GRIZZLY BEAR

RECOVERY PLAN

Prepared by the

U.S. Fish and Wildlife Service in cooperation with the Recovery Plan Leader, Don L. Brown, Montana Department of Fish, Wildlife, and Parks.

APPROVED

DATE: JAN 29 1982

U.S. Fish and Wildlife Service: Robert A. Jantzen
Director

This is the completed grizzly Bear Recovery Plan. It has been approved by the U.S. Fish and Wildlife Service. It does not necessarily represent official positions or approvals of cooperating agencies (and it does not necessarily represent the views of all individuals) involved in preparing this plan. This plan is subject to modification as dictated by new findings and changes in species status and completion of tasks described in the plan. Goals and objectives will be attained and funds expended contingent upon appropriations, priorities, and other budgetary constraints.

Acknowledgements should read as follows:

The Grizzly Bear Recovery Plan, dated January 29, 1982, prepared by the U.S. Fish and Wildlife Service in cooperation with the Recovery Plan Leader, Don L. Brown, Montana Department of Fish, Wildlife, and Parks, under Cooperative Agreement No. 14-16-0006-80-923.

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DOCUMENT PREPARATION

This plan is the result of the efforts of many individuals and agencies with expertise and responsibilities related to grizzly bears and their mangaement. Planning and conduct of workshops, editing and writing, and collation of data and other information were done by Don L. Brown, Grizzly Bear Recovery Plan Leader, Montana Department of Fish, Wildlife and Parks who, through an Interagency Personnel Assignment, was funded by and responsible to the U.S. Fish and Wildlife Service. Principal planning support was provided by Stephen P. Mealey, U.S. Forest Service, Rocky Mountain Region, who contributed 20 working days to the effort. Major contributions were in the areas of conceptual design and organization, grizzly bear ecology and grizzly bear management guidelines. Primary support, also in the areas of plan design and formulation, was provided by John Weaver, U.S. Forest Service, and Wayne G. Brewster, U.S. Fish and Wildlife Service. Other individuals and agencies making significant contributions were John and Frank Craighead, Richard Knight, Charles Jonkel, the Interagency Grizzly Bear Study Team and members of the Border Grizzly Project. Substantial assistance and support was also provided by Regions 1 and 4 of the U.S. Forest Service, the National Park Service, the U.S. Fish and Wildlife Service, the Bureau of Land Management, the state wildlife agencies of Idaho, Montana, Wyoming and Washington, and personnel of the Canadian Wildlife Service and British Columbia Wildlife Division.

PREFACE

The grizzly bear is a symbolic and living embodiment of wild nature uncontrolled by man. Entering into grizzly country presents a unique opportunity - to be part of an ecosystem in which man is not necessarily the dominant species (Herrero 1970).

Under authority of the Endangered Species Act (ESA), the grizzly bear (Ursus arctos horribilis) was listed as a threatened species by the United States Fish and Wildlife Service in 1975. In 1979 a decision was made to prepare a Grizzly Bear Recovery Plan (GBRP) and a plan leader was appointed. The charge was to devise a plan that would provide recommendations and actions necessary for the maintenance, enhancement and recovery of this species in the conterminous 48 states.

The recovery plan leader met with persons interested in or working on grizzlies through a series of nine general meetings and a multitude of personal contacts and telephone conversations. The information contained in this plan is the result of those meetings. It attempts to present a biologically sound program that will result in the recovery of the species and its habitat to a level that will no longer require protection under the Endangered Species Act.

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PART I

INTRODUCTION

The goal of the recovery plan is to identify actions necessary for the conservation and recovery of the grizzly bear. The species was listed as "threatened" in 1975 purusant to the Endangered Species Act of 1973 (ESA 1973) (87 stat 884, 16 U.S.C. 1531-1543). A threatened species is defined as one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (ESA 1973).

The Endangered Species Act (ESA) clearly states the purposes of the Act are to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved. Conserve, conserving, and conservation are defined within the act as--to use and the use of all methods and procedures which are necessary to bring any endangered or threatened species to a point at which the measures pursuant to this act are no longer necessary. "Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking (ESA 1973)."

Therefore, this plan attempts to provide a sequence of actions necessary for the conservation and recovery of the grizzly bear in selected areas of the conterminous 48 states.

Objectives are: 1) Identify grizzly bear population goals that represent species recovery in measurable and quantifiable terms for the several regions that were determined to have suitable habitat for such populations, and to provide a data base that will allow informed decisions. 2) Identify population and habitat limiting factors that account for current populations existing at levels requiring threatened status under ESA. 3) Identify specific management measures needed to remove population limiting factors that will allow the populations to increase or sustain themselves at levels identified in the recovery goals. 4) Establish recovery of at least three populations in three distinct grizzly bear ecosystems in order to delist the species in the conterminous 48 states.

The plan addresses six areas in the conterminous 48 states where grizzly bears are known to have been present during the past decade. These six grizzly bear ecosystems appear to presently have adequate space and suitable habitat to offer the potential for securing and restoring this species as a viable self-sustaining member of each ecosystem.

The question of how many grizzly populations are needed for recovery of the species was debated repeatedly at the various meetings and workshops. No one would recommend a single population in a single ecosystem as being adequate to provide a reasonable margin of safety against what Shaffer (1978) described as "systematic pressures and stochastic perturbations." Several persons thought all known areas containing grizzlies were necessary for recovery and believed the ESA mandated such action. However, a majority of those in attendance shared the opinion that it was impractical to assume that all six identified populations could be recovered and they believe the recovery plan should concentrate primarily on only three populations; those in the Yellowstone Grizzly Bear Ecoystem (YGBE), the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE) and the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE).

The YGBE was chosen because of the research data collected over the past two decades, a current ongoing program and an estimated population of several hundred grizzly bears.

The NCDGBE was selected because the Border Grizzly Project is currently collecting data in this ecosystem and it too has a substantial bear population.

The CYGBE was chosen because it ranked third in areas where data had been collected and currently has research projects planned and funded.

Bear biologists and land managers believe these three major areas should be selected as areas of first priority and funding sought to provide for the tenets of the recovery plan. If additional funding is available, preliminary surveys in the Selkirk Mountains Grizzly Bear Ecosystem (SMGBE), the Selway-Bitterroot Grizzly Bear Ecosystem (SBGBE) and the North Cascades Grizzly Bear Ecosystem (NCGBE) are recommended in that order.

This plan is not intended to be an optimum grizzly bear management plan, but rather outlines steps necessary to ensure recovery of the species in the lower 48 states. The conservation and recovery of three populations, as opposed to only one or two populations, is believed necessary to assure perpetuation of the species to a point that no longer requires the protection of the ESA. During the recovery process the protective provisions afforded a listed species apply to grizzly bears wherever they occur in the conterminous states.

PERSPECTIVE

Recovery of the grizzly bear will be a long-term proposition. Ultimately it should provide viable, self-sustaining populations in perpetuity. Researchers have realized reasonable successes in determining food habits, general habitat use, movements, mortality, etc. for this species. Less success has been achieved in developing

techniques to determine densities or total numbers of bears in these large ecosystems.

Population parameters or their biological equivalents necessary for recovery have been identified for the YGBE, NCDGBE and CYGBE. Recovery actions are defined for each of these populations. Population parameters or their biological equivalents for grizzly bear recovery in the SMGBE, SBGBE and NCGBE are undetermined. The plan outlines management options for each of these populations and the initial steps that will be required to effect recovery.

The general priority for effort should be YGBE, NCDGBE, CYGBE, SMGBE, SBGBE and NCGBE. The first three areas have the largest data base, ongoing research and management. They appear at present to hold the greatest opportunity for positive management direction. With limited resources available for the total effort, the monetary and manpower expenditures necessary to bring the base line data up to par in the latter three areas--that would allow reasonably informed decision making--would be extremely costly. Therefore, we have identified recovery goals and occupied habitat for the first three areas and believe they present the greatest opportunity for providing a recovered population of grizzly bears in the lower 48 states.

Management of grizzly bears in the SMGBE, SBGBE and NCGBE should be aimed at maintaining current populations and providing legal protection under applicable federal (FLPMA, ESA, NEPA) and state authorities until base line data regarding populations and habitat are obtained to allow informed management decisions.

Craighead et al. (1974) were successful in determining population dynamics for grizzly bears in the YGBE. Their data, however, revolved mainly around bears congregating on garbage dumps. The extrapolation of these parameters to more widely dispersed populations did not meet with unanimous approval among bear experts. It is fortunate this research was conducted as the Yellowstone population is the only one for which substantial population data exists.

Results and conclusions vary with the treatment and interpretation of these data, but it is generally concluded that the grizzly population in the YGBE was viable and self-sustaining during the 1959-67 period of the Craigheads' research, and that the space and habitat occupied by those bears was adequate to serve the needs of that population. It is for this reason that the population parameters documented by the Craigheads for the YGBE during the period of 1959-67 were selected as the preliminary goal to define recovery. Attempts to define other population parameters or habitat requirements that would constitute recovery would require a set of assumptions, very few of which would have basis or justification in the scientific literature comparable to the term and extent of the Craighead studies.

It is fully recognized that current distribution and behavioral patterns of grizzly bears may be fundamentally different from those of the 1959-67 period and that these differences may well dictate different population parameters. However, there is presently insufficient evidence to assume current or future population characteristics could not resemble those of the population occurring from 1959-67.

Ongoing research and future intensive monitoring and research will document the extent of differences or similarity with past populations. These data will then be the basis for determining population parameters that document recovery. Specific parameters may be similar or different, but in combination they should constitute the biological equivalents that would lead to the conclusion that the population is recovered.

Objective number one stated previously is to identify grizzly bear population goals that represent species recovery in measurable and quantifiable terms...how many bears constitute a recovered population! However, it is most difficult to determine the total population of a secretive, wide ranging species such as the grizzly bear which occupies rugged, mountainous terrain. Given this constraint it is believed that appropriate and monitorable population parameters which indicate the overall population status can serve as an alternative to a total population census.

It is recognized that observation techniques, management conditions and grizzly behavior are different now than when the Craigheads were conducting their research which focused primarily on bears feeding at garbage dumps. Presently the dumps are closed, the bear jams along the highways no longer occur and the grizzly bear population in the Yellowstone area is more dispersed and free ranging. However, Craighead et al. (1974) represents the only long-term source of data on Yellowstone grizzlies that contains quantified population parameters relating to a population level estimated from a calibrated sample. Furthermore, it is the most extensive data base available on a grizzly bear population that is assumed to have been a viable and self-sustaining population, i.e., a recovered population.

The consensus of opinion of persons attending the grizzly bear workshops was that the NCDGBE must be managed as a single grizzly bear ecosystem. They recognized that study efforts approaching the magnitude of those for the YGBE have not been achieved. While the Border Grizzly Project (BGP) has been doing research since 1975 in this ecosytem, limited funds have relegated their work to relatively small areas on its periphery. Research on study areas in the Mission Mountains (1977-79), North Fork of the Flathead River (1975-80), Hungry Horse Reservoir (1976-80) and along the Rocky Mountain Front (1976-80) is continuing through the efforts of the Border Grizzly Team. Grizzly bear research in Glacier National Park under the direction of Cliff Martinka has been ongoing since 1967. John

Craighead conducted a limited grizzly bear research project in the Lincoln-Scapegoat Wilderness area from 1975 to 1978. Unfortunately, intensive research in the four wilderness areas that constitute a major portion of this ecosystem has not been achieved. This is due to limited funds and the high cost of research in roadless areas. Therefore, the value of wilderness areas to grizzly bears in this ecosystem is presently undocumented. They may contain habitat values superior, inferior or equal to those in peripheral areas. It is known that portions of these wilderness areas are included in the home ranges of many radio-tagged bears. However, until the data are collected directly from within these large wilderness areas conjecture will prevail as to their value to grizzly bears.

While data for the NCDGBE, which includes Glacier National Park (Fig 4), are less extensive than for the YGBE, they are believed to be adequate to make an initial estimate of bear population characteristics that represent a viable, self-sustaining population, and to judge the space and habitat that population would occupy. (See pages 59-60.)

The Cabinet-Yaak Grizzly Bear Ecosystem is the third area chosen for recovery action. Only limited data are available but limited research is either ongoing or scheduled for this area. The quantity and quality of the habitat appear to be adequate to sustain a minimum viable population (MVP). Because there are substantial numbers of sightings and grizzly sign reported annually, this has led us to believe that a breeding population does exist. If this population can be brought to a viable and self-sustaining level, it would have a strong influence on working toward a more comprehensive recovery plan for the remaining three areas (SMGBE, SBGBE, NCGBE).

Recovery goals for the CYGBE were established by delineating an area which appeared capable of supporting grizzly bears based on habitat components, present land uses, and historic and current grizzly bear observations. Its adequacy for spacial requirements and population size were tested by applying Shaffer's (1978) work on MVP sizes and areas and comparing the resulting bear density to other grizzly bear densities from other study areas. Mark L. Shaffer (1978) used a computer model and data primarily from the Yellowstone grizzly bear population (Craighead et al., 1974) to conclude that a MVP for grizzly bears would be 30-70 bears (depending upon population characteristics). Lesser numbers of bears would have less than a 95% chance of surviving for even 100 years according to Shaffer. He further concludes that the minimum area required to support a MVP varies from 1050 km^2 (405 mi^2) in some areas of the Northern Rockies to 7400 km^2 (2850 mi^2) in the Brooks Range of Alaska. The delineated occupied habitat of 1,818 square miles in the CYGBE is within the minimum area (965-2850 square miles) required to support a MVP (30-70 animals) calculated by Shaffer. A population of 70 animals in the CYGBE equates to a density of one bear per 26 square miles which is equivalent to densities of bears in other ecosystems having similar habitat features

Thus, a population of 70 bears within an occupied area of 1,818 square miles was selected as a recovery goal for the CYGBE.

Simulation analysis determining MVP's and the minimum area required to support a MVP were useful for indicating threshold limits but were not used to determine final objectives in the Yellowstone and Northern Continental Divide Grizzly Bear Ecosystem. In these ecosystems, physical limitations of habitat size are not as restrictive as in the CYGBE.

These simulation models assume sufficient secure habitat throughout the projection period and no man-induced mortality. There is little evidence to support either assumption. The minimum area designated to support a MVP would have to be a bear refuge with other uses permitted only to the extent that they aided grizzly bear management. An MVP objective would mean maintaining grizzly bears on the threshold, which, if violated and undetected, could plunge that population over the brink to extirpation. Catastrophe, either biological or physical, can seldom be predicted; and our knowledge of bear biology is inadequate to attempt management within this limited zone.

Data available on other grizzly bear ecosystems (Selkirks, Selway-Bitterroot, North Cascades or Colorado) are insufficient to estimate the present status of these populations or to determine the full extent of grizzly range.

The test of time will determine the validity of the techniques employed in determining populations necessary for viability. This plan is intended to be a dynamic plan that will provide for changes which research indicates are prudent and for periodic reviews.

This recovery plan is not a final plan on behalf of grizzly bears. The best information and knowledge available are used as an initial starting point to promote an increase in the present numbers of bears, to effect recovery and to preserve the ecosystems upon which this species depends.

The human impacts on grizzly bears over the past 200 years and their cumulative effects are history. The fact that these bears still survive speaks of their tenacity. The numbers of grizzlies the remaining habitat will support is finite. More people, more and varied impacts from mineral and energy development, recreation, grazing, logging, subdivisions, etc., if unchecked and without long range planning, will reduce the habitats' carrying capacity for grizzly bears. If grizzly bears and people are to coexist in the lower 48 states, an immediate effort to minimize the effect of these adverse impacts is imperative.

HISTORY

Katherine L. McArthur (1979) presents an excellent history on grizzly bears. Many of the following excerpts are from her paper.

The ancestor of all present day bears was the Etruscan bear (Ursus etruscus) which lived in the forests of Asia about two million years before present (BP) (Herrero 1972, 1978; Henry and Herrero 1974). During the warm interglacial periods of the Ice Age, retreating ice left vast areas of tundra-type, treeless vegetation. The evolution of some bear populations using this extensive new resource gave rise to the cave bear (U. spelaeus) in Europe and the brown bear (U. arctos) in Asia.

Ursus etruscus was the ancestor of both the Asiatic black bear (U. thibetanus) and the American black bear (U. americanus). Members of this black bear line wandered into North America more than 500,000 BP (Kurten 1968). Isolated from their ancestors, the North American population adapted to the resources of the continent, eventually evolving into the American black bear (Herrero 1972).

Much later, about 50,000 BP, brown bears crossed the treeless Bering Land Bridge and spread into North American (Churcher and Morgan 1976). Two subspecies of brown bears occupy North America: the grizzly bear (U. a. horribilis) on the mainland, and the Kodiak bear (U. a. middendorffi), on Kodiak, Shuyak and Afognak Islands (Rausch 1963).

