big Sky, Cooke City, and Silver Gate.
- Establish governmental (police & sheriff) cooperation of compliance of food storage ordinances – West Yellowstone and Gallatin County.
- Establish cooperation with county refuse district in addressing locations of dumpsters to minimize bear habituation or conflicts – Park County, Gardiner and Corwin Springs area.
- Investigate, recommend, and implement construction of new bear-proof enclosure for garbage storage – Corwin Springs / Gardiner area.
- Investigate with the USFS, Federal Highway Department and Park County Refuse, improved changes to the Cooke City/Silver Gate garbage dump. This involves funding and design to construct a new garbage compound. Construction will begin during the fall of 2002 and be completed in 2003.
- Establish and conduct public information campaign with the Sierra Club in Cooke City, Silver Gate, Gardiner, Big Sky and West Yellowstone regarding securing unnatural food attractants away from bears.
- Replacement of all larger (2 cu yd +) dumpsters at Big Sky and Gallatin Canyon businesses and residences, from the YNP boundary north to the Castle Rock / Squaw Creek area. This was accomplished through cooperative efforts with the garbage hauling service (BFI), local government, and private interest groups. Efforts are continuing to address problems with unsecured plastic garbage cans at some residences.
- Meet with Gallatin County Planners and Sierra Club to address wildlife (bears) conflicts in existing rural subdivisions.
- Work with Gallatin County Planners, in development of “Wildlife Covenants as Conditions of Preliminary Plat Approval”.

To maintain an effective grizzly bear management program, the following efforts must be established and continued, which will require greater efforts (in larger areas) as the grizzly bear population recovers/expands:

- Investigate conflicts - capture/mark, relocate and monitor management (nuisance) grizzly bears as well as black bears.
- Monitor bear activity and natural food production to recognize areas or years of high bear / human conflicts.
- Use of aversive conditioning techniques (noise, dogs, electric fence, and scents) to discourage bears from frequenting areas of human habitation.
- Through routine reconnaissance, identify areas or locations of potential bear/human conflicts and implement actions to minimize.
- Research and implement techniques to discourage bears from seeking unnatural foods in front country situations. Electric fencing of orchards, gardens, storage sheds, livestock pens, garbage containers, and bee-yards has proven to be effective in reducing bear/human conflicts. (Extensive efforts using electric fencing around bee-yards have nearly eliminated all black bear complaints and bear control measures. Bee-yards in some areas could potentially attract a grizzly bear.)
- Investigate livestock losses caused by grizzly bears for financial reimbursement provided by Defenders of Wildlife.
- Establish and maintain network of public citizens to report known bear activity or problems.

- Deliver presentations and information on capture, handling, and relocation of grizzly and black bears to FWP wildlife and enforcement personnel in regions 3 and 5. Cooperatively work on management situation bears with wildlife and enforcement personnel in these regions.
- Instruct bear capture techniques to wildlife professionals during statewide animal handling course given by the MTFWP Research Laboratory (Keith Aune.)
- As an Interagency Grizzly Bear Study Team member, critique research and management methods to achieve and maintain grizzly bear recovery.
- Sponsor and instruct Russian tiger / bear researchers and managers on techniques and efforts in Montana and the Yellowstone Ecosystem, comparing to programs in other countries (Russia).

Backcountry – Grizzly Bear (few black bear)

Due to the fact that the highest percentage of grizzly bear related human injuries and the second highest cause of human related grizzly bear mortalities occur in the backcountry, the following needs have been recognized and are conducted in Montana's portion of the YES, which will expand into larger geographic areas as bear activity occurs:

- Establish and maintain inter-agency (WY, ID, USFS, NPS-YNP, USGS, USFWS, USDA) cooperation in bear management and research activities.
- Through cooperative efforts with the USFS-GNF-Hebgen District, design and place large portal signs at major drainages in the upper Gallatin and Madison rivers. These signs alert the public at trailheads to areas of high grizzly bear frequency.
- Post hunter educational and informational signs regarding bear identification and conflict avoidance at trailheads in 43 creek drainages of the Madison, Gallatin, and Yellowstone rivers. During the spring and summer, drainages of high bear activity are also posted.
- Inform USFS and FWP field personnel of known (telemetry and sightings) grizzly bear locations during the fall and summer to better communicate with hunters and recreationists.
- Use timely PSA's, to inform hunters and recreationists of bear activity and safety practices when in the backcountry.
- Inform hunters at game check stations of grizzly bear activity, record sightings, and investigate hunting related conflicts.
- In conjunction with the USFS, conduct backcountry patrols of hunting camps to assure compliance of food storage guidelines, and inform hunters of bear activities and proper methods to avoid bear conflicts. These efforts, directed at reducing bear-caused human injuries, grizzly bear mortalities, and bear habituation to camps and hunters, occur in the Hellroaring/Slough/Buffalo Fork creeks in the Absaroka/Beartooth Wilderness, and in the upper Gallatin and Madison drainages from early September to late November.
- Conduct research project with the USFS, IGBST, HWI, YNP and MTFWP in the Absaroka/Beartooth Wilderness, to investigate the effects of human activity on carnivore (grizzly bears, cougars, wolves) movements and habitat use during the summer months versus the early-fall elk hunting season.
- Conduct individual and cooperative research in identifying and minimizing backcountry bear / human conflicts.

- Investigate human injuries caused by bears, and assist in enforcement investigations of legal and illegal grizzly bear mortalities. Use this information to better educate hunters and recreationists.
- Through PSAs, personal contacts, and organized presentations provide information on the use of pepper spray as a tool to minimize an aggressive encounter with a grizzly bear in backcountry situations.
- Using air (planes) and ground telemetry monitor radio-collared management and research grizzly bears.
- Establish and maintain cooperation with outfitters in areas of high grizzly bear activity, conflicts, and past human injuries and bear mortalities to determine changes or trends in human and bear use.
- Mail grizzly bear information to all special permit (goat and moose) holders who will be hunting in districts within the recognized grizzly bear recovery area.
- Present bear information to outfitters, ranchers, and backcountry users at organized meetings/workshops.
- Monitor natural food availability to determine seasons or years of potentially high bear / human conflicts.

The following work is done to evaluate current management efforts and to recognize any changes needed for new information or efforts in the future:

- Investigate and document grizzly bears sightings, cooperate in grizzly bear research captures, and evaluate potential grizzly bear habitat in areas beyond known grizzly bear use.
- Establish and maintain relationships with hunters who use traditional areas, to determine bear and human activity. This will help recognize any changes / problems that may influence grizzly bear survival and human safety.
- Work in conjunction with Wyoming Game & Fish Department to analyze hunting-related grizzly bear mortalities, methods for conflict reduction, and capture/relocation of management grizzly bears.
- Serve on investigative committee by the YES Sub-Committee to interpret hunting related grizzly bear mortalities and make recommendations to minimize these mortalities.
- Serve on communications committee of the YES Sub-Committee to assist in designing public relations approaches to dealing with grizzly bear issues.
- Investigate and discuss methods used in conflict reduction efforts with MTFWP grizzly bear managers in northwestern and west central Montana.
- With the IGBST, investigate, record, and report on annual basis grizzly bear mortalities in the entire Yellowstone Ecosystem.