For brown bears to exploit the rich periglacial habitats, their ancestral forest adaptations had to be modified. Away from the protection of forest cover, morphological and behavioral changes were necessary for the bears to protect their young from other bears, wolves and several now extinct Pleistocene carnivores. A sudden burst of violence or an effective threat by the mother toward any perceived threat is important to the survival of her cubs. This behavioral adaptation of greater aggressiveness to successfully care for cubs in this new habitat (Herrero 1970b, 1972, 1978) is quite likely to have subsequently earned this subspecies of brown bear the name "horribilis."

PHYSICAL CHARACTERISTICS

Grizzly bears are generally larger than black bears and can be distinguished by longer curved claws, humped shoulders and a face that appears to be concave. A wide range of coloration from light brown to nearly black is common. Guard hairs are often paled at the tips; hence the name "grizzly." Spring shedding, new growth, nutrition and climate all affect coloration.

An occasional male may exceed 1,000 pounds but the average weight is closer to 500-600 pounds (Greer 1980). Females are generally smaller. Adults stand 3½-4½ feet at the hump when on all fours, and may rear up on their hind legs to over eight feet.

The muscle structure in grizzly bears is developed for massive strength, quickness and running speeds up to 25 miles per hour. Movement includes the normal position on all fours and an upright position on the hind legs which improves the opportunity to see and smell.

Grizzly bears are relatively long-lived with individuals known to have lived 40 years (Storer and Tevis 1955); a captive bear lived 47 years (Curry-Lindahl 1972). Pearson (1975) listed the oldest age classes as 28 years for males and 23 years for females; and Craighead et al. (1974), working in Yellowstone, found the oldest age was 25.5 years for both sexes.

SOCIAL ORGANIZATION AND BEHAVIOR

Adult bears are individualistic in behavior and normally are solitary wanderers. Except when caring for young or breeding, grizzly bears have individual patterns of behavior. Individuals probably react from learned experiences. Two individual bears may respond in opposite ways to the same situation (Scott 1964, Riegelhuth 1966, in McArthur 1979).

Mace and Jonkel, (1980a) documented movements on three radio-marked bears during the summer and fall of 1979. A limited tolerance appeared to exist as two male grizzly bears followed a marked female (in estrous), during late June--at least there were no recent wounds on either male at the time of capture. Bear No. 363 (female) moved westward in August and was followed by male No. 114. Throughout August and September the two bears were in the same general area and fed periodically on Vaccinium globulare in a small shrubfield but they were never known to use the shrubfield simultaneously. A third male No. 395 moved into the same general area but frequented the shrubfield only when No. 363 or No. 114 were not present. Grizzly No. 395 spent approximately 40 days in a natural burn, with short term movements to the ridgetops. On 17 September male grizzly No. 114 moved through the burn and two days later bear No. 395 was located 13 air miles to the north. Was this the result of a typical confrontation or the coincidental action of a single bear? Continued research may resolve the question. Apparently strict territoriality is limited and spacing may involve either time or location. If both are violated, confrontation may occur with the dominant bear prevailing.

Each bear appears to have a minimum distance within which another bear or person cannot enter; any intrusion of this distance may evoke a threat or an attack (Herrero 1970b, Mundy and Flook 1973 in McArthur 1979). Surprise is an important factor in many confrontations involving bears and humans. A female with young exhibits an almost reflexive response to any surprise intrusion or perceived threat to her "individual distance" (Mundy and Flook 1973, Herrero 1976, in McArthur 1979). While females with young comprise less than 20% of the total grizzly population, they caused at least 79% of the injuries to people during 1970-1973 period (McArthur 1979).

Defense of a food supply is another cause of confrontation between man and bear. The bear generally defending his kill or carrion out of a perceived need and man defending his supplies and property for human reasons.

If back-country hikers would actively make noise (bells, singing, talking) to avoid suddenly surprising bears while traveling through grizzly bear habitat; and if campers would take reasonable care of their garbage and food supplies, most grizzly bears would flee in response to human intrusions (Herrero 1976 in McArthur 1978).

Grizzly bears of all ages will readily congregate at plentiful food sources and then form a social hierarchy unique to that grouping of bears (Hornocker 1962, Craighead 1979). However, the mating season is the only time that adult males and females tolerate one another and then it is only during the estrous period. Other social affiliations are generally restricted to family groups of mother and offspring, siblings that may stay together for several years after being weaned and an occasional alliance of subadults or several females and their offspring (Murie 1944, 1963; Jonkel and Cowan 1971; Craighead 1976; Egbert and Stokes 1976; Glenn et al., 1976; Herrero 1978).

PAST DISTRIBUTION

Historically, the range of the brown bear included almost the entire coniferous and deciduous forest zones of Europe (Curry-Lindahl 1972). Brown bears still occur near both their northern and southern extremes of original distribution in Eurasia, although their numbers are greatly reduced. They have been extirpated throughout vast areas. Though still numerous in the USSR, the brown bear has disappeared from most of its range west of the USSR due to destruction of habitat and heavy hunting pressure. The North African subspecies was exterminated a century ago. About 13-20 local populations persist in Europe. Some are surprisingly abundant (Poland, Hungary) but others are very small and their future is far from bright (Cowan 1972, Curry-Lindahl 1972).

In North America, the grizzly's historic range extended from Ontario westward to the California coast (Herrero 1972) and south into Texas and Mexico (Storer and Tevis 1955). The development of unfavorable environmental conditions in the wake of westward expansion and development caused a rapid distributional recession (Guilday 1968). Populations were present throughout most of western North America during the 18th century (Storer and Tevis 1955), but the rapidity of local extinctions suggests that many of these were also of marginal status (Martinka 1974a).

Between 1800 and 1975, grizzly populations receded from estimates of over 100,000 to less than 1,000 grizzly bears. Livestock depredation control, habitat deterioration, protection of human life, commercial trapping and sport hunting (Stebler 1972, Martinka 1976) were leading causes. Conflicts between bears and livestock were common during the settling of the west and is characterized by the

attitude of early American stockmen as expressed by Bailey (1931): "The destruction of these grizzlies is absolutely necessary before the stock business...could be maintained on a profitable basis." The scene is less common today but still persists when man, livestock and grizzly bears compete for space. Several ranchers raised in the foothill areas along the east and south borders of the NCDGBE have commented that present populations appear to be greater in recent years than they were during the 1920's and 1930's.

Howard Copenhaver, a rancher and outfitter living on the southern boundary of the NCDGBE for over 60 years, believes grizzly bear populations were at their lowest ebb during the early part of the century and extending into the 1920's and 1930's. He related that sheepmen were running their bands of sheep far into the mountains and, out of necessity, hired hunters and trappers in addition to herders to protect them. "Seeing a track of a grizzly or black bear during the 1920's was something to write home about," states Copenhaver. He also stated that it is his opinion that grizzly bears have increased markedly over the past thirty years in areas he is familiar with.

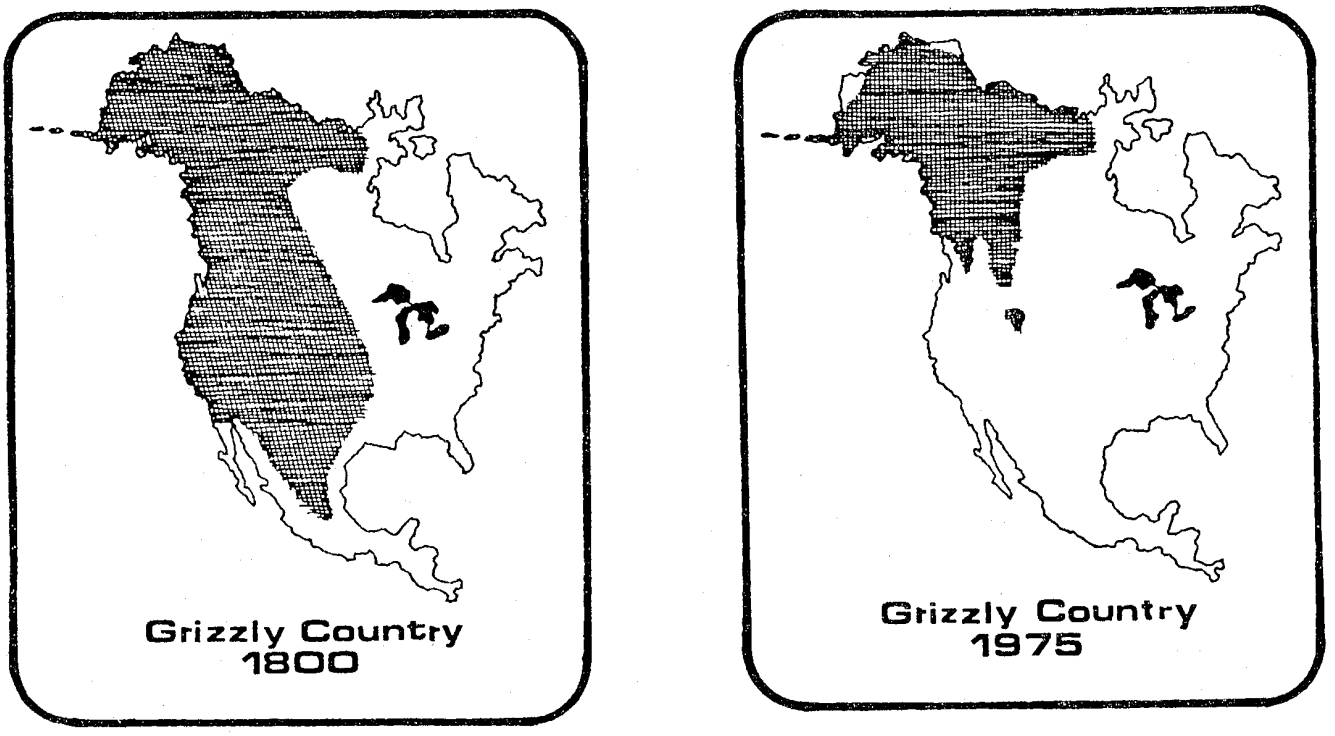
As fur trapping, mining, ranching and farming pushed westward, the grizzly was extirpated from much of the Great Plains where it had flourished at the time of the Lewis and Clark expedition (Wright 1909). Logging and recreational development added to the man-induced mortality of grizzly bears as the mountainous areas were settled. In most cases, bears which threatened or appeared to threaten man's early tenuous existence were eliminated.

Grizzly bears disappeared from Texas about 1890 and by 1922 the last of the California grizzly bears were gone (Storer and Tevis 1955). They were last reported in Utah in 1923, Oregon 1931, New Mexico 1933 and Arizona 1935. By 1970 only the present populations, referred to by some as remnant populations, occurred in mountainous regions, national parks and wilderness areas of Washington, Idaho, Montana and Wyoming (Hoak et al., 1980). The Sierra del Nido in Mexico may also have a remnant population (Leopold 1967, Koford 1969) and the status of the grizzly bear in the San Juan National Forest in Colorado is still in doubt.

Throughout history grizzly bears in marginal habitat have been particularly susceptible to over-kill because of their opportunistic feeding habits and consequent attraction to carrion, weakened domestic animals, garbage and other food sources often associated with people (Hamer 1974). However, many bear hunters and field research personnel would disagree on their susceptibility in their present habitat as they have found them difficult to even fleetingly observe.

CURRENT DISTRIBUTION/STATUS

In the conterminous 48 states, only six areas were found to contain either self-perpetuating or remnant populations. A grizzly



Schneider, B. 1977. Where the grizzly walks.

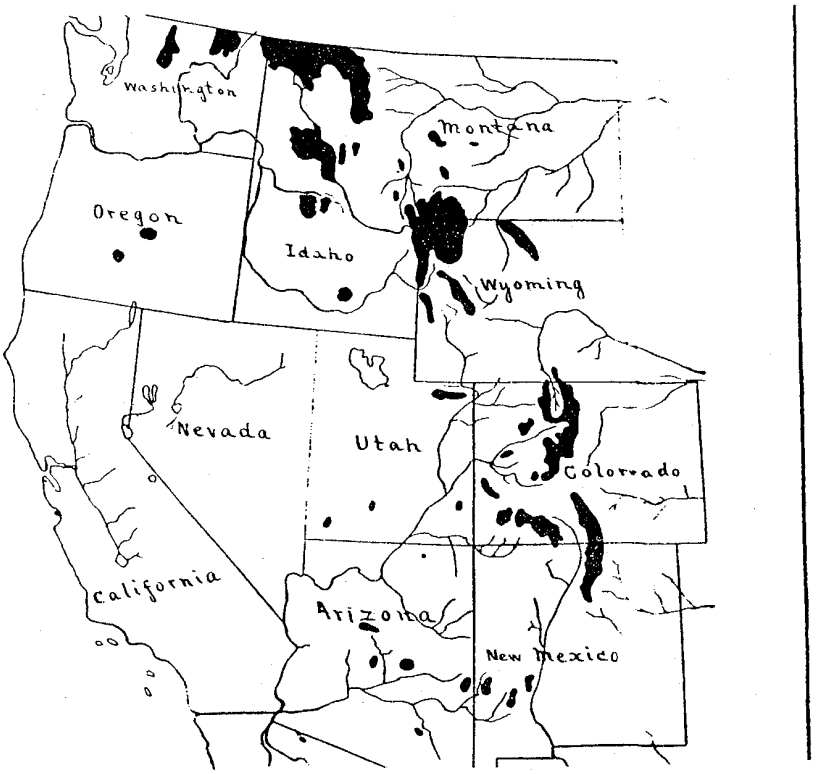


FIGURE 1.

Map of the distribution of grizzly bear by C.H. Merriam in 1922 (from Outdoor Life, Dec. 1922; reprinted with permission from The Popular Science Publishing Company), in Earle F. Layser 1978.

bear killed in the early fall of 1979 near the Continental Divide in a remote section of the San Juan National Forest in Colorado casts doubt on whether or not the species is extant in Colorado and the southern Rockies. This adult grizzly was killed by an archer while hunting on the headwaters of the Navajo River (Hess 1980 pers. com.). The remoteness of the area, its proximity to wilderness areas and the existence of a very large and well protected Spanish land grant, Tierra Amarilla, all lend credibility to the possible existence of a relic population. This plan does not address recovery in Colorado beyond expressing hope that a search for grizzlies will continue.

Grizzly bears presently occupy over 5.5 million acres of mountainous terrain in and surrounding Yellowstone National Park (Fig 3). The Yellowstone Grizzly Bear Ecosystem (YGBE) includes Yellowstone National Park, Grand Teton National Park, John D. Rockefeller Memorial Parkway, significant contiguous portions of the Shoshone, Bridger-Teton, Targhee, Gallatin and Custer National Forests, Bureau of Land Management lands and over 55,000 acres of state and private lands in Montana, Wyoming and Idaho. Population estimates for this ecosystem vary from 200-350 grizzlies.

The Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE) contains 5.7 million acres of occupied grizzly bear habitat. It includes Glacier National Park, parts of the Flathead and Blackfeet Indian Reservations, parts of five national forests (Flathead, Helena, Kootenai, Lewis & Clark and Lolo), Bureau of Land Management parcels, and a significant amount of state and private lands. Four wilderness areas (Bob Marshall, Mission Mountains, Great Bear and Scapegoat) and one wilderness study area (Deep Creek North) are included. Population estimates for this ecosystem vary from 440-680 bears. The area is contiguous to Canadian grizzly bear populations and an interchange of bears is assumed (Fig 4). There is no evidence to indicate the numbers of grizzly bears in the NCDGBE are increasing. When the added stress of increasing habitat encroachment by increasing numbers of people is considered, the trend may be a decreasing population and the need for action is obvious.

One very important aspect of this ecosystem is that it embraces a narrow strip of the Great Plains and grizzly bears can still be found there. Descendants of the plains grizzly bears, noted by Lewis and Clark in the early 1800's and painted by Charles Russell 100 years later, have been reduced to this last narrow strip of plains habitat bordering the eastern slopes of the Rocky Mountains, commonly called the Rocky Mountain Front.

The CYGBE in northwestern Montana and northeastern Idaho has over a million acres of forested and mountain habitat occupied by grizzly bears (Fig 4). The status of that population is presently undetermined. Biologists are able, however, to observe grizzly bears in this ecosystem when a reasonably intense effort is made. It is not uncommon to receive 40-50 unsubstantiated reports of observations

annually (Christensen 1980 pers. com.). Low densities of grizzly bears are found in the Yaak and contiguous areas in Canada and interchanges of bears have been documented. The retention of functional movement corridors, with adequate cover, between the Cabinet Mountains population and population centers in the Yaak, Whitefish Range and Canada, are essential to the welfare and survival of the bears in this grizzly bear ecosystem.