IDAHO

Grizzly Bear Management by IDFG in the Yellowstone Ecosystem

- While IDFG has been an active member on the Yellowstone Ecosystem Subcommittee (YES) since its inception, on the ground bear management has been less than the other state agencies simply because of less actual grizzly bear activity.
- IDFG has taken part in the annual monitoring flights of those BMUs that are in or connected to Idaho. Actual on the ground monitoring and research trapping

efforts have been conducted either by the Interagency Study Team or by Wyoming Game and Fish.

- IDFG officers have been involved in responding to and relocating nuisance grizzly bears, but only at a fraction of what have been experienced in Montana and Wyoming.
- Educational outreach efforts have been focused on the Island Park area and the private and public lands bordering the western edge of the ecosystem. Approximately 20 Living in Bear Country workshops have been held across the Upper Snake Region since 1996. These workshops have been about 3 hours long and are abbreviated versions of those started in Wyoming. A Living in Bear Country component has been added to all Project WILD workshops for teachers held in the region since 1995.
- Most Caribou-Targhee National Forest trailheads and hosted campgrounds within the ecosystem have been posted with bear education information. Areas such as spawning sites that have been known to regularly attract bears have received specific posting efforts on an annual basis. In 1999 & 2000, Ricks College Students and Americorps volunteers were utilized to distribute bear education materials to the majority of homes and summer cabins in the Island Park area.
- Informational news stories about bear awareness are run in local newspapers and on local radio and television stations on an ongoing basis.

USFS

Summary of Work to Maintain or Improve Grizzly Bear Habitat and Reduce Grizzly Bear/Human Conflicts

The following is a brief summary of the actions and projects that national forests have accomplished to maintain or improve grizzly bear habitat, and reduce grizzly bear/human conflicts.

- **Food storage orders/regulations.** Forests began implementing food storage orders in the mid to late 1980s. Food storage orders require the public to store properly food and garbage so bears cannot obtain access to the food or garbage. Food storage orders have been applied to the PCA and some areas outside of the PCA. In some areas where grizzly bears have expanded outside of the PCA, some forests have implemented a voluntary sanitation program to reduce grizzly bear/human conflicts. Efforts are currently underway to expand the food storage orders to additional areas outside of the PCA.
- **Bear resistant facilities/sanitation work.** Forests have provided bear resistant facilities (i.e. bear resistant food boxes, food tubes, garbage containers, meat hanging poles, panniers, etc.) at campgrounds, trailheads, dispersed campsites, and other areas. These bear resistant facilities have been provided within the PCA and some areas outside of the PCA. Some forests have programs to loan or rent bear resistant facilities to the public for short-term uses. National forests have worked with local communities to fence garbage dumps and close garbage dumps to resolve conflicts with grizzly bears. The Forest Service has worked with communities, counties, and organizations to implement food and garbage storage ordinances and to provide bear resistant garbage containers on lands outside of the national Forests.

- **Information and education work.** Substantial information and education materials (pamphlets, brochures, signs, videos, etc) and programs have been provided to the public at all Forest Service offices. Signs and brochures have been made available at campgrounds, trailheads, dispersed recreation sites, picnic areas, etc. Forests contributed financing for the production of the information and education film "Living in Grizzly Country." Forests have cooperated with state wildlife management agencies and other cooperating institutions and individuals in giving "Living in Bear Country Workshops," which includes bear identification, safe camping, hiking, hunting, and working procedures to use in bear country, and the proper use of bear deterrent pepper spray. Wilderness rangers and other backcountry patrols have been used to inform and educate the public on food storage orders, and to check on compliance with these orders. Field patrols have been used during hunting seasons to reduce hunter-caused conflicts and grizzly bear mortalities.
- **Special grizzly bear requirements in contracts and permits.** Contracts and special use permits have clauses requiring protection of the grizzly bear and its habitat, and proper food storage and sanitation. Some contract and permit clauses require temporary or permanent cessation of permitted activities to resolve grizzly bear/human conflicts. Timber sale prescriptions and contracts incorporate provisions to protect grizzly bear habitat, for example, silvicultural prescriptions maintain or enhance food sources, timing clauses reduce chances of grizzly bear/human conflicts, contract clauses require proper food storage and sanitation and temporary or permanent cessation of permitted activities to resolve grizzly bear/human conflicts. Oil and gas leases have been modified to protect grizzly bear habitat.
- **Access restrictions/regulations.** Important food sites (such as army cutworm moth sites) have been identified, with management emphasis to keep new trails and other human activities away from these sites. Roads and trails have been decommissioned (permanently closed) or restricted to motorized access to provide security for grizzly bears. Many areas within the PCA and outside the PCA have been closed to cross-country motorized travel to provide security and habitat protection. Areas have been closed to overnight camping to avoid grizzly/human conflicts. Temporary area closures have been implemented when necessary to resolve grizzly bear/human conflicts. Annual monitoring is performed to evaluate compliance with access restrictions, and to provide information and education to the public. Annual signing and maintenance of gates and other restrictions is accomplished.
- **Black bear baiting.** In Idaho and Wyoming, forests have worked with state wildlife management agencies to prohibit black bear baiting within the PCA, and to educate hunters on the identification of grizzly bears.
- **Whitebark pine.** Whitebark pine seeds are an important food source for grizzly bears. A GYA Whitebark Pine Task Group has been formed to gather information on the status of this tree in the GYA. Current work on whitebark pine includes planting in several areas of the GYA to provide long-term habitat improvement, cone collection from healthy superior trees, silvicultural treatments to improve growth and establishment, prescribed burning to encourage whitebark pine seedling establishment, inventory and blister rust surveys, inventories to locate superior trees, work to prevent mountain pine bark beetle attacks on superior trees, and reading of whitebark pine cone transects every year in cooperation with the IGBST.

- **Planning, coordination, and cooperation work.** In 1986, the Forest Service, in cooperation with other federal and state agencies, developed the 1986 Guidelines. These Guidelines have been incorporated into existing forest plans and have provided the overall management direction for maintaining or improving grizzly bear habitat on national forest lands. Forest Service personnel have contributed to the development of the Conservation Strategy and state management plans for the grizzly bear, and participated in annual coordination meetings with state agencies, other federal agencies, organizations, and various committees. In cooperation with other federal agencies, the Forest Service developed the grizzly bear cumulative effects model to help assess the habitat value and the habitat effectiveness of grizzly bear habitat within the PCA. The Forest Service provides office space for the IGBST, and cooperates with the Study Team in the collection of data on the grizzly bear population and habitat throughout the GYA. The national forests work cooperatively with the USFWS and state wildlife management agencies on nuisance grizzly bear management. The Forest Service has completed formal consultation with the USFWS on the effects of snowmobile use on grizzly bears.
- **Livestock grazing.** Many domestic sheep allotments both within and outside the PCA have been closed to resolve conflicts with grizzly bears. Portions of cattle allotments have been rested from cattle grazing to reduce conflicts with grizzly bears, and one cattle allotment has been closed to grazing. Livestock grazing permits include special provisions such as proper food and attractant storage and carcass removal. Annual monitoring of livestock allotments is performed to check on compliance and conflicts. Animal carcasses are disposed of to reduce conflicts with grizzly bears.
- **Land adjustment.** A few land exchanges and acquisitions have been accomplished that have retained important habitat for the grizzly bear on the Caribou-Targhee, Gallatin, and Shoshone National Forests.

Grizzly bear-human conflicts often lead to human-caused bear mortality. Preventing bears from obtaining anthropogenic foods is the foundation of the National Park Service's (NPS) strategy for reducing grizzly bear-human conflicts. This is accomplished through education of park visitors, use of bear-proof food and garbage storage facilities, and strict enforcement of bear-related food and garbage storage regulations. Major components of Yellowstone and Grand Teton National Parks Bear Management Programs include:

- Educating park visitors about the causes of bear-human conflicts and how park visitors can modify their behavior to prevent conflicts from occurring. Educational efforts are made both before and after park visitors arrive in the National Parks.
- All garbage cans and dumpsters are constructed of a bear-proof design.
- Food storage devices are provided in all designated backcountry campsites. Backcountry users not staying in backcountry campsites are required to store their food and garbage in a bear-proof manner.
- Regulations that require all anthropogenic foods, garbage, and other attractants to be stored in a bear-proof manner are strictly enforced.
- Regulations prohibiting park visitors from feeding bears are strictly enforced.
- Developed areas and roadside auto campgrounds are frequently patrolled to ensure compliance with food and garbage storage regulations. All anthropogenic bear attractants left unattended in auto campgrounds are confiscated.

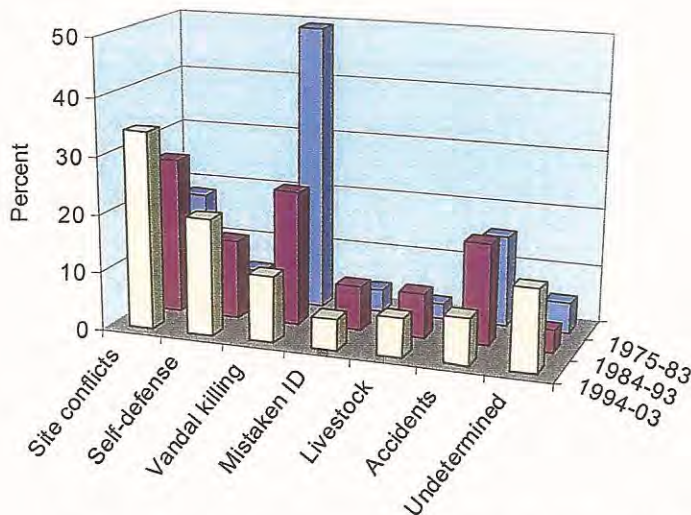
- In addition to these measures, in 2000 Grand Teton National Park began requiring that all participants in the Park's annual elk reduction program carry bear spray while hunting in the northern hunt unit, where grizzlies are common.

NATIONAL PARK SERVICE

The grizzly bear management programs currently being implemented by Yellowstone and Grand Teton National Parks have been highly effective at minimizing bear-human conflicts and human-caused bear mortality. Lands under National Park Service jurisdiction comprise 40% (3,640 of 9,209 square miles) of the Yellowstone Grizzly Bear Recovery Zone (YGBRZ). However, only 14% (88 of 629 conflicts) of the grizzly bear-human conflicts and 13% (12 of 96) of the known and probable human-caused grizzly bear mortalities within the YGBRZ over the last 10 years (1994-2003), occurred on NPS managed lands.

The Current Situation: Human-Caused Known and Probable, and Undetermined Mortalities

To understand current mortality issues, it is useful to understand how causes of mortality have changed over time. Mortality causes have changed when these causes viewed by decades (Fig. 2). Since the 1975-83 time period, there has been an increase in site related and self defense-related mortalities, with a decrease in vandal and accidental mortalities (Table 3). There was also an increase in livestock-related mortalities, but this result could be complicated by the possibility that many of the vandal killings in the early time periods could have been associated with livestock operations.



IGBST

Figure 2. Mortality by cause and by decade, 1975-2003 (IGBST data).

Table 2. Human-caused mortalities by decade from 1975-2003.

		Time Period			Total
		1975-1983	1984-1993	1994-2003	
Mortality Category	Site conflicts	14	14	51	79
	Self-defense	4	7	30	41
	Vandal killing	38	12	17	67
	Mistaken ID	3	4	8	15
	Livestock	2	4	10	16
	Accidents	12	9	12	33
	Undetermined	4	2	21	27
Total		77	52	149	278

IGBST

We thought it most useful to concentrate on mortality causes in the last 10 years. Looking at the causes of mortality by age and sex over the last 10 years, most adult females die due to site conflicts and self defense, while most subadult males die due to site conflicts (Fig. 3). Adult males dominate mortalities related to livestock. Looking at mortality by land ownership, mortalities on private lands are mostly site conflicts, while public lands mortalities are mostly self-defense and livestock-related (Fig. 4).

Of the mortality categories in the last 10 years (1994-2003), manager kills of bears mostly involve bears in site conflicts and in livestock conflicts. Management kills comprised 41% of all human-caused mortalities. During the same time period, private individuals killed bears involved in self-defense, vandal killing, and mistaken identification killings. These private killings comprised 37% of all human-caused mortalities.