The SMGBE (Fig 5) of northeastern Washington and northwestern Idaho is not well defined. An area on the Panhandle National Forest (Idaho) has been designated by state and forest service biologists as occupied by grizzly bears. Forest service personnel recognize that grizzly bears may occur beyond this boundary, especially during the spring season. The size of the occupied range may be expanded as new information is gathered. Personnel of the Colville National Forest (Washington) have reports and first-hand knowledge of the presence of grizzly bears in an area adjacent to the Panhandle National Forest (Fig 5) but do not believe they have adequate data to designate the extent of occupied habitat. Canada has a population of grizzly bears contiguous to this area and an interchange of the species is believed likely.

The NCGBE (Fig 6) is also contiguous to an area of low grizzly density in Canada. In this ecosystem, bears are rarely observed and there are insufficient data to designate occupied range or to estimate the density or population. Whether this is a factor of low numbers of bears or the heavy cover they occupy is subject to debate.

The SBGBE (Fig 7) is centered in the Selway-Bitterroot Wilderness Area. Credible grizzly bear observations are relatively few. Historic ranges of the grizzly bear include National Forest lands surrounding this wilderness and the proposed River of No Return Wilderness on both sides of the Salmon River. Several biologists and Forest Service personnel questioned whether grizzly bears in this area are permanent residents or transients. Others adamantly maintain they are permanent residents of the area. Recent reports (Oldenburg 1980 pers. com.) include one grizzly bear sighting (unconfirmed) on Moose Creek and several sightings and reports of tracks on the upper Lochsa-Clearwater Divide (Oldenburg 1981 pers. com.).

CORRIDORS

It is highly unlikely that adequate corridors of cover to provide for an interchange of grizzly bears between the YGBE and other grizzly bear ecosystems presently exist. The distance exceeds 150 miles (airline) and a much greater distance if mountainous terrain were followed. Interchanges between all other populations are feasible, and consideration to protect these travel corridors is a necessary part of future land planning. Intervening areas of developed or tilled agricultural lands are unlikely to be crossed by grizzly bears--at least without the chance of a confrontation that may lead to the demise of the bear.

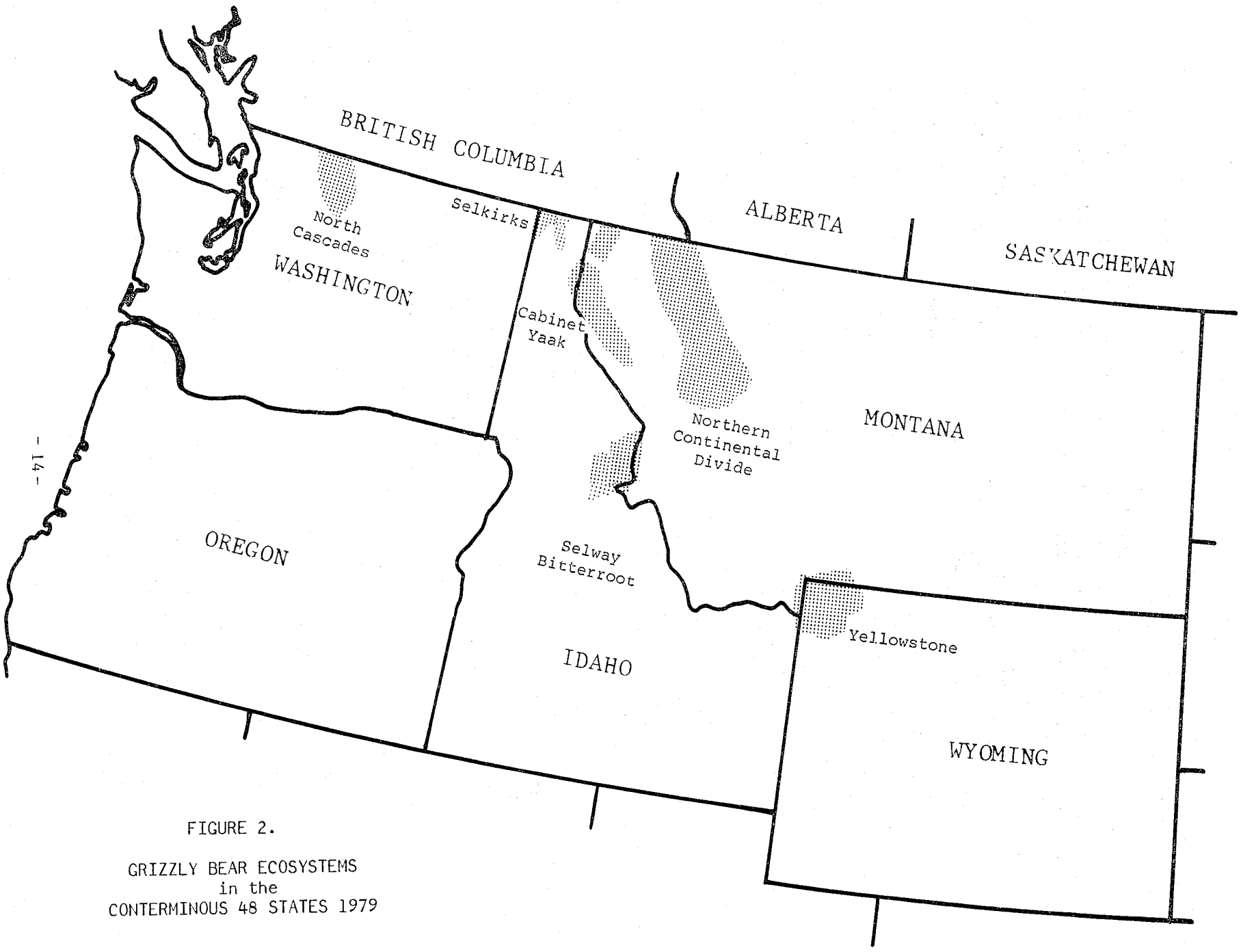


FIGURE 2.

GRIZZLY BEAR ECOSYSTEMS
in the
CONTERMINOUS 48 STATES 1979

"One of the most profound developments in the application of ecology to biological conservation has been the recognition that virtually all natural habitats or reserves are destined to resemble islands, in that they will eventually become small, isolated fragments (isolates) of formerly much larger continuous habitat. Typically, the term isolate is used to connote any discrete ecological unit which is insulated from other similar units" (Wilcox 1980). They have definable physical and biological properties and are of "...primary interest to conservation biologists since they are affected by habitat loss and insularization. Reduction in total amount of area encompassed by natural habitat and fragmentation into disjunct insular parcels obviously have negative effects on natural ecosystems" (Wilcox 1980). Larger areas have more habitat and greater habitat diversity to offer all species or any particular species. Loss and fragmentation of natural habitat is particularly relevant to the management and survival of grizzly bears. They are large animals with great metabolic demands requiring extensive home ranges. Their low densities, low reproductive potential, individualistic behavior, large home ranges and their invasion of the riparian habitat (also used extensively by man), cause them to be more vulnerable to extirpation than many other species.

The necessity of developing or maintaining corridors for inter-isolate dispersal between populations may prove to be very important. "...individuals dispersing from adjacent or contiguous habitat can shore up a faltering population." (Wilcox 1980).

POPULATION CHARACTERISTICS

Density

The mean density of grizzly bears in the Yellowstone Ecosystem was computed to be 1 bear per 34 square miles by Craighead et al. (1974); in Glacier National Park the mean density was estimated by Martinka (1974a) to be 1 bear per 8 square miles on a 290-square mile study area; on Kodiak Island, Troyer and Hensel (1964) found a density of bear greater than 1 per .75 square miles and in Mt. McKinley National Park, a mean density of 1 bear per 11 square miles was found (Dean 1976).

The mean density of grizzly bears in the NCDGBE can only be estimated at this time as large segments of remote, unroaded wilderness habitat have not been sampled. Servheen and Lee (1979) estimated the mean density of the grizzly bears in the Mission Mountains study area to be 1 bear per 15 square miles; and they have extrapolated these data to estimated 1 bear per 19 square miles for the entire Mission range. BGP studies, conducted in the Whitefish range, estimated a density of 1 bear per 15 square miles on that 220-square mile study area (Thier 1979 pers. com.). Richard Mace, working with the BGP in the South Fork of the Flathead River drainage south of the Jewel Basin, estimated a density of 1 bear per 9.8 square miles on a study area of 128 square miles (Mace 1980 pers. com.).

Schallenberger (1980) stated he could not estimate the total population or density for study areas on the Rocky Mountain Front. Jonkel (1980 pers. com.) stated daily grizzly bear densities on some key seasonal use areas along the Front were as high as 1 bear per square mile. Servheen (1980a) combined and averaged several density estimates determined from study areas to establish a range of population estimates for the NCDGBE. Additional information gleaned from biologists and game managers familiar with the area has hopefully refined these density estimates; but the fact remains that population data for this ecosystem, especially the wilderness portions of it, are less than adequate.

No estimates of density or total population are made for the remaining grizzly bear ecosystems in the conterminous 48 states. Densities of areas for comparison are shown in Table 1.

Home Ranges

"Space is a species' communal home range; the size is determined by the cruising radius of that species. This home range must contain all of the species' requirements--food, cover and water--for both sexes and all age classes, for all seasons and for all of the species' activities." (King 1938).

In theory, territoriality is the optimal mechanism to space individuals where resources are plentiful and predictable (Giest 1974). To defend a territory of low food availability by overt aggression would not be beneficial to the bear. The energy cost of defending the area would outweigh the return in resources (Bunnell and Tait 1978). Territoriality, if it occurs in grizzly bear behavior, also serves as a population regulating mechanism by spacing individual bears and thereby limiting population density (Etkin 1964). It also serves to dampen the total population by limiting their ability to exploit locally abundant resources.

While there is little evidence that grizzly bears exhibit territoriality, a solitary grizzly bear appears to maintain an individual spacing between itself and other bears. The distance maintained may vary with circumstance and season. Females with cubs may enforce a distance of several hundred meters (Herrero 1970b, Cole 1972, Pearson 1975, in McArthur 1979).

The home ranges of adults frequently overlap. The home range of adult males is generally two to four times larger than that of females (Jonkel and Cowan 1971, Kemp 1972, Pearson 1975, Amstrup and Beecham 1976, Craighead 1976, Rogers 1977, Herrero 1978, Servheen and Lee 1979, and Mace 1980 pers. com.). Home ranges of adult males are too large to be defended. The home range of females appear to be smaller during the period they are with cubs, but they expand when the young are yearlings in order to meet increased foraging demands (Kemp 1972, Pearson 1975, Herrero 1978, Russell et al., 1978 in McArthur 1979).

Table 1. Estimated densities of U. arctos in various areas.

Location	km^2/bear	mi^2/bear*	Source
Eurasia			
Abruzzo Nat. Park (Italy)	5.41	2.1	Zunio and Herrero 1971
Northeast Siberia	10.00	3.9	Kistchinskii 1972
Upper Kolyma Basin	150.00	57.9	Kistchinskii 1972
Kamchatka Pensula	16.00	6.4	Ostroumov (1968) as cited in Kistchinskii 1972
North America			
Kodiak Island	1.60	0.62	Troyer and Hensel 1964
Mt. McKinley Nat. Park	30.00	11.6	Dean 1976
Brooks Range	148.00	57.0	Curatolo and Reynolds, in press
Northwest Territories	147.50	57.0	Harding, in press
Northern Yukon	48.0	18.5	Pearson 1976
Southwest Yukon	25.0	9.7	Pearson 1975
Glacier Prov. Park	23.30	9.0	Mundy and Flook 1973
Glacier Nat. Park	21.20	8.2	Martinka 1974
Yellowstone Nat. Park	88.4	34.1	Craighead et al. 1974

Shaffer, M.L. (1978) Determining Viable Population Sizes: A Case Study of the Grizzly Bear

*Column added

Editor's Note: Differences in densities between areas may actually result from differences in study methods, length and depth of study, seasonality, etc. but they are indications of the productivity of the respective areas.

The fact that grizzly bears disperse as subadults is assumed; however, their pattern of dispersal is not well documented. Dispersing young males apparently leave their mothers' home range and may disperse directionally, constantly moved on by the avoidance of the home ranges of established adults. This increases their susceptibility to mortality and human/bear conflict by finding and utilizing unnatural sources. Young females may establish a home range soon after family breakup, often within the vicinity of their mothers' home range. Grizzly bear mothers may tolerate female offspring and may shift their home range to accommodate them (McArthur 1979). Lentfer, Servheen, and Beecham (1981 pers. com.) have stated this behavioral strategy has been described for black bears but cannot be supported for grizzly bears in the literature.

Home range sizes vary in relation to food availability, weather conditions and interactions with other bears. In addition, an individual bear may later extend its range seasonally or change from one year to the next (Jonkel and Cowan 1971, Greer 1972, Craighead 1976, Rogers 1977, Russell et al., 1978).

In the YGBE the average home range size was 179 mi^2 for males and 105 mi^2 for females. Extremes varied from 3 mi^2 to 672 mi^2 during the 1974-80 period of study (Blanchard 1980 pers. com.). A decade earlier home range sizes of bears in the YGBE were described as ranging from 40 mi^2 to 1000 mi^2. Grizzly bears whose home ranges extended beyond the park boundaries were including garbage areas within the park in their home ranges during the summer period (Craighead, 1976, Craighead and Craighead 1972a, Craighead 1980, Craighead 1981.

Average home range size for adult grizzly bears was computed from several study areas in the NCDGBE. For males, an average of 189 mi^2 was determined; extremes varied from 64 mi^2 to a maximum of 543 mi^2 (Rockwell et al., 1977, Servheen and Lee 1979, Schallenberger and Jonkel 1980). One highly mobile radio-marked bear ranged throughout an 1165 mi^2 area and was excluded from the averages (Servheen and Lee 1979). For females in the same area, the average was 72 mi^2, with a minimum range of 39.5 mi^2 and a maximum of 190 mi^2 (Thier 1979, Servheen and Lee 1979, Schallenberger and Jonkel 1980, Mace 1980 pers. com.).

The Kodiak Island study found the average home range of grizly bears to be only 5.5 mi^2, as influenced by abundant food and denning sites being closely grouped (Berns and Hensel 1972).

Age and Sex Structure

"The average unhunted grizzly bear population is composed of 17% cubs, 13% yearlings, 11% subadults, 19% females with young and 40% unclassified adults (Hornocker 1962, Egbert and Stokes 1976, Martinka 1974b, 1976; and Dean 1976 in McArthur 1979)." Age and sex structures are dynamic variables influenced by so many factors such as habitat conditions, time of the year observations are made, hunting,

etc., that trying to determine an average population may not be appropriate. Pearson (1972), working with a hunted population in the Yukon, found 24% cubs and yearlings, 32% subadults (2-6 years) and 44% adults. The population structure of grizzly bears on Kodiak Island (hunted) was 26% cubs, 22% yearlings, 27% subadults and 25% adults (Troyer and Hensel 1964 in Shaffer 1978).

Craighead et al. (1974) recorded an average age composition 18.6% cubs, 13.0% yearlings, 24.9% subadults (2-4 years) and 43.7% adults during the period 1959 through 1967 in the YGBE. Blanchard and Knight (1980) recorded 6.5% cubs, 16.1% yearlings, 37.1% subadults and 40.3% adults for the area in 1980.

Age and sex classifications for small study areas may not reflect the true composition because of the home range size differences between sexes and overlapping ranges (Dean 1976 in McArthur 1979). Sex ratios are usually even, although the larger ranges and mobility of males may bias samples toward males (Hornocker 1962, Troyer and Hensel 1964, Jonkel and Cowan 1971, Kemp 1972, Egbert and Stokes 1976). Higher male vulnerability throughout their life span results in a sex ratio in favor of females in adult age classes (Jonkel and Servheen 1980 pers. com.). Reynolds (1978) working on the North Slope in Alaska, where grizzly bears are more readily observable, found the adult male/female ratio to be 27:50.

Natality

The most comprehensive information on breeding biology in the YGBE comes from the Craighead's studies. Much of the following is from their reports. It must be noted, however, that the reproductive biology of bears is influenced by habitat quality, quantity and its spatial and temporal distribution. Therefore subsequent data by the Interagency Grizzly Bear Study Team should document a difference (lower) in reproductive performance because the dumps, a lucrative artificial food source, have been removed (Beecham, 1980 pers. com.). On the other hand, Picton (1978) suggests that the depression in the reproductive rate of grizzly bears in this ecosystem during the 1972-76 period was due to influences related to climate, and that the closure of garbage dumps has had little effect.