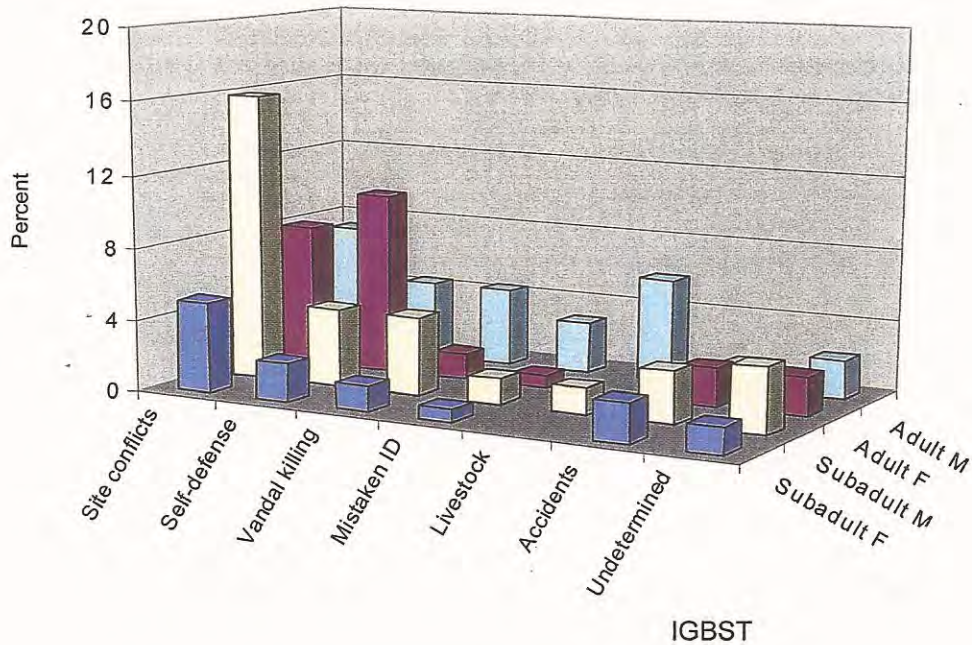


Figure 3. Mortalities by cause and by age and sex, 1994-2003 (IGBST data).

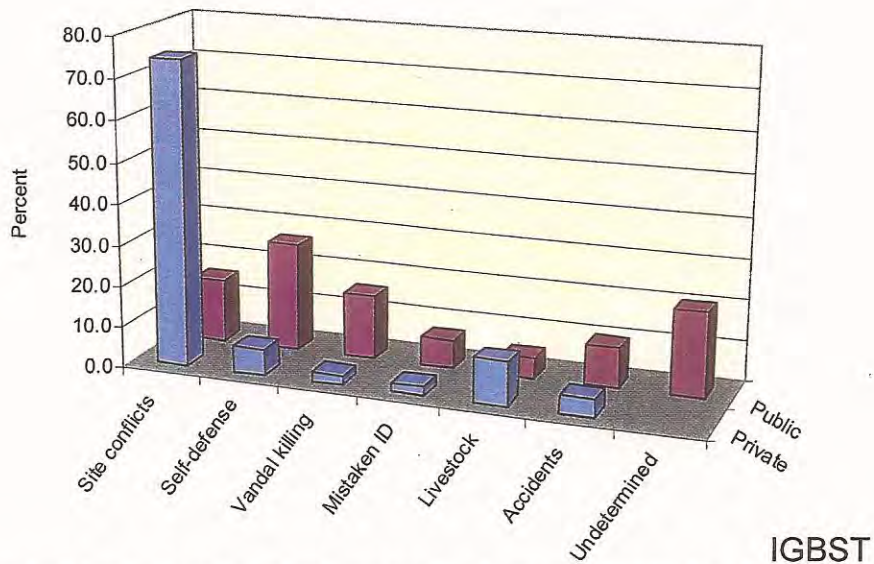
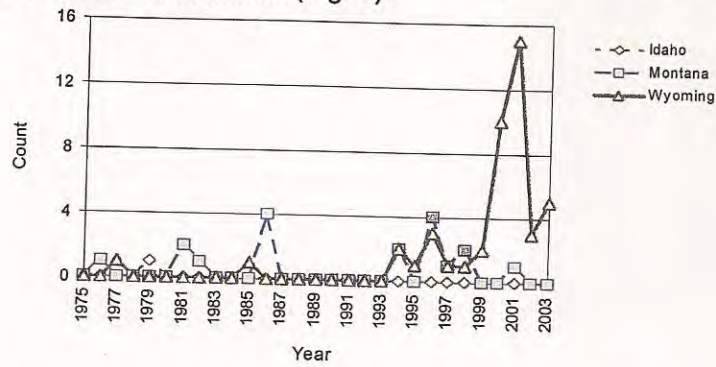


Figure 4. Percent of known and probable mortalities by sex-age class and land ownership during 1994-2003 for the Yellowstone area (IGBST data).

Since approximately the mid-1990s there has been an increase in mortalities in Wyoming outside the recovery zone (Fig. 5), probably due to the fact that the majority of range and population expansion has been in Wyoming. Most of this increase in

mortalities outside the recovery zone in Wyoming is due to site conflicts (Figs. 2 and 4). Distribution of mortalities have changed since 1975 with increasing mortalities on the periphery of the recovery zone and outside the recovery zone as the population increases in numbers and distribution (Fig. 6).



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Figure 5. Number of known and probable human-caused mortalities, and mortalities from undetermined cause occurring outside the Yellowstone Grizzly Bear Recovery Zone by state during 1975-2003 (IGBST data).

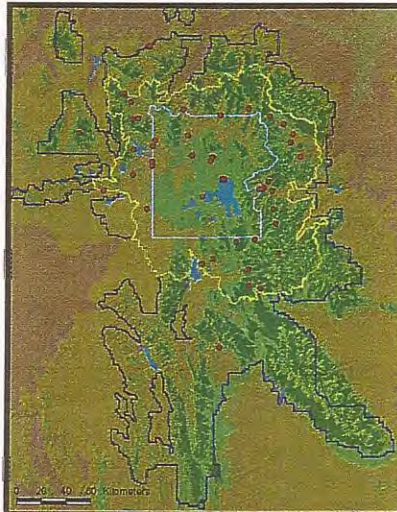
Distribution of known and probable human-caused mortalities, and mortalities from undetermined cause during 1975-83.

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Distribution of known and probable human-caused mortalities, and mortalities from undetermined cause during 1984-93.

IGBST



Distribution of known and probable human-caused mortalities, and mortalities from undetermined cause during 1994-2003.

IGBST



Figure 6. Distribution of mortality by decade, 1975-2003 (IGBST data).

The Current Situation: Bear-human Conflicts

Bear-human conflicts are the ultimate cause of the majority of bear mortalities. Minimizing bear human conflicts will minimize bear mortalities. We examined bear-human conflicts from 1993 to 2003 looking at the distribution and causes of these conflicts. The overall distribution of conflicts (Fig. 7) shows a wide distribution of conflicts both inside and outside the recovery zone. There was a shift in the location of conflict concentration areas between 1993-1998 and 1999-2003 (Fig. 8). Recent conflicts from 1999-2003 show conflict hotspots for livestock in the South Fork of the Shoshone area, Sunlight Basin, and the Upper Green River. Hotspots for site conflicts from 1999-2003 include West Yellowstone, Gardiner, Sunlight Basin-North and South Forks of the Shoshone, and the Dubois area.