Mating appears to occur from late May through mid-July, with a peak in mid-June and estrous lasting from a few days to over a month (Craighead et al., 1969, Herrero and Hamer 1977). Females in estrous are receptive to practically all adult males (Hornocker 1962). A male may isolate and defend a female in areas of low bear density; but in areas of high density, males and females may both be promiscuous (Craighead at al., 1969)

Age of first reproduction and litter size varies and may be related to nutritional state (Herrero 1978, Russell et al., 1978).

Litter sizes range from 1 to 4, with the mean about 2 (Craighead and Craighead 1972, Curry-Lindahl 1972, Pearson 1972, 1975, Zunino and Herrero 1972, Mundy and Flook 1973, Martinka 1974a; Craighead et al., 1976; Glenn et al. 1976; Bunnell and Tait 1978; Herrero 1978 in McArthur 1979). Litter size averages 1.7 in Glacier National Park (Martinka 1974a). Age of the mother is not correlated with litter size (Craighead et al., 1976). Lack (1954) theorized that litter size is adjusted to the most young for which the parents can, on the average, find sufficient food. Litter sizes of bears tend to be largest in the best fed populations (Stringham 1980). Lord (1960) has theorized that the higher survival rates of hibernators favor smaller litter sizes than in non-hibernators. First-year mortality of grizzly cubs, during the period of intensive maternal care, seems to be low (Mundy and Flook 1973, Martinka 1974a, Dean 1976, Glenn et al., 1976); although it may be higher than is apparent, particularly if the losses involve singletons, which may have selective advantage, or entire litters" (Tait 1980). The Craighead team (1969) determined that females in the YGBE reach sexual maturity at 4.5 years of age, but only 69% conceived at this age (Craighead et al., 1974). Evidence of estrous and conception in grizzly bears at 3.5 years has been noted in three areas in North America (Erickson et al., 1968, Nagy and Russell 1978, Jonkel and Servheen 1980 pers. com.), but seldom do female grizzlies conceive until 4.5 years of age. Data from the NCDGBE and reports from Canada indicate 5.5 years of age and 6.5 years, respectively, may be more common for age of first conception in those areas. Two instances of bears conceiving at 4.5 years of age in the NCDGBE have been recorded recently (Servheen 1981 pers. com.). Reynolds (1978) found that grizzly bears in the Brooks Range of Alaska do not usually produce young before 8 years of age. The oldest known female giving birth in YGBE was 22.5 years of age (Craighead et al. (1974). Females are probably capable of reproducing throughout their lifetimes after reaching maturity (Jonkel and Cowan 1971, Craighead and Craighead 1972, Pearson 1975, Craighead et al., 1976, Nagy and Russell 1978). The average reproductive cycle, the period between giving birth to young, for the Yellowstone population, was determined to be 3.4 years with a range of 2-7 years (Craighead et al., 1974).

The limited reporductive capacity of grizzly bears precludes any rapid increase in the population. Grizzly bears have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age of first reproduction, small average litter size* and the long interval between litters (Jonkel and Cowan 1971, Bunnell and Tait 1978). Females must first survive the rigors of being a cub, a yearling and several years of sub-adulthood before reaching the age of first estrous, generally at 4.5 or 5.5 years of age. Prior to first estrous, a female grizzly may be more likely to be dispatched for food

* Litter sizes 2.24 (Craighead et al., 1976), 1.6 (Pearson 1975), 1.78 (Reynolds 1976).

by an adult male than to enter into a social agreement for mating. Male grizzly bears killing adult females has been documented (Pearson 1975, Craighead 1980 pers. com.); Jonkel (1980 pers. com.) reports a similar case for polar bears.

In the event mating occurred, and assuming she conceived at 4.5 years, a female grizzly bear would add her first recruitment to the population when she was 5.5 years. The following summer, at 6.5 years, she is normally still lactating, and this is believed to inhibit receptivity to males (Jonkel and Cowan 1971). Thus, the age of second breeding would not likely occur until she is 7.5. Therefore, during the first 10 years of her life, a female grizzly bear is capable of adding only 2 litters to the total population. If there are litters of 2 cubs with a 50:50 sex ratio, she can at best, replace herself with one breeding age female in the first decade of her life. Unfortunately, this situation is achieved only if her female cub survives from birth to breeding age. In some populations, only 20 to 50 percent of the cubs might be expected to survive that period (Metzgar 1980 pers. com.).

Assuming optimum conditions, no mortality, equal sex ratio, and using the oldest documented female weaning her last litter at age 24.5 years (Craighead et al., 1974), a single female would have the potential capability of adding only 7 females to the population during her lifetime. Given a normal rate of mortality for all age classes, a protracted reproductive cycle of 3.4 years to 7 years, and the increasing stresses of habitat encroachment by humans, a reproductive expectancy of far less than the maximum cited would be expected. Obviously, the need to provide maximum protection for females is essential to recovery.

Males are believed to mature sexually at 4.5 years, but larger, dominant males may preclude young adult males from siring many offspring (Hornocker 1962).

The time lapse from conception to birth of cubs is between 229 and 266 days (Banfield 1974). A delay in blastocyst implantation postpones embryonic development (following a mating season that extends from late May to mid-July) until late November or December, and is believed to be approximately 0-30 days after denning (Craighead et al., 1969) with birth occurring near February 1.

MORTALITY

Natural Mortality

The causes of natural mortality for grizzly bears or other bears are not well known. Bears do kill each other. It is known that adult males kill juveniles and that adults also kill other adults. Parasites and disease do not appear to be significant causes of natural mortality (Jonkel and Cowan 1971, Kistchinskii 1972, Mundy and

Flook 1973, Rogers and Rogers 1976) but they may very well hasten the demise of weakened bears (Jonkel 1980 pers. com.).

There are insufficient data to fully assess the degree of mortality in the younger age classes of bears as a result of predation by adult bears. However, Pearson (1975), Egbert and Stokes (1976), and Nagy and Russell (1978) in McArthur (1978) indicate that it may be an important factor. If young bears are not killed directly by aggressive adults, as dispersing subadults they may be forced to choose submarginal home ranges or areas near human habitation equally dangerous to their survival.

Natural mortality during the denning period is not well documented. Several authors believe some bears die during denning, especially following periods of food shortages. However, few such deaths have been recorded.

Shaffer (1978) cites several references on mortality of denning bears. Jonkel and Cowan (1971) report no mortality in dens; Craighead and Craighead (1972b) suspect old bears may die in their dens and they report that several old color-marked bears were observed in the fall and never seen again. One older bear died soon after emerging from hibernation.

Beecham (1980) working with black bears in Idaho indicated that the physical condition of denned bears remained good, and that the period of physical stress was most acute when fat reserves were at their lowest in early July.

Upon emergence from the den, it is critical to the bears' welfare to find sources of high quality, protein-rich food. With den sites at higher, snow-covered elevations, movements of considerable distances to lower elevations are necessary to reach palatable, emerging vegetation rich in protein or to reach the foothill winter ranges of ungulates in order to feed on the winter-killed or weakened animals. This movement of bears to the lower elevations often takes them near areas of human habitation and greatly increases the incidence of human/bear conflicts. "A similar movement can often occur in the fall due to ripening of fruit and berries at lower elevations. The west front of the Mission Mountains is a case in point" (Servheen and Lee 1979). Not all residents of these foothills communities are willing to assist in protecting the grizzly, especially if the bear commits an act of depredation. Fortunately, the majority favor the survival of the species. Those who still adhere to the axiom of the early west, "...the only good grizzly is a dead one," are often either steeped in tradition that all predators are a threat to their livelihood, or they have had recent negative grizzly bear encounters.

Man-Caused Mortality

Man-related mortality can be categorized into six major areas: (1) direct human/bear conflicts or confrontations in wilderness areas

and parks (hikers, backpackers, photographers, hunters, etc.; (2) attraction of grizzly bears to improperly stored food and garbage associated with towns, subdivisions, farms, hunter camps, campers, loggers, fishermen, backpackers, etc.; (3) careless livestock husbandry, including the failure to dispose of dead livestock in a manner that minimizes grizzly interactions; (4) opportunistic or pure chance interactions between livestock and bears as they wander into close proximity; (5) the eroding of grizzly bear habitat for economic values that reduces space, increases interactions and stress; and, (6) hunting.

Subdivisions, power line corridors, logging roads, recreational development, trails, sight-seeing gondolas, energy and mineral exploration or development and simply more people everywhere are degrading grizzly bear habitat by co-locating grizzly bears and people; neither species will long endure the other in close proximity. These actions are increasing and compounding the adverse effects of human encroachment in so many ways that it is impossible to stay current in the evaluation of all of them.

Grizzly bear habitat has steadily decreased since the initial westward movement of settlers. Bears were conditioned to avoid conflict with humans by the actions of those early settlers. In later years bears have been attracted to carrion, waste products of construction camps, recreational camps and the sprawling residential areas that have invaded their habitat. The result has been "problem bears" that have learned to cause damage to property, to prey on livestock and to become a threat to human lives. This often leads to illegal shooting or becomes a cause for the removal of the bear, ultimately leading to a decline in the total grizzly bear population and the eventual confinement of bears to ever-decreasing fragments of their former range.

Conversely, sanctuaries that provide for high levels of human/bear contact which result in little or no negative experiences for the bear, may remove any barrier of fear or uncertainty the grizzly bear would normally exhibit towards man. The effect could be neutrally conditioned bears that may easily be followed by aggressive bear behavior; especially if they associate people with a food source (camp food, horse feed pellets, garbage, etc.). This learned behavior is passed from females to cubs or is learned by dispersing subadults finding a food source left by careless people. The end result of this learned behavioral pattern is usually the loss of the bear (Jonkel and Servheen 1977). Left unchecked, this learned behavior could lead to a shift or trend in the behavior of entire bear populations.

National parks provide a set of circumstances conducive to conflicts between humans and grizzly bears. As park visitors increase and invade the habitat of the grizzly bear, especially in small parties of one, two or three persons, the number of confrontations can be expected to increase proportionately. How this pattern can be

reversed is at present not clear. Some biologists advocate a retraining program for problem bears to instill a fear of man and food sources associated with people, but to date research in this field is lacking.

There are numerous examples of man and grizzly bear coexisting compatibly through a relationship that can be expressed as tolerant but firm. These people, ranchers, outfitters, loggers, field personnel of wildlife agencies, forest service and BLM personnel, and many others, collectively spend tens of thousands of days and nights in grizzly bear habitat with relatively few problems. Most bears outside of national parks have apparently retained their fear of man. Perhaps it is because they are hunted occasionally, legally and illegally, or because those bears that become too bold are eliminated, again legally or illegally, or it may be because the ratio of bears to humans is lower than it is in parks (Jonkel and Servheen 1977). In any event, the behavioral makeup of the grizzly bear population must be given serious consideration. People who impair the bears' respect for man by providing unnatural food sources, whether it be accidentally, foolishly, or intentionally, share a moral responsibility for any future acts of damage or violence committed by these grizzly bears.

HABITAT CONDITIONS

Food

The broad historic distribution of grizzly bears suggests adaptive flexibility in food habits of different populations. Although the digestive system of bears is essentially that of a carnivore, bears are successful omnivores, and in some areas may be almost entirely herbivorous. Morphological adaptations include crushing molars and the greatest intestinal length relative to body length of any carnivore (Mealey 1975). Although grizzly bears in many areas are almost entirely herbivorous, they are lacking in multiple stomachs and a caecum and are therefore unable to digest cellulose. Bears feed on animal matter or vegetable matter that is highly digestible and high in starch, sugars, protein and stored fat (Stebler 1972, Mealey 1975, Hamer et al., 1977).

Grizzly bears must avail themselves of foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive denning and post-denning periods. Therefore, protein availability may be the limiting factor in grizzly bear densities. Herbaceous plants are eaten as they emerge, when crude protein levels are highest. These levels decline rapidly as the plants mature (Mealey 1975, Hamer et al., 1977, Herrero 1978).

Grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food including ground squirrels, ungulates, carrion and garbage (Murie 1944, Hamer 1974). In areas where animal matter is less available, roots, bulbs, tubers, fungi and tree cambium may be important in meeting protein requirements (Hamer 1974, Pearson

1975, Singer 1978). High quality foods such as berries, nuts and fish are important in some areas for food sources (Cole 1972, Martinka 1972, Hamer et al., 1977).

Much of the following is excerpted from the Method for Determining Grizzly Bear Habitat Quality and Estimating Consequences of Impacts on Grizzly Habitat Quality (Mealey 1977).

Grizzly bear habitat in the YGBE and in that portion of the NCDGBE east of the Continental Divide is open and xeric with continental climate (Mealey 1979). Grizzly bears in these areas derive most of their energy from protein in succulent, herbaceous vegetation, primarily grasses and sedges, and secondarily, the aerial parts of western spring beauty (Claytonia lanceolata), elk thistle (Cirsium foliosum) and clover (Trifolium spp.) (Mealey 1977, Schallenberger and Jonkel 1978-1979). The underground parts of spring beauty (Claytonia spp.) and biscuitroot (Lomatium spp.) are also used in significant amounts for starch (Sumner and Craighead 1973, Mealey 1977, Schallenberger and Jonkel 1978-1979). Moist, fertile grasslands, herblands, streambottom, ridgetops, talus slopes, wet avalanche chutes and swamps, interspersed with timbered areas (for cover), are primary feeding sites. The abundance and location of these habitat components appear to influence grizzly bear distribution. These components are usually found between 5,000 and 10,000 feet elevation, with their use and relative importance depending upon season and phenology.

Grizzly bear range on the west side of the Continental Divide of the NCDGBE and the other four grizzly bear ecosystems in northwestern Montana, northern Idaho and Washington are influenced primarily by maritime climate. Grizzly bears here appear to derive most of their energy from sugar occurring in the fruits of huckleberry (Vaccinium spp.), mountain ash (Sorbus spp.), buffaloberry (Shepherdia canadensis) and serviceberry (Amelanchner alnifolia); burns producing these fruiting shrubs are primary feeding areas (Tisch 1961, Shaffer 1971, Martinka 1972, Hamlin and Frisina 1974, Husby et al., 1977, Mealey et al., 1977, Servheen and Lee 1979). Prior to the availability of fruit, the grizzly bear diet consists largely of succulent forbs and graminoids, starchy bulbs, tubers and roots occurring in moist parks, avalanche chutes, wet meadows and riparian zones (Mealey 1975, Husby et al., 1977, Mealey et al., 1977, Servheen and Lee 1979). In years of berry crop failure, these components are the major energy sources for grizzly bears. In all areas, small mammals, especially ground squirrels, mice, insects, carrion and occasionally a larger ungulate are utilized as available.

This search for food is a prime influence on movements. Upon emergence from the den they seek the lower elevations, drainage bottoms, avalanche chutes and ungulate winter ranges, where their food requirements can be met. Throughout late spring and early summer they follow plant phenology back to the higher elevations. In late summer and fall, there is a transition to the fruit and nut sources, as well as herbaceous materials. This is a generalized pattern, however, and

it should be kept in mind that bears are individuals trying to survive and will go where they can best meet their requirements.

Some silvicultural practices to increase production of grizzly bear food species and food producing openings in dense timber are discussed in "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area," (USFS and NPS,1979)

Cover

The relative importance of cover to grizzly bears has been documented by Blanchard (1979) in a 4-year study in the YGBE. Ninety percent of 2,261 aerial radio relocations of 46 instrumented grizzly bears were in cover too dense to observe the bear. Whether grizzly bears use timber (cover) because of an innate preference or in avoidance of contact with humans is unknown (Blanchard 1979). The importance of an interspersion of open parks as feeding sites associated with cover is also recorded in Blanchard's study: "Only 1% of the relocations were in dense timber more than a kilometer from an opening."

She further records that bears observed in the open were less than 100 meters from cover and most of those were less than 30 meters from cover (Blanchard 1980).

Seventy-nine percent of the feeding activities recorded were in timber over three meters tall (Class 1 timber), 4% in timber of less than three and 17% in open habitats. Bear activities, other than feeding, were most frequently recorded in Class 1 timber (70%), as opposed to cover of lesser heights (Blanchard 1979). The values of timber or brush for cover for grizzly bears has also been documented by Craighead and Craighead (1972a), Craighead and Sumner (1973), Ruediger and Mealey (1978), and Knight et al. (1977).

Timber cover was found to be very important to grizzly bears for use as day beds. Most day beds were found less than a yard or two from a tree (Servheen and Lee 1979, Blanchard 1979). Blanchard further records only 16 of 233 day beds observed (6.7%) were without immediate cover. Schallenberger and Jonkel (1980) found grizzly bears preferring timber in over 80% of their radio relocations.

Ruediger and Mealey (1978) recommend that at least 30% of grizzly bear habitat be managed as cover. Blanchard states, "Despite the preponderance of observations in the timber, the importance of interspersion of timber and open habitats is apparent." Additional data on the importance of habitat interspersion to grizzly bears has been documented by Craighead and Craighead (1972a), Jonkel and Mealey (1975), Schallenberger (1976), Knight et al. (1978). Jonkel (1980 pers. com.) points out that cover is a relative term and isolation and darkness in themselves constitute "cover". No distinction has been made between the requirements for thermal cover and hiding cover.

Timber management programs can affect grizzly bears by (1) vegetative manipulation (e.g., tree removal, riparian management, prescribed burning); (2) displacement during the logging period; and, (3) changes in human/grizzly bear confrontation potential or perturbation factors as a result of road building and management (e.g., new roads and road closures) which may cause the bears to abandon the area.

Timber harvesting, according to Ruediger and Mealey (1978), is most beneficial as a grizzly bear habitat management tool in forested terrain where natural or prescribed burning will not or cannot be used. Conversely, Blanchard (1979) states, "Logging negatively affects bears through reduction of shelter and increases in human activity." Elgmork (1978) discussed the disturbance on brown bears in Norway and summarized the European literature on the effects of clearcutting timber. His data show a significant negative correlation between bear observations and the number of roads and increased human activity, especially the networks of roads and resulting secondary traffic (Elgmork 1976). Claar and Klaver (1980 pers. com.) found a similar relationship between roads and grizzly bears on the Flathead Indian Reservation.

Zager (1980) found that grizzly bears generally avoid cutting units in northwestern Montana. Those that were utilized were located along secondary or closed roads where the likelihood of human disturbance was low. Grizzly bear use was generally restricted to the margins of the cuts within 50 meters of timber cover. Comprehensive and effective management of logging roads is important to grizzly bear conservation. The isolation and security afforded bears by obliterating or closing roads immediately following logging operations in grizzly bear habitat is essential to assure that the bears will return and use the affected areas.

Denning

The unavailability of food, deep snow and low ambient air temperatures appear to make winter sleep essential to bears' survival (Craighead and Craighead 1972a, 1972b). When rodents and bats hibernate, they become periodically poikilothermic (Stringham 1980). Hock (1960) defines hibernation: "...a periodic phenomenon in which body temperature falls to a low level approximating ambient; heart rate, metabolic rate and physiologic functions fall to a correspondingly minimum level..." By contrast, bears are homeo-hypothermic hibernators whose body temperature drops no more than 5°C and is maintained there indefinitely (Stringham 1980). With normal fat reserves, bears are capable of fasting for six months with only slight reductions in body temperature. They do exhibit a "...marked depression in heart rate and respiratory frequency, but a relatively slight drop in body temperature" (Craighead and Craighead 1972a). Day length and inclement weather have been documented as influencing the onset of winter sleep or hibernation by a number of authors. However, Hocks (1960) deems it likely that hibernation is triggered

when the energetic cost of remaining active exceeds the benefit derived from food intake. Miller (1972) found bears at abundant food sources denning at later dates. Intrinsic factors are also involved as some bears in captivity continue to simulate hibernation (Kayser 1965 in McArthur 1979).

Digging of dens is probably instinctive. It starts as early as September or may take place just prior to entry in late November. Dens are usually dug on steep slopes where wind and topography cause an accumulation of deep snow and where the snow is unlikely to melt during warm periods. Elevations of dens vary geographically, but generally they are found at higher elevations well away from any development or activity by humans. Denning habitat descriptions and activity have been described for grizzly bears in the Mission Mountains of Montana by Servheen and Klaver (1981). Finding an isolated area that will be well covered with a blanket of snow to minimize the escape of body-warmed air and one that will provide a secure environment for a five-month sleep, appears to be a factor favoring survival of the species (Craighead and Craighead 1972b). Grizzly bears seem very sensitive to disturbance or alteration of habitat during the pre-denning period. Denning habitat may be a population limiting factor in some areas (Craighead and Craighead 1972b, Pearson 1975). Once denning areas are located, they must be given prime consideration by land management agencies. Craighead and Craighead (1972b) and others have recorded pre-hibernation lethargy in bears that may start several weeks prior to denning. Bears exhibit no overt defense of their dens and several have been reported to abandon them because of human disturbance .

Pre-hibernation lethargy, the consequences of disturbance factors to denning bears and bear vulnerability during the pre-denning and denning period will necessarily be a consideration in planning any land use activities in identified denning habitat.

In summary, it should be remembered that all species existing in the wilds need adequate habitat. Maintaining present habitat conditions is a difficult task. Making limited gains in the quality and quantity of grizzly bear habitat is even more difficult. In sum total, grizzly bear habitat is losing ground throughout the range of the species (Jonkel 1980 pers. com.).

LEGAL STATUS

Protection afforded grizzly bears under the Endangered Species Act is extensive. The possession, transportation, taking, sale and receipt of grizzly bears or parts thereof are covered under special regulation Part 17.40 of Title 50, Code of Federal Regulations (CFR). The term "take" includes, harrass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or attempt to engage in any such conduct.

Title 50 CFR, Part 17.40 authorized certain exceptions to the act. The regulations allow taking of a grizzly bear in defense of human life, removal of nuisance bears by authorized federal or state employees, federal or state research activities conducted under the authority of permits issued by the Director of the Fish and Wildlife Service and limited hunting in specific areas of northwestern Montana. Any grizzly bear taken under the above situations must be reported to the Fish and Wildlife Service, Division of Law Enforcement and appropriate state officials, within five days.

Violation of the provisions of the Endangered Species Act can result in a fine of $20,000 and one year in prison for a criminal conviction and up to $10,000 in civil penalties. Criminal conviction also carries provisions for: 1) modification, suspension or revocation of any lease, license, permit or other agreement authorizing the use of federal land, including the grazing of domestic livestock; 2) revocation of federal hunting and fishing permits; and, 3) forfeiture of all guns, traps, other equipment, vehicles, aircraft and other means of transportation used in taking, possessing, selling, purchasing, offering for sale or purchase, transporting, delivery, receiving, carrying, shipping--in violation of the act. This regulation currently prohibits the sale of any unlawfully taken grizzly bear, hide, claws, or parts thereof, and supersedes wildlife treaty rights relative to hunting, possession or selling of grizzly bears except in accordance with federal or state regulations. Rewards equal to one-half of the criminal or civil penalty or fine paid, not to exceed $2,500 from the fine or penalty, may be authorized to any person furnishing information which leads to a finding of civil violations or criminal convictions of any provision of the Endangered Species Act.

Subject to the provisions of the laws and regulations of the State of Montana, licensed hunters may hunt grizzly bears in the area referred to as the NCDGBE exclusive of Glacier National Park. Hunting of grizzly bears in Montana is subject to a limitation of 25 grizzly bears killed from all known man-induced causes in northwestern Montana in any calendar year. This limit is to include those bears that have been taken illegally, nuisance bears killed in control actions, bears killed accidentally, in fact, any grizzly bear death that is man-caused. The season will close when that number is reached or will fail to open if 25 bears are known to have been killed before the season is due to open.

Goals and objectives of this recovery plan will be attained and funds expended contingent upon appropriations, priorities and budgetary constraints; but the most important ingredient will be the degree of commitment exhibited by individuals in supervisory capacities toward saving the grizzly bear. Half-hearted attempts to comply with the provisions of the Endangered Species Act, or the recovery plan, may slow the bears rate of decline, but it will certainly not reverse the trend. Inadequate funding or lack of full cooperation by individuals, groups or agencies will only waste dollars

and eventually increase the cost of recovery or increase the costs of tasks that will be necessary to prevent extinction at a later date. An all-out concerted effort, with federal and state agencies and a concerned public coordinating their resources, appears necessary to be assured that the future will include grizzly bears.

PART II

GRIZZLY BEAR RECOVERY PLAN OUTLINE

Primary Goal: To remove the grizzly bear from threatened status in the 48 conterminous United States

In the wake of the human force spreading across the land, grizzly bears have survived in certain refugia - primarily the national parks and wilderness areas - in western North America. That this is true, is altogether fitting with the purpose of these areas: to conserve, perpetuate and portray as a composite whole, the indigenous flora and fauna.

As relatively pristine environments, the national parks and wilderness areas can fulfill the crucial role of providing a standard of environmental health, the concept of which Aldo Leopold stated years ago: "A person (or a society) cannot know what sickness is without some criterion of health." UNESCO has embraced this idea through its "Man and the Biosphere" program.

Hence, we may look toward national parks and similar refugia as our best benchmarks, indicative of healthy communities of plants and animals. It is with this rationale that we have selected available grizzly bear population data from Yellowstone and Glacier National Park to establish our recovery objectives for the species.

To be healthy, however, means to be whole. Since the national parks may not constitute complete ecosystems for a wide ranging species such as the grizzly bear, it is only proper and necessary to delineate such intact ecosystems. It is within these areas that we must apply systematic management to conserve habitats for healthy grizzly bear populations.

Exploration and development of resources and increasing numbers of people within the range of grizzly bears are rapidly dwindling the space and habitat necessary for the bear's survival. All ecosystems are being adversely affected and the time for decisions to reverse this trend is now.

This plan addresses six areas in the conterminous 48 states where grizzly bears are known to have been present during the past decade. These six grizzly bear ecosystems appear to presently have adequate space and suitable habitat to offer the potential for securing and restoring this species as a viable, self-sustaining member of each ecosystem.

The population parameters or their biological equivalents necessary for recovery of the grizzly bear population in the Yellow-

stone Grizzly Bear Ecosystem (YGBE), the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE), and the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE) have been determined or estimated. Recovery levels are defined for each of the populations.

Population parameters necessary for recovery of the species in the Selkirk Mountains Grizzly Bear Ecosystem (SMGBE), Selway-Bitterroot Grizzly Bear Ecosystem (SBGBE) and North Cascades Grizzly Bear Ecosystem (NCGBE) are undetermined. This plan outlines some management options for these populations and steps that will be required to maintain the present population or to initiate actions to effect recovery.

The plan has been structured in a step down outline form addressing each ecosystem. It is recognized that there is much duplication between the sections addressing each ecosystem. However, the initial data base on populations and habitat are significantly different; the specific limiting factors are of varying magnitude between ecosystems; the current management direction is different between ecosystems; and the agencies and groups that have management jurisdiction over the bulk of the grizzly bear habitat in each ecosystem are different. It is for these reasons that we have organized the plan in this manner. The agencies, groups, or individuals that are involved or interested in each ecosystem have a complete chapter addressing not only the elements all ecosystems have in common, but also the elements specific to each ecosystem.

Management guidelines for National Forest and National Park lands have been formulated for the YGBE but stratification of all Forest lands has not been accomplished. Guidelines for the other five ecosystems have not been formulated nor has any stratification of the habitat been accomplished by any state or federal agency. Only the Flathead Reservation within the NCDGBE has taken these steps and only within the reservation boundaries.

ABBREVIATED STEP-DOWN OUTLINE

Objective: Describe methods and actions needed to bring grizzly bear populations to recovered status

1. State or establish the population objective and identify limiting factors.
   11. State or determine population conditions at which the species is viable and self-sustaining.
   12. State, estimate or determine current population conditions.
   13. Identify the man-related population limiting factors if present populations differ from desired.
      131. Identify sources of direct mortality.
      132. Identify sources of indirect mortality.

2. Redress population-limiting factors.
   21. Identify and reduce sources of direct mortality.
   22. Identify and reduce sources of indirect mortality.
   23. Monitor compliance with recovery plan.

3. State or determine the extent and quality of habitat and space appropriate to the achievement of the population goal.
   31. Identify or state occupied space and habitat.
   32. Identify or state agency management stratification and direction within occupied habitat.
   33. Identify or state the differences between total acres with agency stratification and management direction and total acres in occupied space and habitat.
   34. Recommend critical habitat.
   35. Identify travel corridors connecting islands of habitat or grizzly bear ecosystems.

4. Resolve differences between occupied space and habitat and agency management stratifications and direction.

5. Monitor populations and habitats.
   51. Monitor populations before and during recovery.
   52. Monitor populations after recovery.
   53. Monitor habitats before and during recovery.
   54. Monitor habitats after recovery.

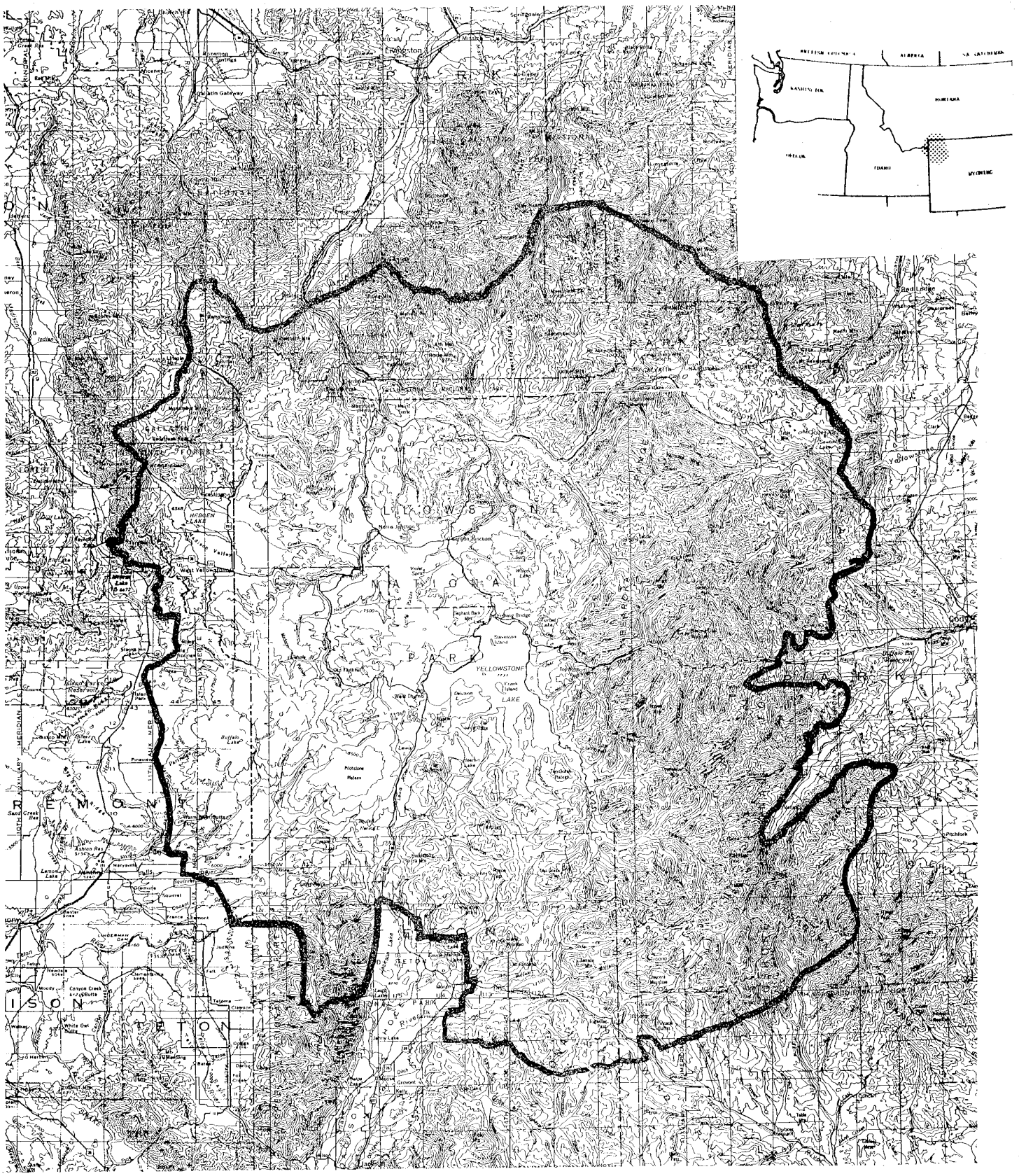
6. Manage populations and habitats.
   61. Manage populations and habitats prior to recovery on Federal lands.
   62. Manage populations and habitats prior to recovery on private and state lands.
   63. Manage populations and habitats after recovery on all lands.

7. Monitor public attitudes.
   71. Sample public viewpoint.
   72. Formulate and implement plans for public acceptance.

8. Implementation of the plan.

9. Revise appropriate federal and state regulations and initiate international cooperation.

FIGURE 3. YELLOWSTONE GRIZZLY BEAR ECOSYSTEM (OCCUPIED TERRITORY) 1979.



RECOVERY PLAN

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

Subgoal: Secure and maintain a viable, self-sustaining grizzly bear population in the Yellowstone Grizzly Bear Ecosystem (Figure 3)

Y1. State or establish a population goal in reference to present population conditions and limiting factors.

Y11. State or determine the level at which the grizzly bear population is considered to be viable and self-sustaining.