Distribution of
conflicts by cause,
1994-2003.

- Site conflicts
- Livestock
- ▲ Human injury

IGBST

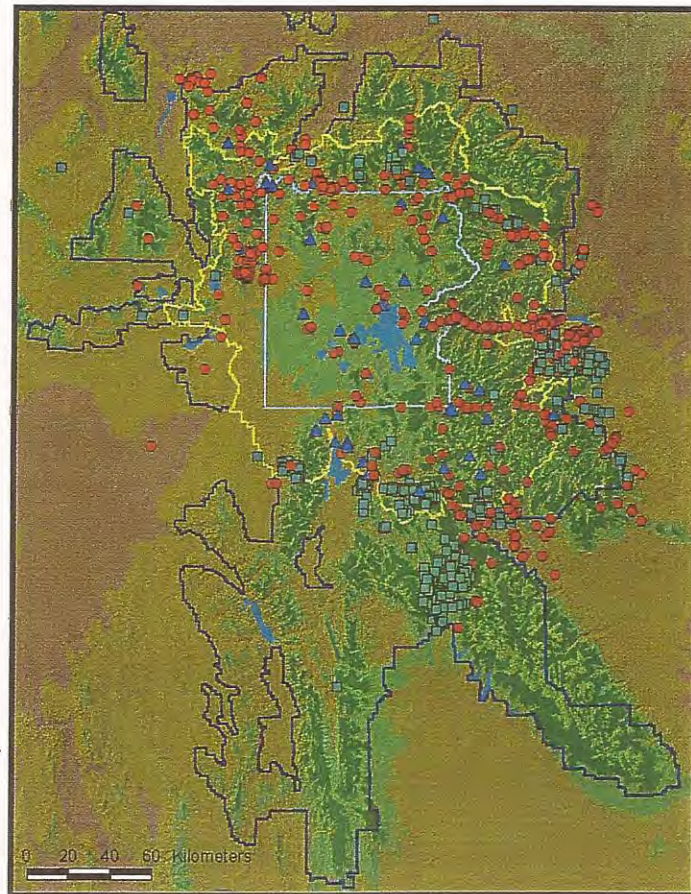


Figure 7. Major bear-human conflicts in the Yellowstone area, 1994-2003 (IGBST data).

The 80% fixed kernel isopleths estimated for site and livestock conflicts occurring during 1994-1998.

- Site conflicts
- Livestock
- ▲ Human injury

IGBST



The 80% fixed kernel isopleths estimated for site and livestock conflicts occurring during 1999-2003.

- Site conflicts
- Livestock
- ▲ Human injury

IGBST

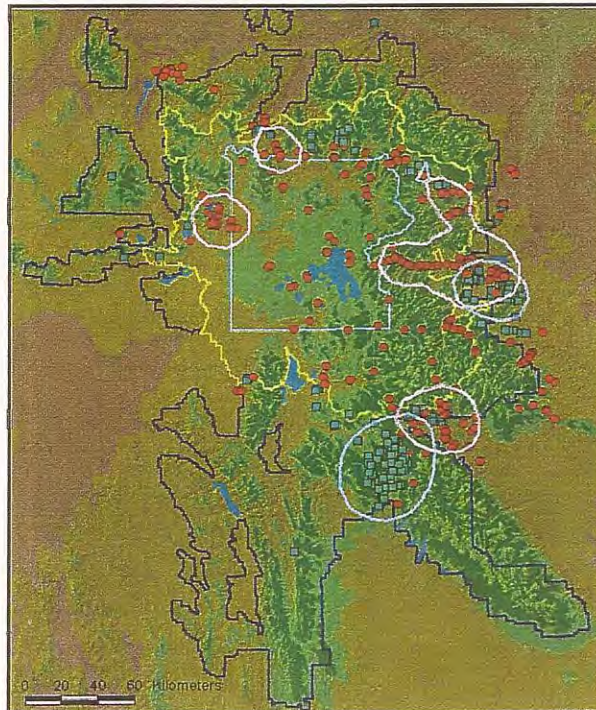
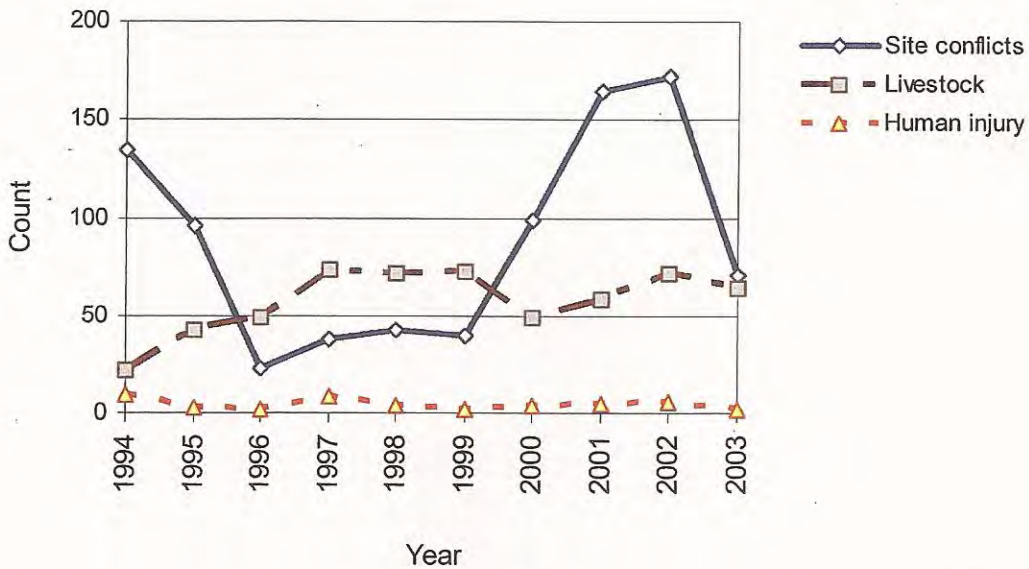