Y111. The grizzly bear population in the Yellowstone Grizzly Bear Ecosystem will be viable and self-sustaining when monitoring efforts indicate that recruitment, natality and mortality are at levels supporting a stable or increasing population. The population will be judged recovered (eligible for delisting) when it is determined to be viable at a population size equal to or greater than the population size documented by Craighead et al. They documented a population consisting of 229 bears based on a census efficiency of 77.3 percent, that was recomputed by Cowan (1975) to 301 bears based upon a census efficiency of 58.8 percent. Due to undetermined recruitment and natural mortality rates under free ranging conditions, the higher number is recommended. Due to annual variations in the environment, population characteristics will be judged on a running six year average. During the 1959-67 period, a self-sustaining population associated with a supplemental food source was documented by Craighead et al. (1974) and is represented by the following statistics:

Reproductive rate	0.651	(Craighead et al. 1974)
Females with cubs of the year	14.889	(av. pop. 177) (Craighead et al. 1974)
	19.2	(av. pop. 229) (extrapolated from Craighead et al. 1974)

Females with cubs of the year (cont'd)	25.2	(av. pop. 301) (extrapolated Craighead et al. 1974 and Cowan, 1975)
Cubs/Females	2.209	(Craighead et al. 1974)
Reproductive cycle	3.400	(Craighead et al. 1974)
Estimated total avg. annual mortality	33.2*	bears (Craighead et al. 1974
	RATE	
	18.65%	(Craighead et al. 1974)
	17.10%	(Shaffer 1978)
Avg. annual known mortality	18.889	bears (Craighead et al. 1974)

Y112. Re-evaluate population criteria (Y111) as new information becomes available.

Y12. Determine or state present population characteristics.

Y121. The present grizzly bear population in the Yellowstone Grizzly Bear Ecoysystem, which does not have a significant supplemental food source, is described by the following population characteristics computed as running 6-year averages (Blanchard and Knight 1980) [27]:

Reproductive rate	0.555**	(Knight et al. 1979)
Females with cubs of the year	12.000	(Knight et al. 1979) (av. pop. unspecified)

*1967 Mortality included an unusually high number of grizzly bears that were killed after it was advertised that 1967 would be the last year of hunting in Wyoming (Craighead, J. 1980 pers. com.)
**A higher rate of cub survival will lower the reproductive rate needed for a stable population (Blanchard and Knight 1980).

Cubs/female	1.900	(Knight et al. 1979)
Reproductive cycle	3.000 [3/]	(Knight et al. 1979)
Avg. annual known man-caused mortality	11.000	(Knight et al. 1979)

The statistics in Y121 are based on a small sample at this time. Continued research is needed to establish the parameters that describe a viable self-sustaining population existing without a significant supplementary food source.

Y122. Re-evaluate population data (Y121) as new information is made available.

Y13. Identify or state the man-related population limiting factors if present population characteristics are less than those judged necessary to sustain a viable population.

Y131. Identify or state sources of direct mortality

Y1311. Illegal hunting

Y13111. Poaching, vandalism, malicious killing

Y13112. Accidental losses resulting from mistaken identity by black bear hunters.

Y13113. Private citizen control by livestock operators, apiarists, outfitters, resort operators in protection of property.

Y1312. Accidental deaths

Y13121. Road kills (highway, train, etc.)

Y13122. Scientific error

Y1313. Control measures

Y13131. Agency (State, NPS or USFWS) control

Y131311. Livestock conflicts

Y131312. Other property damage

Y131313. Life threatening situations

Y13132. Private citizen control

Y131321. Self-defense

Y132. Identify or state activities which can indirectly limit grizzly bear populations through adverse habitat changes, human encroachment on grizzly bear habitat and displacement, grizzly/human conflicts, or adverse conflict resolution.

Y1321. Grazing operations

Y1322. Timber operations (including road construction)

Y1323. Mining, water development, and energy exploration/development

Y1324. Recreation operations

Y1325. Human development of conflicting enterprises, (subdivisions, dog kennels, fish farms, boneyards, garbage dumps, etc.)

Y1326. Cumulative impacts

Y2. Redress population limiting factors

Y21. Reduce the numbers of bears lost to the population through direct man-caused mortality.

Recommended annual man-induced grizzly bear mortality goal for expediting species recovery is zero. Since this mortality level will not likely be achieved, reaching the recovery goal will be expedited if all man-caused mortality does not exceed the currently documented man-caused mortality of 11 bears per year (Knight et al. 1979), calculated as a running 6-year average. This level of man-caused mortality is within the theoretical tolerance limits of 5 to 6% man-caused mortality suggested by Cowan (1972).

Y211. Illegal hunting

Y2111. Provide a concerted law enforcement effort by designating a specially trained law enforcement team coordinated by the U.S. Fish and Wildlife Service to minimize the illegal kill of grizzly bears. One or more persons representing the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, State of Montana, State of Wyoming and State of Idaho will be appointed. Each member will receive specialized training to work on illegal kills of grizzly bears. The

team will be trained initially by the Interagency Grizzly Bear Study Team (IAGBST) and other biologists in such matters as distribution, home ranges of identifiable bears, movements by season, mating habits, current location of radio-marked bears and other biological information that may be helpful to the team. Representatives from the Forest Service and Bureau of Land Management will be encouraged to attend in order to more ably assist in gathering field evidence.

All incidents of grizzly bear kills, suspected illegal activities, and rumors of kills will be communicated between the enforcement team, their respective agencies and the IAGBST on a daily basis or as often as is practical.

The Enforcement Team Leader will keep all members of the enforcement team and the IAGBST informed and will organize coordination meetings as needed.

Special emphasis will be directed at covert operations which may be operating commercially.

The Enforcement Team will operate through an interstate, interagency agreement under the direction of the U.S. Fish & Wildlife Service.

It is imperative that the group leader establish a line of communications and rapport with all field personnel, field office staff and local law enforcement agencies in order that he may be notified immediately on a violation or threat of a violation.

Public assistance will be solicted in reporting suspected or known illegal kills. Persons furnishing information which leads to a finding of civil violation or a conviction of a criminal violation of 50 CFR, Part 17.40 regarding grizzly bears, can be rewarded up to one half of the fine or civil penalty not to exceed $2,500.

States having toll free numbers for reporting violations or for information should publicize their numbers as a means of reporting grizzly problems and grizzly bear deaths.

Y2112. Reduce accidental losses resulting from mistaken identity by black bear hunters.

Y21121. The state conservation agencies will make information available to all black bear hunters to assist them in distinguishing between black and grizzly bears.

Y21122. State agencies will issue special warnings to black bear hunters using areas frequented by grizzly bears.

Y21123. Black bear hunting regulations will be modified as appropriate to reduce or eliminate areas of significant conflicts or time periods of conflict.

Y21124. The special enforcement team will investigate accidental grizzly bear kills and recommend prosecution when appropriate.

Y2113. Reduce accidental deaths from other causes

Y21131. All agencies will increase warning signs along highways and roads in high-use grizzly bear areas.

Y21132. All agencies will increase efforts to clean up carrion and other attractants along highways and other routes within occupied grizzly bear range. See "Guidelines" [4/] pages 15, 30 and 36.

Y21133. State and federal agencies will seek cooperation of railroad train crews regarding the reporting of all collisions resulting in death of large animals that could attract grizzly bears. Removal or burial of such animals will be arranged.

Y21134. Reduce losses due to mishandling of bears, e.g., an overdose of immobilizing drugs or by improper post-handling. Only ex-perienced personnel that are certified by a sponsoring unit having the required permits

and knowledgeable in the application of capture techniques, immobilizing drugs, transportation of drugged animals, scientific data collecting, etc. will handle grizzly bears. The safest effective drugs available will be used.

Y21135. Prepare detailed guidelines for trapping, immobilizing, transporting and handling grizzly bears.

Y21136. Agencies responsible for licensing, conducting, or in anyway overseeing rodent damage control programs, using toxic substances in occupied grizzly bear habitat, should use the most selective (but effective) rodenticide available, and use it in lowest effective dosage. Poison bait will only be used under the on-site supervision of a certified applicator. Disturbances on the treatment site should be created for a minimum of three nights following application of any rodenticide in order to discourage scavenging by grizzly bears. Poisoning within grizzly bear habitat should be delayed as long as possible into July to minimize the potential for grizzly bears to consume poisoned rodents or bait (O'Gara 1980 pers. com.).

Y2114. Agency control on federal lands will be in accordance with 50 CFR 17.40.

Y21141. For grizzly bears involved in livestock conflicts, animal damage control officers will follow the "Guidelines" pages 11, 27, 35 and 59-64 and other appropriate interagency agreements.

Y21142. All other agency control related to grizzly bears should be governed by "Guidelines" directions starting on page 59 and other interagency agreements.

Y2115. Private citizen control. The only legal citizen control of a grizzly bear is that related to self defense. The law enforcement team should carefully investigate every case of grizzly bear mortality alleged to be self defense.

Y2116. Agency control on state and private lands. Follow "Guidelines" direction, pages 61 and 62 related to management situation 2 and other procedures developed by the Fish and Wildlife Service and wildlife agencies in accordance with applicable federal or state laws and regulations.

Y212. Necessary removal of problem bears can be accomplished by a state licensed hunter supervised by a qualified employee of state conservation agencies. Sport hunting on national forest, BLM, state and private lands is recognized as a legitimate tool for managing grizzly bear populations once recovery has been achieved and for controlling nuisance grizzly bears. Species managers must develop regulations to reduce mortality of female grizzly bears.

Y213. The U.S. Fish and Wildlife Service will appoint a grizzly bear mortality coordinator to tabulate annual bear mortality for all grizzly bear ecosystems and assure that all cooperating agencies and the public have current mortality data. The coordinator will maintain key contacts with all agencies and keep detailed records of all conditions surrounding each grizzly bear death. A standard form, meeting the needs of all agencies will be prepared.

Y22. Reduce or eliminate activities identified in Y132 which indirectly limit grizzly bear populations through adverse habitat changes, human displacement of bears, grizzly/human conflicts or conflict resolutions adverse to conservation of grizzly bears.

Y221. Grazing operations

Y2211. On federal lands apply "Guidelines" to make grazing operations compatible with grizzly bear spacial and seasonal habitat requirements. Management direction is currently given in "Guidelines" pages 11, 27, 35 & 45.

Y2212. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate the intent of the "Guidelines" as described above (Y2211) as a cooperative extension effort.

Y222. Timber operations and fire management

Y2221. On federal lands apply "Guidelines" to make timber operations compatible with grizzly bear spacial and habitat requirements. Management direction is currently given in "Guidelines", pages 6, 21, 34 & 40.

Y2222. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate the intent of the "Guidelines" as described above (Y2221) as a cooperative extension effort.

Y223. Mining and energy operations

Y2231. On federal lands or lands where sub-surface rights are under federal jurisdiction apply "Guidelines" to make mining and energy operations compatible with grizzly bear spacial and habitat requirements. Management direction is currently given in "Guidelines", pages 17, 32, 38 & 48.

Y2232. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate the intent of the "Guidelines" as described above (Y2231) as a cooperative extension effort.

Y224. Recreation activities

Y2241. On federal lands apply "Guidelines" to make recreation activites compatible with grizzly bear spacial and habitat requirements. Management direction is currently given in "Guidelines", pages 14, 28, 36 & 46.

Y2242. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate the intent of the "Guidelines" as described above (Y2241) as a cooperative extension effect.

Y225. Human development. Land management agencies, state regulatory agencies, county commissioners and county zoning boards should give consideration to the needs of grizzly bears in any actions requiring their approval. When homes, summer homes, cabins, camps, farm operations, etc., with attendant dog kennels, pig farms, garbage dumps and boneyards are allowed to invade the habitat occupied by

grizzly bears, they will directly or indirectly, but effectively reduce the space and habitat necessary for the bears survival. For private lands not subject to the above restrictions, wildlife managers should give consideration to purchase, lease or easement if habitat components are necessary to survival of the species.

Y226. Monitor and determine the cumulative impact of past project actions. Determine the cumulative effects of all, or any combination, of the actions described above (Y221-Y225) that may adversely impact grizzly bears. Past adverse impacts on the bears, and their habitat, must be a major consideration in the evaluation of any new action (Jonkel 1979). New actions must be evaluated on a regional basis to avoid the cumulative effects of several well planned individual actions impacting bears from too many directions simultaneously. History records that at some point in time, probably associated with the degree of stress, grizzly bears no longer use certain portions of their former range. Therefore, each new action has the potential of being "the last straw," from the standpoint of the bear, and every effort must be made to evaluate each new action with respect to former and future actions.

Y23. Coordinate, monitor and report on activiites relating to redressing population limiting factors and monitor compliance with recovery plan.

Y3. Determine the habitat and space required for the achievement of the grizzly bear population goal.

Y31. State or determine occupied space and habitat where management considerations for grizzly bears are necessary. 57/

Y311. Identify or state occupied grizzly bear space and habitat by land ownership and administrative unit. Occupied space and habitat were delineated by workshop members participating in a grizzly bear recovery planning workshop December 6 and 7, 1979, Missoula, Montana (Fig 3 and Table 2). Present occupied habitat boundaries will be corrected as new data become available.

Y312. Identify or state Forest Service, Bureau of Land Management, state and National Park Service management stratifications within occupied space and habitat (See Table 2).

Y32. Compare agency management stratifications by administrative unit with occupied space and habitat delineations and identify areas where additional management stratification or management direction is necessary (See Table 2).

Y33. Correct data in Table 2 as new information is available.

Y34. Recommend critical habitat

Y4. Resolve differences between occupied space and habitat versus agency stratifications within occupied habitat (Table 2), and/or adjust presently delineated stratifications.

Assumptions:

The November 5, 1979 biological opinion of the Fish and Wildlife Service issued to the Forest Service is that "Implementation of the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area will promote the conservation of the grizzly bear." Regions 2 and 4 of the forest service have fully implemented the "Guidelines" including stratification of all occupied grizzly bear range in terms of appropriate management situations and managment direction. Forest Service Region 1 has implemented the "Guidelines" only to the extent that Management Situation 1 has been applied to "essential habitat" designated by USFS in 1977. The remainder of Region 1 occupied habitat is unstratified and without the interim management direction outlined in the "Guidelines." Forest Service Region 1 states they will address this subject through forest planning. The Fish and Wildlife Service, states of Montana, Wyoming and Idaho, and a majority of participants attending the grizzly bear recovery planning workshops agreed in principle with the "Guidelines"; specifically that occupied habitat and space should be stratified in terms of management direction that reflects the differing intensities and importance of grizzly bear use.

This plan recognizes that Management Situations 1, 2 and 3, which are most frequently applied, adequately provide for grizzly bear survival and recovery if fully applied with a commitment to recover the species. The plan specifically recognizes that areas designated as Management Situation 1 provide adequate and necessary conservation measures for grizzly bears, and also

recognizes that provisions are made for reclassification of other areas to Management Situaton 1 if use representing need is documented.

NOTE: Persons attending the workshops were not all in full agreement with acreages designated for occupied habitat, habitat stratification or areas for resolution. Numerous calls suggesting boundary changes were received during plan formulation, some with apparent justification and some for reasons unknown. Further, there appeared to be a variance in the interpretation of the Criteria for Grizzly Bear Critical Habitat Identification (USFS, 1975) used in the delineation of essential habitat, between forests and between forest districts; and, almost no data on state or private lands. Reconvening the workshops to review each suggested change seemed impractical. Therefore, the acreages presented will have to suffice for a beginning (see Footnote 5), the refinement of occupied habitat and habitat stratification is a plan element.

Y41. Areas for resolution and/or adjustment within the Shoshone National Forest which includes 9,000 acres of state and private land.

Y42. Areas for resolution and/or adjustment within the Targhee National Forest.

Y421. 7,025 acres of state and private land

Y422. 38,000 acres of MS2 to be re-evaluated for possible adjustment to MS1* Fish Creek area (most was originally in MS1 in 1977)

Y43. Areas for resolution and/or adjustment within the Bridger-Teton National Forest.

Y431. 3,820 acres of state and private land

Y432. 9,300 acres of MS2 to be re-evaluated for adjustment to MS1* Rosie's Ridge

Y44. Areas for resolution within the Gallatin National Forest

Y441. 176,000 acres of unstratified lands (forest, private and state) within the occupied space and habitat that are in need of management stratification and direction.**

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*Habitat components and sightings over last several years (Knight 1980 pers. com.).