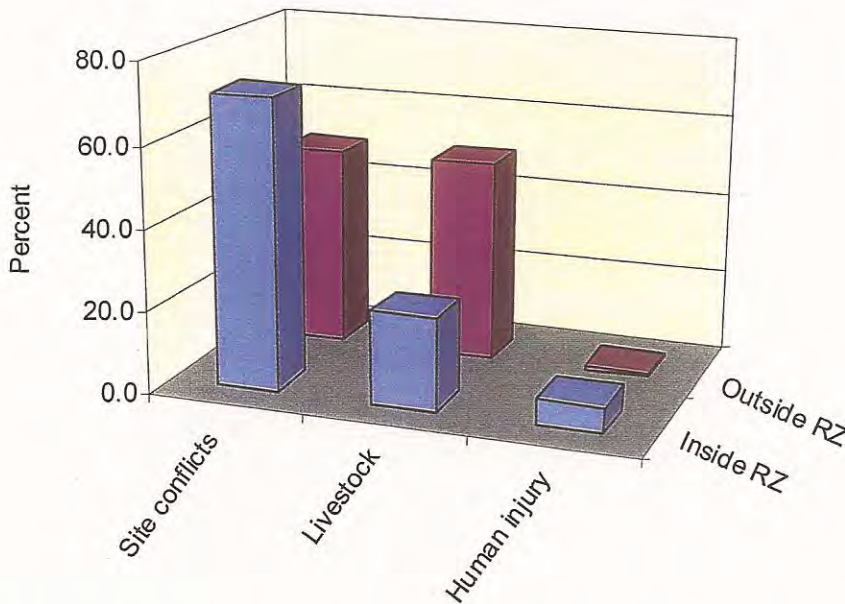
Figure 8. Comparison of the distribution change in site and livestock conflict concentration areas using 80% fixed kernel isopleths between 1994-98 and 1999-2003. Light blue lines are livestock isopleths and light red lines are site conflict isopleths (IGBST data).

The main causes of conflicts were site conflicts and livestock (Fig. 9). The majority of conflicts inside the recovery zone were site conflicts; while outside the recovery zone, site conflicts and livestock were approximately equal (Fig. 10).



IGBST

Figure 9. Numbers of conflicts by category, 1994-2003 (IGBST data).



IGBST

Figure 10. Conflicts by category inside and outside the recovery zone, 1994-2003 (IGBST data).

BACKGROUND ON PREVENTION AND MANAGEMENT OF CAUSES OF MORTALITY

We examined the causes of mortality 1980-2002 and whether there were categories of mortality that were at least to some degree possible to reduce through management actions. The highlighted categories in Table 3 show the mortality causes where management can have some impact in reducing mortalities. Our management recommendations focus on these categories.

Table 3. Causes of known grizzly bear mortalities, including natural mortalities, in the Yellowstone Ecosystem, 1980-2002. Of the 290 mortalities during this time period, at least 188 (64.8%) were from causes that can be reduced to some degree by management actions.

Category	Yellowstone	% of Total
Capture mortality ¹	10	3.4
Car	9	3.1
Human fatality	3	1.0
Human site conflicts	59	20.3
Livestock depredation	11	3.8
Sheep	4	
Cattle	6	
Horses	1	
Illegal / malicious	37	12.8
Poached/illegal	27	
Backcounty camp illegal	7	
Hunting-related illegal	2	
Sheep-related illegal	1	
Mistaken ID	13	4.5
Natural	33	11.4
Self-defense	49	16.9
Hunting-related	35	
Backcounty camp	8	
Frontcounty DLP	3	
Sheep-related DLP	3	
Under investigation	-	0
Electrocution	5	1.7
Unknown	61	21.0
TOTAL	290	-
Deaths / Year	12.61	-

¹ Seven of these 10 are associated with management rather than research captures. The 3 research mortalities occurred from 1980-82. It is important to note that since 1982, there has not been a single capture mortality associated with research trapping in the Yellowstone area involving more than 468 grizzly bear captures.

RECOMMENDATIONS

Causes of mortality are either by individuals shooting bears or by managers removing bears that are involved in repeated conflicts with human activities. There are 3 ultimate reasons people shoot and kill grizzly bears (Fig. 11). These are mistaken killing where people did not intentionally mean to shoot the bear; vandal killing by people who have various reasons for shooting grizzly bears illegally; and self defense or defense of property where people shoot bears because they feel directly threatened.

The main reasons private individuals killed grizzly bears in the Yellowstone ecosystem from 1994-2003 are self defense (30 or 20% of the total), vandal killing (17 or 11% of the total); and mistaken identification (8 or 5% of the total). The main management causes of mortality from 1994-2003 are removals at site developments (51 or 34% of the total), followed by livestock-related removals (10 or 7% of the total). Site developments and livestock were also the main causes of bear-human conflict leading to management actions such as translocations. We used these mortality data from 1994-2003 to focus our management recommendations, which are presented in Fig. 12 and Table 4.

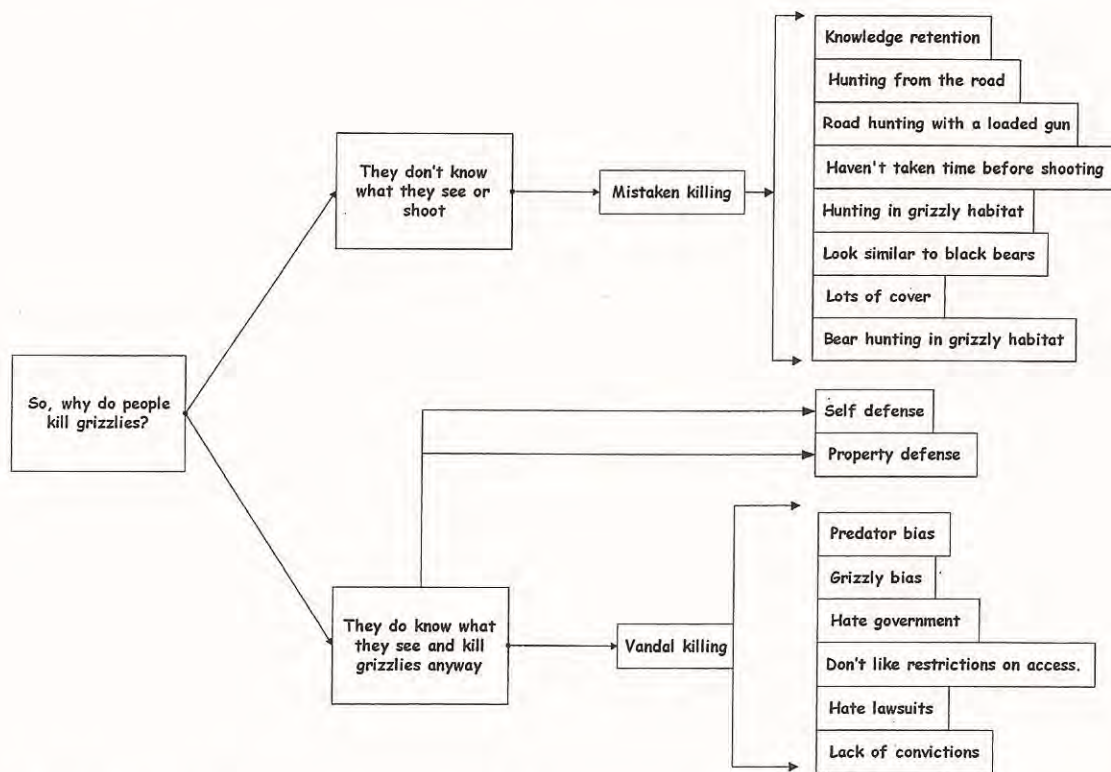


Figure 11. The ultimate reasons that people shoot and kill grizzly bears.

We believe there are additional management actions that can be taken by the state and federal management agencies acting in cooperation with the counties, cooperative NGOs and the public to reduce some of the grizzly bear mortalities and bear-human conflicts in the Yellowstone area. We suggest that the highest priorities are actions to address site conflicts; self defense conflicts and vandal killing. We strongly believe there should be a demonstration area where enhanced management efforts should be focused on reducing site conflicts and associated sanitation issues in order to learn the best approaches and at the same time solve some of these problems in an area where site conflicts are concentrated. We suggest the North Fork of the Shoshone be this demonstration area.

We have followed a strategic planning approach to review the issue of human-caused mortalities and bear-human conflicts. In order to successfully improve management actions relating to these issues, the YES needs to establish a timetable and budget needs to implement the management suggestions we have made. A monitoring system is also necessary to determine if the suggested actions are working and to adapt and adjust management if necessary based on the results of the monitoring program.

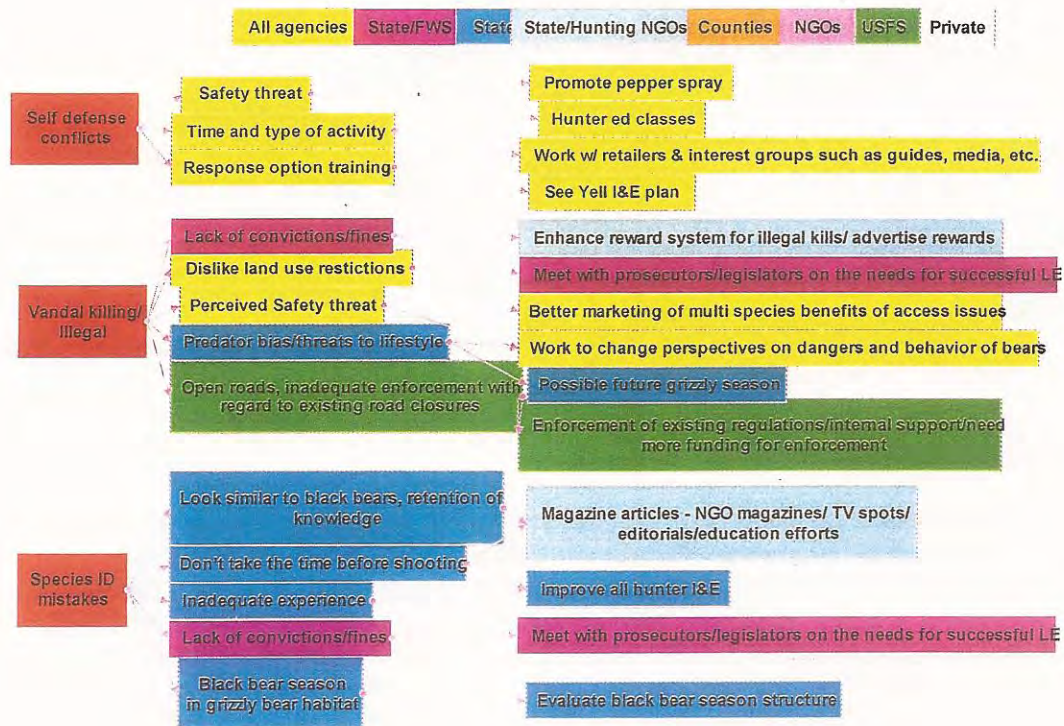
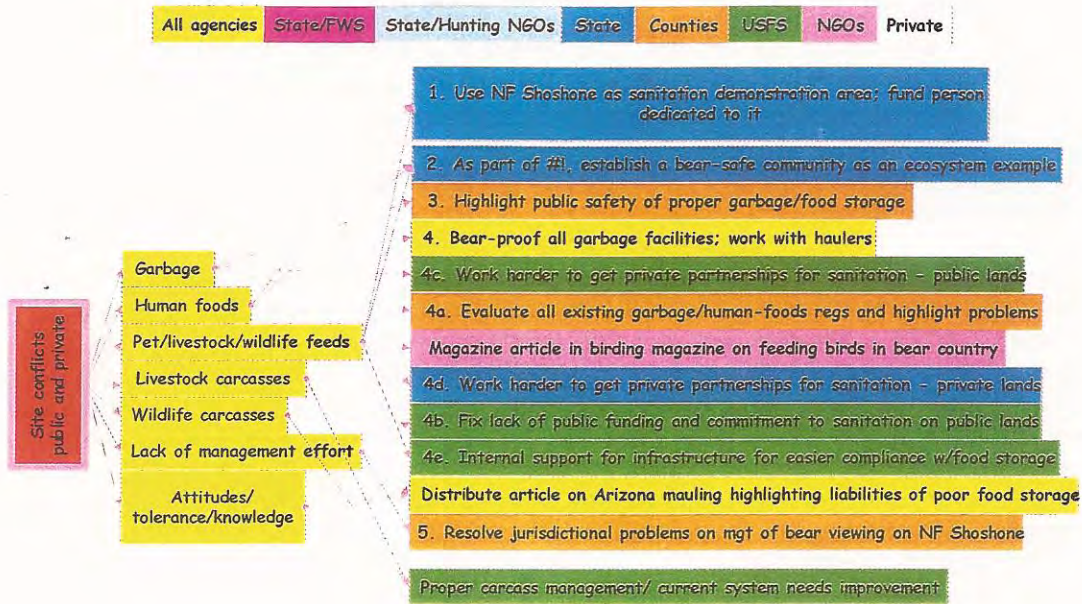
Strategic Planning for Conservation

1. **Identify problems**
2. **Prioritize problems**
3. **Identify why the problems occur**
4. **Identify who will fix each problem**
5. **Determine how to fix each problem**
6. **Set a timetable for action**
7. **Monitor success and modify as necessary.**

The timetable for applying these actions will be based on budgets and agency commitments. We believe there are excellent monitoring systems in place as part of the IGBST and the YES agencies. This existing system reports mortalities by cause and location and bear-human conflicts by cause and location as part of normal, established protocols. We suggest that once the YES implements actions to address some of the issues we have identified, there could be a timetable established to monitor and measure results, perhaps for 5 years. This could be used to judge success and adapt management as necessary.