**USFS lands are being stratified (4-8-81).

TABLE 2. OCCUPIED HABITAT, AGENCY MANAGEMENT STRATIFICATION WITHIN, AND DIFFERENCES WHICH REQUIRE RESOLUTION IN THE YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

MGMT. AGENCY	AREAS WITHIN OCCUPIED HABITAT*	ACRES WITH MGMT STRATIFICATION & GUIDELINES DELINEATED BY AGENCIES		DIFFERENCES	AREAS FOR RESOLUTION (ACRES WITHOUT MGMT. STRATIFICATION OR GUIDELINE DIRECTION)***
Shoshone National Forest	1,258,000	MS1	412,000		-0-
		MS2	819,600		-0-
		MS3	17,400		-0-
				9,000	9,000
Targhee National Forest	389,390	MS1	171,390		-0-
		MS2	217,000		-0-
		MS3	1,000		-0-
Bridger-Teton Nat'l Forest	734,100	MS1	665,500		-0-
		MS2	61,500		-0-
		MS3	7,100		-0-
Gallatin National Forest	522,000	MS1	346,001	176,000****	176,000****
Custer National Forest	32,000	MS1	-0-	-0-	-0-
	124,500	MS2	-0-	-0-	-0-
				2,000	2,000
Grand Teton Nat'l Park & John D. Rockefeller, Jr. Memorial Parkway	97,728	MS1	95,373	-0-	-0-
		MS2	-0-**		-0-
		MS3	2,355	-0-	-0-
Yellowstone National Park	2,221,773	MS1	2,221,773	-0-	-0-
Bureau of Land Management (Idaho)	2,800	MS1	-0-	-0-	-0-
		MS2	2,200	-0-	-0-
		MS3	-0-		-0-
Bureau of Land Management (MT)	600		-0-	600	600
Private Lands	54,845		-0-	54,845	54,845

* See Figure 1. ** MS2 areas exist south of occupied territory designated in map.
*** Management guidelines need to be developed for these areas. See job #4.
**** Presently being stratified.

Y442. Review 20,000 acres of area between Taylor Fork and Muddy Creek along the divide and including the Taylor-Hilgard Range for inclusion in occupied grizzly bear range in light of the comments regarding occupied habitat in the Buck Creek-Yellow Mules final environmental statement.

Y443. Re-evaluate 20,000 acres for possible inclusion in MS1 Horse Butte, Red Canyon and south of Taylor's Fork

Y444. 33,000 acres of state and private land

Y45. Areas for resolution within the Custer National Forest which include 2,000 acres of state and private land.

Y46. Areas for resolution within Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, none.

Y47. Areas for resolution within Yellowstone National Park, none.

Y48. Areas for resolution within lands administered by the Bureau of Land Management.

Y481. 2,800 acres of land within occupied space and habitat in Idaho that are in need of stratification and management direction relative to grizzly bears.

Y482. Unknown acres of land within occupied space and habitat in Montana that are in need of stratification and management direction relative to grizzly bears.

Y49. Approximately 55,000 acres of state and private land are within the occupied space and habitat of this grizzly bear ecosystem. These lands, both within or adjacent to USFS and BLM lands, are not stratified for grizzly bear management relating to direct grizzly mortality and grizzly/human conflicts potential. Agencies should encourage landowners to eliminate conditions related to problems. Management direction described in "Guidelines" would be appropriate in principle as solutions Long-range solutions include purchases, easements or leases, if warranted and other solutions are unavailable. All agencies should identify parcels representing actual or potential problems.

Y49A. Coordinate, monitor, and report activities related to resolving differences between occupied space and habitat and agency stratification and management direction and monitor compliance with recovery plan.

Y5. Monitor grizzly bear population and habitats.

Y51. Monitor grizzly bear population prior to recovery.

Y511. Develop and conduct an intensive monitoring system to measure the selected population parameters by using an appropriate experimental design with sufficient sampling effort to permit valid comparisons with the benchmark statistics in Y111.

Y512. Collate, analyze and compare current research data with with benchmark statistics to determine recovery progress and plan compliance. Coordinate population analysis to assure a common understanding of techniques used in on-going studies.

Y513. Standardize observation report forms and encourage all agencies to require field personnel to use them; develop procedures for verification of reports on grizzly bears and submit copies of all observations, reports of sightings, verifications and other relevant information to the Grizzly Bear Recovery Coordinator. He in turn will submit monthly reports to effected personnel and agencies. Report forms 4 and 5 found on pages 124-125 of the "Guidelines" are examples.

Y52. Monitor grizzly bear population following recovery.

Y521. Develop and conduct an extensive monitoring system to index one or more of the selected population parameters and to provide information on the geographical and ecological distribution. This should be a systematic sampling method to allow valid assessments of population trends by managers.

Y522. Standardize the monitoring procedures and reports and deposit all reports with the Grizzly Bear Recovery Coordinator, who will submit monthly reports to relevant agencies and personnel.

Y53. Monitor grizzly bear habitat prior to recovery.

Y531. Continue habitat surveys to refine current habitat delineations and habitat stratifications. Use a mapping scale appropriate for valid assessments of trends

(changes in quality, loss or gain) in habitat components. Standardize terminology (see BGP Special Report No. 41).

Y532. Within the context of current habitat delineations and stratification, develop a more refined grizzly bear habitat classification management system to determine more precisely the nature and extent of habitat.

Y5321. Refine classification and map habitat components, giving non-wilderness areas first priority.

Y5322. Establish a quality index for the extent of the habitat components in the ecosystem.

Y5323. Establish a benchmark of present habitat values to measure the cumulative effects of all actions over time that have impacted grizzly bear habitat.

Y5324. Monitor changes in grizzly bear use of habitat components under various types and degree of human use (i.e., logging, mineral or energy exploration/development, recreation, etc.).

Y5325. Report management activities used successfully to improve habitat.

Y54. Monitor grizzly bear habitat following recovery.

Y541. Inventory and map changes in extent of habitat components every 5 years.

Y542. Continue evaluation of present habitat changes to measure cumulative effects of all actions over time that have impacted grizzly bear habitat.

Y543. Coordinate and review agency action plans, report periodically on status of recommended action programs necessary for plan compliance and advise appropriate agencies on actions necessary to avoid relisting of the species.

Y6. Manage grizzly bear population and habitats.

Y61. Manage populations and habitats on Federal lands by applying management guidelines developed to maintain or enhance habitats, to make land use activities compatible with grizzly bears spacial and habitat requirements; to minimize the potential for human/bear conflicts.

Y611. Develop and refine procedures for relocating grizzly bears: Refine "Guidelines" relative to relocation of bears as needs dictate and research indicates.

Y6111. Develop and coordinate procedures to expedite the relocation of nuisance bears, review and update interagency agreements (NPS, FS, WG&F, IF&G, MFW&P, FWS) see pages 57-64 "Guidelines," make a determined effort to relocate bears within 24 hours and continue search for new release areas.

Y6112. Research and develop methods to rehabilitate problem bears and develop an aversive conditioning of the bear that will cause the bear to avoid repeating the behavioral pattern that led to the human/bear confrontation. The track record on relocated bears staying out of trouble is less than good. The learned behavior of the original experience that caused them to be a problem bear appears to persist; after several similar encounters the grizzly bear is usually dispatched.

Y6113. Develop and coordinate interagency agreements and procedures for the introduction of grizzly bears into areas of former habitat or to bolster low level populations outside the YGBE. Note: Strong leadership will be necessary to reach agreements between all state and federal agencies and a thorough investigation conducted prior to transplanting bears to areas of low populations or for the introduction of new populations. Using nuisance bears for this purpose should be discouraged unless rehabilitation training is proven to be successful.

Y612. Control or remove documented nuisance grizzly bears on all lands within recommended mortality levels per criteria and steps on pp. 59-62 of the Guidelines (see Y21)*.

Y62. Manage populations and habitats on private and state lands by developing and applying management guidelines prior to recovery that maintain or enhance habitats and recommend land use activities compatible with grizzly bear requirements for space and habitat; minimize potential for human/bear conflicts. See Y611 and Y612.

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*Removal of nuisance bears by a state licensed hunter, supervised by a qualified representative of a state wildlife agency, is an acceptable option.

Y63. Continue to manage habitats and populations on all lands upon recovery of the grizzly bear population in the ecosystem. Refine control methods, establish harvest quotas and develop a coordinated system for sport hunting of grizzly bears on non-park lands.

Y631. Intensify management activities and monitoring of grizzly bears in areas of sheep allotments to reduce losses of both bears and sheep.

Y632. Establish baseline data on grizzly bears for at least two years prior to issuance of any permit for major construction activities that may create a disturbance for grizzly bears that may cause them to abandon the area.

Y633. Monitor radio-tagged grizzly bears in the areas where special permits or unusual activities that may impact grizzly bears are being conducted.

Y7. Develop and initiate appropriate information and education programs.

Reducing man-induced mortalities is a major factor in effecting the recovery of the grizzly bear. Therefore, it is crucial to the recovery effort that people understand reasons for actions in order to have a favorable attitude toward the bear. Private conservation organizations interested in the recovery of grizzly bears could be of assistance if they would disseminate appropriate information in their publications and news releases.

Y71. Sample, quantify and evaluate public attitudes toward grizzly bears, grizzly habitat protection and maintenance, land use restrictions, mitigating measures, relocation of bears, hunting, nuisance bear control actions and habitat acquisition or easement.

Y711. Sample and evaluate attitudes of people residing in or adjacent to grizzly bear management areas.

Y712. Sample and evaluate attitudes of people geographically removed from grizzly bear management areas.

Y72. Formulate ways to improve public attitudes and acceptance of habitat maintenance and protection, research and management. Agencies having the authority and responsibility for control actions will institute and carry out information and education programs to inform citizens having problems with grizzly bears of the appropriate procedures and contacts for assistance.

Y73. Develop means to extend public attitudes to actions plans and/or funding.

Y8. Implementation of plan by jobs, priority and cost. To facilitate implementation the Fish and Wildlife Service will appoint a Grizzly Bear Recovery Coordinator to collate all relevant information on grizzly bears, coordinate and stimulate compliance and action to implement recovery plan. He will submit progress reports and conduct workshops and meetings as necessary. This is a particularly important position that will provide a central focal point for the accumulation, exchange, and dissemination of information, and a central point for multi-agency coordination that will greatly aid in the judicious use of resources and materially enhance the recovery effort. The Fish and Wildlife Service should expeditiously establish this position.

Y9. Revise appropriate federal and state regulations to reflect current situations and facilitate implementation of actions necessary for species recovery.

YGBE FOOTNOTES

1/ It is difficult to determine the total population of a secretive, wide-ranging species such as the grizzly bear which occupies rugged, wilderness areas. Appropriate and monitorable population parameters which indicate population status can serve as an alternative to a total population figure. The parameters selected as benchmark indicators are based upon Craighead et al. (1974) which represent:

(1) the Yellowstone grizzly bear population from 1959-67; (2) a census efficiency computed to be 77.3%*; and, (3) a population which was increasing at a computed rate up to 2.4% annually with an age structure of 18.6% cubs, 13% yearlings, 24.9% subadults, 43.7% adults (N=177) (Craighead et al., 1974).

The following assumptions relate to the population parameters, habitat and space judged necessary to grizzly bears:

a. Craighead et al. (1974) represents the only long-term source of data on Yellowstone grizzly bears that contains quantified population parameters relating to a population level estimated from a calibrated sample.

b. The estimated population occurring between 1959-67 is assumed to represent a population that would not require the protection of ESA; i.e., a recovered population (see pp. 2 of Introduction).

c. The space and habitat occupied at the present time (Fig 3), under appropriate management, is adequate to serve the needs of a population indicated by the above statistics.

d. The population parameters for comparison will be computed as a running 6-year average to assure a real population response up to a recovery level, rather than simply population stability at a lesser level that may be inadequate.

e. Current distribution and behavioral patterns of grizzly bears are probably fundamentally different from those of the 1959-67 period. However, there is insufficient evidence in grizzly bear literature to assume current or future population characteristics could not resemble those of the earlier population. Beecham (1980) found a strong

*58.8% census efficiency computed by Cowan et al. (1975 pers. com. to Cole).

correlation between nutrition and productivity of two Idaho black bear populations; any major vegetative change or removal of arificial food sources would affect growth rates and therefore the reproductive potential of the population. Intensive monitoring will document the extent of difference or similarity.

Blanchard and Knight (1980) qualify the present population indicators as follows:

2/ "Accurate estimates of the number of grizzly bears inhabiting the YGBE have eluded us for several reasons. The study areas covers over 7700 square miles (20,000 km^2) of rugged isolated terrain which is 70 to 75% timber covered. Even our most optimistic estimate of 350 bear places the density of grizzly bears at only one per 20 square miles (50 km^2). The most pessimistic estimate of 84 or less (Craighead et al. 1974) places the density at one bear per 95 square miles (245 km^2). Given these natural low densities, nocturnal habits of Yellowstone grizzly bears and the physiography of the study area, accurate estimation of the entire population is difficult." Present population indicators in the YGBE are based on data from the Blanchard and Knight (1980) (1) for the 1974 to 1979 period; (2) an unknown census efficiency, "---although observability of instrumented bears indicates that it is significantly less then 77%", (Blanchard and Knight 1980); (3) a population of unknown stability with an age structure of 6.5% cubs, 16% yearlings, 37% subadults, 40.3% adults, (N=62), (Blanchard and Knight 1980).

3/ The reproductive cycle of 3.0 from Knight et al. (1979) is believed to be from an insufficient sample size (N = 5). Consequently, the reproductive cycle of 3.4 (N=68) (Craighead et al. 1974) was used to compute the current reproductive rate.

4/ Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area (1979). U.S. Forest Service and National Park Service personnel, with the support of the state wildlife agencies of Montana, Wyoming, and Idaho, cooperatively developed guidelines for grizzly protection and management in the national forests and national parks of the Greater Yellowstone Area. The "Guidelines" received a favorable biological opinion from the U.S. Fish and Wildlife Service following a request for consultation by the U.S. Forest Service. Recognizing the "Guidelines" were written with terms primarily applicable to the Forest Service and Park Service, we believe the concept is sound for other federal agencies, state agencies and for lands administered by private enterprise to minimize human/grizzly conflicts causing adverse impacts to the bear or its habitat.

5/ The occupied space and habitat for each grizzly bear ecosystem was estimated by qualified personnel in attendance at each

of six workshops. The precision of the designation of occupied habitat was a function of the amount of formal research conducted in the respective areas and the degree of familiarity various qualified personnel had with specific areas or regions. Species occurrence and presence of habitat components were major considerations. Consideration was given to what is biologically and ecologically practical and feasible for grizzly bears. Delineated areas are those where management considerations for grizzly bears are deemed necessary. The boundaries include areas which have different relative values to grizzly bears. Some areas may be necessary to species needs and survival, while others may be used but not needed. Boundaries will be adjusted as new data become available.

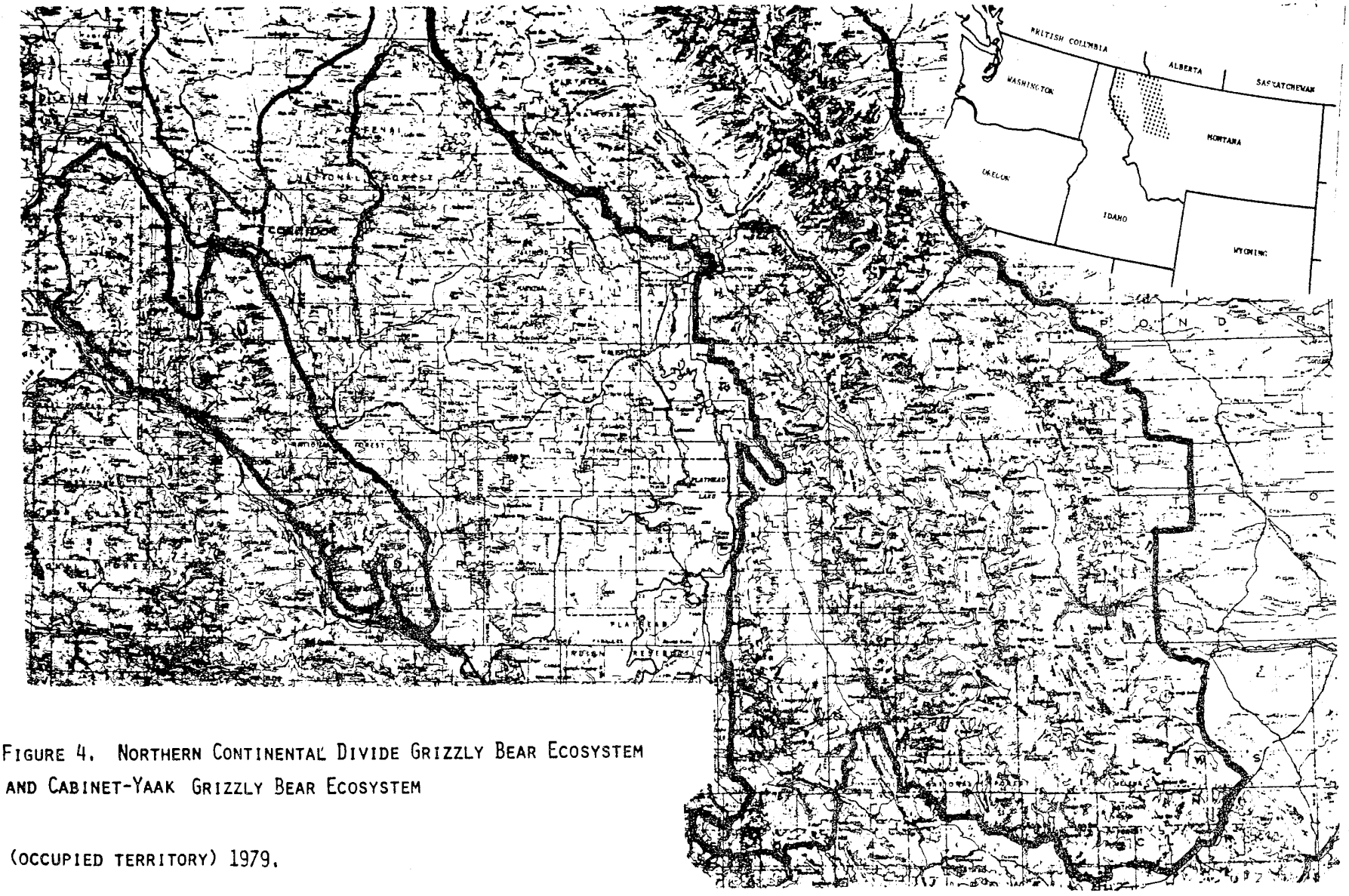

FIGURE 4. NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM AND CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

(OCCUPIED TERRITORY) 1979.