SUMMARY

We believe that application of management effort to address preventable human-caused mortalities and to reduce bear-human conflicts is a responsible activity of the management agencies and cooperators working to assure the long-term future of the Yellowstone grizzly population. We foresee these management actions continuing under the management committee that will continue to function to manage the Yellowstone grizzlies and their habitat after recovery and delisting. We view this effort to minimize preventable mortalities and to reduce bear-human conflicts as a logical progression of the careful management and interagency cooperation that has been so important to the recovery of the Yellowstone grizzly population. Such actions will serve the public and the grizzly bears.



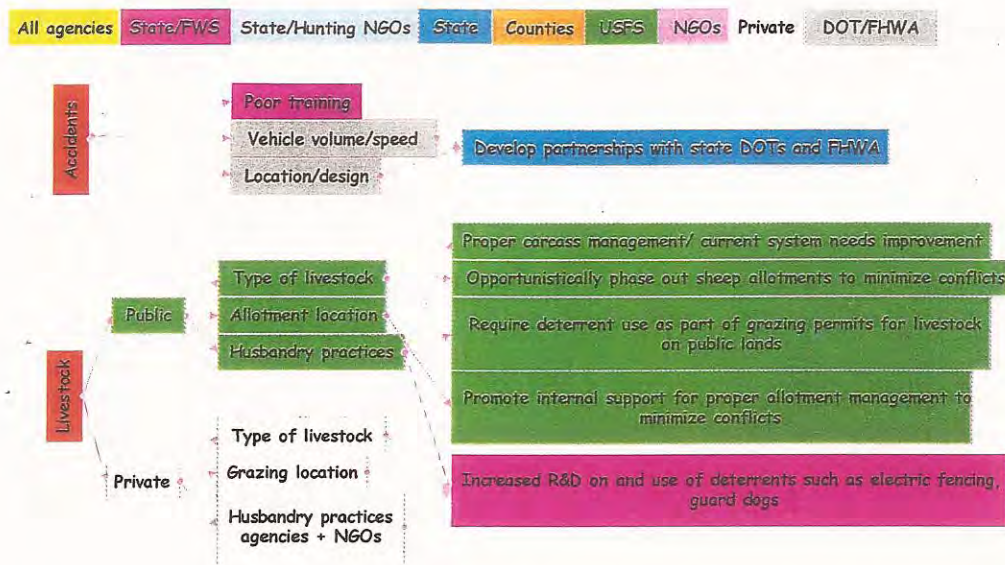


Figure 12. Recommendations on actions that can be taken to minimize preventable human-caused grizzly bear mortalities and bear-human conflicts in the Yellowstone area. Reading from left, the first column lists the main issues relating to mortalities and conflicts. The center column of boxes lists the primary causes of these mortalities and conflicts. The column on the right lists cause-specific management actions suggested to address the causes of mortalities and conflicts. Actions to address site conflicts are our top priority and are prioritized by number. Responsibilities for each management action are color coded by lead agency or agencies.

Table 4. Table of agency responsibilities and suggested actions.

ISSUE	RESPONSIBILITY	ACTION
SITE CONFLICTS	ALL AGENCIES	Bear- proof all garbage facilities * Work with haulers * Distribute articles on Arizona mauling highlighting liabilities of poor food storage
	STATE	Use NF Shoshone as sanitation demonstration area - fund person dedicated to it * As part of #1 - establish a bear-safe community as an ecosystem example * Work harder to get private partnership for sanitation – private lands
	COUNTIES	Highlight public safety of proper garbage/food storage * Evaluate all existing garbage/human – food regs and highlight problems * Resolve jurisdictional problems on mgt of bear viewing on NF Shoshone
	USFS	Work harder to get private partnerships for sanitation on public lands * Fix lack of public funding and commitment to sanitation on public lands * Internal support for infrastructure for easier compliance w/food storage * Proper carcass management/ current system needs improvement
	NGOs	Magazine articles in birding magazine on feeding birds in bear country
SELF DEFENSE	ALL AGENCIES	Promote pepper spray * Hunter ed. classes * Work w/ retailers & interest groups such as guides, media, etc. * See Yell I&E plan * Better marketing of multi species benefits of access issues * Work to change perspectives on dangers and behavior of bears

	STATE FWS	Meet with prosecutors/legislators on the needs for successful Law Enforcement
	STATE	Possible benefits of future grizzly season * Improve all hunter I&E * Evaluate black bear season structure
	STATE NGOs	Enhance reward system for illegal kills/advertise rewards * Magazine articles – NGOs magazines/TV spots/editorials/education efforts
	USFS	Enforcement of existing regulations/internal support * need more funding for enforcement
VANDAL KILLING	ALL AGENCIES	Promote pepper spray * Hunter ed classes * Work w/retailers & interest groups such as guides, media, etc * See Yell I&E plan * Better marketing of multi-species benefits of access issues * Work to change perspectives on dangers and behavior of bears
	STATE/ FWS	Meet with prosecutors/legislators on the need for successful LE
	STATE	Possible benefits of future grizzly season * Improve all hunter I&E * Evaluate black bear season structure
	STATE NGOs	Enhance reward system for illegal kills/advertise rewards * Magazines articles – NGO magazines/TV spots/editorials/education efforts
	USFS	Enforcement of existing regulations/internal support/need more funding for enforcement
SPECIES ID MISTAKE	ALL AGENCIES	Promote pepper spray * Hunter ed classes * Work w/retailers & interest groups such as guides, media, etc * See Yell I&E plan * Better marketing of multi species benefits of access

		issues *Work to change perspectives on dangers and behavior of bear
	STATE FWS	Meet with prosecutors/legislators on the needs for successful LE
	STATE	Possible future grizzly season * Improve all hunter I&E * Evaluate black bear season structure
	STATE NGOs	Enhance reward system for illegal kills/advertise rewards * Magazine articles – NGO magazines/TV spots/editorials/education efforts
	USFS	Enforcement of existing regulations/internal support/need more funding for enforcement
ACCIDENTS	STATE FWS	Increased R&D on and use of deterrents such as electric fencing, guard dogs
	STATE	Develop partnerships with state DOTs and FHWA
	USFS	Proper carcass management/current system needs improvement * Opportunistically phase out sheep allotments to minimize conflicts * Require deterrent use as part of grazing permits for livestock on public lands * Promote internal support for proper allotment management to minimize conflict
LIVESTOCK	STATE/FWS	Increased R&D on and use of deterrents such as electric fencing, guard dogs
	STATE	Develop partnership with state DOTs and FHWA
	USFS	Proper carcass management/current system needs improvements * Opportunistically phase out sheep allotments to minimize conflicts * Require deterrent use as part of

grazing permits for livestock on
public lands * Promote internal
support for proper allotment
management to minimize conflicts