RECOVERY PLAN

NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

Subgoal: Secure and/or maintain a viable, self-sustaining grizzly bear population in the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE) (Fig 4)

N1. Establish a population goal in reference to the present population conditions and limiting factors.

The grizzly population parameters for the NCDGBE are not as well documented as those for the Yellowstone Grizzly Bear Ecosystem. However, Martinka has population data for Glacier National Park from 1967 through 1976. Based on population parameters computed for a 290 square mile census area, and an assumed census efficiency of 100%, a stable population at K (carrying capacity) is presumed (Martinka 1980 pers. com.). From a density of 1 bear per 8.2 square miles in the study area, Martinka has extrapolated these data to a total average Park population of 201 grizzly bears during the study period. Natality and immigration were assumed to equal mortality and emigration. Thus, the average annual mortality rate is computed to be 17.8% (Martinka 1974).

An age structure of 17.0% cubs, 18.5% yearlings*, and 64.5% subadults and adults is indicated from these data. When consideration is given to the difference in study conditions, and an assumed reduction in cub and subadult mortality and breeding failures on a dispersed population, the age structure for the GNP population is not significantly different from that of the more intensively studied 1959-67 population in the YGBE. That population was 18% cubs, 13% yearlings and 68.6% subadults and adults (Craighead et al. 1974).

The data indicated that an average of 10% of the total Park population were females with cubs in any given year, and that there were an equal number of females with yearlings. In addition, 10% (or more) are assumed to be breeding females each year at 4.5 years of age and older. This assumes that a minimum of 60 adult female grizzly bears are present in the Glacier National Park population. Shaffer

*Includes an undetermined number of litters with young of age two or older (Martinka 1980 pers. com.).

(1978) computed that 32.07% of the total numbers of females over 4.5 years of age in the Yellowstone population were productive in any given year. Therefore, 62-64 females of breeding age may be a more accurate estimate for the Glacier National Park population. The GNP data are used as a benchmark in determining a population goal for the entire NCDGBE.

N11. State or determine the level at which the grizzly bear population is considered to be viable and self-sustaining.

N111. The grizzly bear population in the NCDGBE will be viable and self-sustaining when monitoring efforts indicate that recruitment, natality, and mortality are at levels supporting a stable or increasing population. The population will be judged recovered (eligible for delisting) when it is determined to be viable at a population size of 440-680 bears (current estimated levels) or above and/or monitoring efforts document the following statistics or their biological equivalents computed as a running six year average:

Reproductive rate	0.593	(Martinka 1974a)
Females with cubs of the year	56.0	(Martinka 1974a) (10% of total population)
Cubs/females	1.78	(Martinka 1974a)
Reproductive cycle	3.0 years	(Martinka 1980 Pers. comm.)
Avg. annual known man-caused mortality	25.0 bears	Legal limit
Avg. annual total mortality as % of total population	18.65	(Craighead et al. 1974)
	17.10	(Shaffer 1978)
	17.80	(Martinka 1974a)

*Population estimates varied from 440 to 680 bears and were extrapolated from known densities in five study areas and knowledge of the extent of similar habitat within the 5.7 million acres of occupied habitat.1_/ (Jonkel, Servheen, Craighead, J., 1980 all pers. com.). The mean (560) was used to establish a goal.

N112. Re-evaluate population criteria (N111) as new information becomes available.

N12. Determine or state present population characteristics.

N121. The grizzly bear population in the Northern Continental Divide Ecosystem can currently be described in terms of the following statistics based on best estimates:

Reproductive rate	0.524 to 0.676	(Cub/female ratio below divided by repro. cycle)
Females with cubs of the year - low est.	38.0 [2/]	(Servheen (1980)
high est.	58.0 [2/]	(Servheen 1980)
Cubs/female	1.78	(Martinka 1974)
	2.3	(Servheen 1980 pers. comm.)
Reproductive cycle:	3.4	(Craighead et al. 1974)
Avg. annual known man-caused mortality	18.2*	(Greer 1979 pers. com.)

For further reference on population parameters see pages at end of this chapter and appendix A.

N13. Identify or state the man-related population limiting factors if present population characteristics are less than those judged necessary to sustain a viable population.

N31. Identify or state source of direct mortality.

N1311. Hunting

N13111. Illegal hunting

N131111. Poaching, vandalism, malicious killing

N131112. Accidntal losses resulting from mistaken identity by black bear hunters.

*9.4 deaths from hunting and 8.8 deaths from control actions and illegal kills (Greer 1975-79).

N131113. Private citizens, control by livestock operators, apiarists, outfitters and resort operators in protection of property.

N13112. Legal hunting. Losses in the female segment

N1312. Accidental deaths

N13121. Road kills (highway, trains, etc.)

N13122. Scientific errors

N1313. Control measures

N13131. Agency (State, NPS, BIA, or USFWS) control

N131311. Livestock conflicts

N131312. Other property damage

N131313. Life threatening situations

N13132. Private citizen control--self-defense

N132. Identify or state activites which can indirectly limit grizzly bear population through adverse habitat changes, human encroachment on grizzly bear habitat, grizzly/human conflicts or adverse conflict resolution.

N1321. Grazing, bee keeping operations, etc.

N1322. Timber operations (including road construction)

N1323. Mining, water impoundments and energy exploration/development

N1324. Recreation operations

N1325. Human development of conflicting enterprises; subdivisions dog kennels, pig farms, fish farms, boneyards, garbage dumps, etc.

N1326. Cumulative impacts.

N2. Redress population limiting factors

N21. Reduce the numbers of female grizzly bears lost to the population through direct man-caused mortality.

The recommended annual man-caused female mortality goal for expediting species recovery is zero. Since this zero mortality goal will not likely be achieved, recovery is dependent upon reduced man-caused mortality of females. The Recovery Plan Group recommends that man-caused mortality be reduced to less than 9 females per year within occupied habitat (See Fig 4) to expedite recovery. (Average mortality for 1967 to 1979 was 9 females per year (Greer 1979 pers. com.).

N211. Hunting

N2111. Illegal hunting

N21111. Develop a specially trained law enforcement team coordinated by the U.S. Fish and Wildlife Service to minimize the illegal kill of grizzly bears. One or more persons representing the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, State of Montana and enforcement personnel from the Blackfeet and Flathead Indian reservations will be appointed. Each member will receive specialized training to work on illegal kills of grizzly bears. The team would be trained initially by personnel of the Border Grizzly Project (BGP) in bear biology, home ranges of identifiable bears, current locations of radio-marked bears, and any other biological information that would be helpful to the team. All incidents of grizzly bear kills, suspected illegal activities, and rumors would be communicated between the enforcement team, their respective agencies and the BGP on a daily basis or as often as is practical. Representatives from the forest service and Bureau of Land Management will be encouraged to attend in order to more ably assist in gathering field evidence.

The Enforcement Team Leader would keep all members of the Enforcement Team and the BGP informed and will organize coordinaion meetings as needed. Special emphasis would be directed at covert operations which may be conducted commercially. It is imperative that the Group Leader establish a line of

communication and a rapport with all field personnel, field office staff, and local law enforcement agencies in order that he may be notified quickly in case of a violation, threat of a violation, or to assist in preventing a violation.

Public assistance will be solicited in reporting suspected or known illegal kills. Persons furnishing information which leads to a finding of civil violation or a conviction of a criminal violation of 50 CFR, Part 17.40 regarding grizzly bears, can be rewarded up to one-half of the fine not to exceed $2,500.

States having toll free numbers for reporting violations or for information should publicize their number as a means of reporting grizzly bear problems and grizzly bear deaths.

The enforcement team will operate through an interstate, interagency agreement under the direction of the U.S. Fish and Wildlife Service.

N21112. State conservation agencies will make information available to all black bear hunters to assist them in distinguishing between black and grizzly bears.

N21113. The special enforcement team will investigate accidental grizzly bear kills and recommend prosecution when appropriate.

N2112. Legal hunting

N21121. State agencies will issue special warnings to black bear hunters using areas frequented by grizzly bears.

N21122. Purposeful hunting losses of females will be reduced.

Examine the current grizzly bear hunting program annually in terms of its impacts on achieving the population goal

and develop alternatives which assure compatability between sport hunting and goal attainment. The alternatives could include regulations which (1) reduce mortality in the female segment by prohibiting the shooting of bears in groups of two or more (only 33% of the adult females would be vulnerable), or consider spring hunting when females are less vulnerable; (2) spread the hunter density by use of special permits; (3) set quota on man induced female mortality; and, (4) eliminate the hunting of grizzly bears.

N2113. Reduce accidental deaths from other causes.

N21131. All agencies will increase warning signs along highways and roads in high grizzly bear use areas.

N21132. All agencies will increase efforts to clean up carrion and other attractants along highways and roads under their jurisdiction. Suggested methods to address this problem can be found in "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area: 3/ (December, 1979, pp. 15, 30 and 36). 3/ (See Footnote 4 YGBE)

N21133. State and federal agencies will seek cooperation of railroad crews in reporting all collisions resulting in deaths of large animals that could attract grizzly bears. Removal or distribution of such animals will be arranged.

N21134. Agencies responsible for licensing, conducting, or in anyway overseeing rodent damage control programs using toxic substances in occupied grizzly bear habitat should use the most selective (but effective) rodenticide available and use it in the lowest effective dosage. Poison bait will only be used under the on-site supervision of a certified applicator. Disturbances on the treatment site should be created for a minimum of three nights following application of any rodenticide in order to discourage scavenging by grizzly bears. Poisoning

within grizzly bear habitat should be delayed as long as possible into July to minimize the potential for grizzly bears to consume poisoned rodents or bait (O'Gara 1980 pers. com.).

N21135. Reduce losses due to mishandling of bears, overdoses of immobilizing drugs, or improper post-handling care. Only experienced personnel that are working under an Endangered Species Act permit and are certified by a sponsoring unit as knowledgeable in the application of capture techniques, immobilizing drugs, transportation of drugged animals, scientific data collecting, etc. will handle grizzly bears. The safest most effective drugs available will be used.

N21136. Prepare detailed guidelines for trapping, immobilizing, transporting, and handling grizzly bears.

N2114. Agency control on federal lands will be in accordance with 50 CFR, 17.40.

N21141. Animal damage control officers or agency personnel will take actions similar to those found in the "Guidelines" pages 11, 27, 35 and 59-64, and will follow appropriate interagency agreements when controlling grizzly bears involved in livestock conflicts.

N21142. All other agency control related to grizzly bears should be guided by the "Guidelines" directions starting on page 59 and other appropriate interagency agreements.

N2115. Control by private citizens. The only legal citizen control of a grizzly bear is that related to self defense. The law enforcement team should carefully investigate each case of grizzly bear mortality alleged to be self defense.

N2116. Agency control on private and state lands. Follow principle described in the "Guidelines" procedures, pages 61 and 62 related to Management Situation 2, or other procedures developed by the FWS, MFWP and BIA/Tribes in accordance with federal and state laws and regulations.

N212. The Fish and Wildlife Service will appoint a Grizzly Bear Mortality Coordinator to tabulate annual bear mortality for all grizzly bear ecosystems and assure that all cooperating agencies and the public have current mortality data. The coordinator will maintain key contacts with all agencies and keep detailed records of all conditions surrounding each grizzly bear death. A standard form meeting the needs of all agencies will be prepared.

N22. Reduce or eliminate activites identified in N132 which indirectly limit grizzly bear populations through adverse habitat changes, human displacement of grizzly bears, changes in bear behavior induced by human intrusion, adverse grizzly/human conflict or adverse conflict resolution.

N221. Grazing, bee keeping operations, etc.

N2211. Develop and apply systematic management guidelines on federal lands to make grazing, bee keeping, etc. operations compatible with grizzly bear special, and seasonal habitat requirements. Management direction is currently described in "Guidelines," pages 11, 27, 35 & 45.

N2212. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of the "Guidelines" as described in above (N2211) as a cooperative extension effort.

N222. Timber operations (including road construction, reforestation, etc.)

N2221. Develop and apply systematic management guidelines on Federal lands to make timber operations compatible with grizzly bear spacial and habitat requirements. Management direction is currently described in "Guidelines," pages 17, 32, 34 & 40.

N2222. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (N221) as a cooperative extension effort.

N223. Mining and energy operations

N2231. Develop and apply systematic management guidelines on Federal lands to make water development and mining and energy operations compatible with grizzly bear spacial and habitat requirements. Management direction is currently described in "Guidelines," pages 17, 32, 38 & 48.

N2232. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (N2231) as a cooperative extension effort.

N224. Recreation activities

N2241. Develop and apply systematic management guidelines on Federal lands to make recreation operations compatible with grizzly bear spacial and habitat requirements. Management direction is currently described in "Guidelines," pages 14, 28, 36 and 46 and in the Glacier Bear Management Plan.

N2242. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (N2241) as a cooperative extension effort.

N225. Human development. Land management agencies, state agencies, county commissioners and county zoning boards responsible for regulating homes, summer homes, cabins, camps, farm operations, etc., that may have attendant dog kennels, pig or goat farms, garbage dumps, and boneyards, should give consideration to the needs of grizzly bears in any actions requiring their approval when these activities invade the occupied habitat of the grizzly bear. For private lands not subject to the above restrictions, wildlife managers should give consideration to purchase, lease, or easement if habitat components are necessary to survival of the species and other solutions are unavailable.

N226. Monitor and determine the cumulative impact of past project actions. Determine the cumulative effects of all, or any combination, of the actions described above (N221-N225) that may adversely impact grizzly bears at a multiple or amplified level. Past adverse impacts on

the bears and their habitat must be a major consideration in the evaluation of each new action (Jonkel 1979). New actions must be evaluated on a regional basis to avoid the cumulative effects of several well planned individual actions impacting bears from too many directions simultaneously. History records that at some point in time, probably associated with the degree of stress, grizzly bears no longer use certain portions of their former range. Therefore, each new action has the potential of being "the last straw," from the standpoint of the bear, and every effort must be made to evaluate each new action with respect to former actions and future actions.

N23. Coordinate, monitor and report on activities relating to redressing population limiting factors and monitor compliance with recovery plan.

N3. Determine the habitat and space appropriate to the achievement of the grizzly bear population goal.

N31. State or determine occupied space and habitat where management considerations for grizzly bears are necessary. 4/

N311. Identify or state occupied grizzly space and habitat by land ownership and administrative unit.

N3111. Occupied space and habitat were delineated by workshop members participating in a grizzly bear recovery planning workshop February 26 and 27, 1979, Missoula, Montana (Fig 4 and Table 3).

N3112. Occupied habitat boundaries will be corrected as new data become available.

N312. Identify or state Forest Service, Bureau of Land Management, state lands and National Park Service management stratifications within occupied space and habitat (see Table 3.)

N32. Compare agency management stratifications by administrative unit with occupied space and habitat delineations, and identify areas where additional management stratifications or management direction is necessary (see Table 3).

N33. Correct data in Table 3 as new information becomes available.

N34. Recommend critical habitat.

N35. Identify travel corridors connecting islands of habitat or grizzly bear ecosystems.

N4. Resolve differences between occupied space and habitat and agency stratifications within occupied habitat (Table 3), and/or adjust presently delineated stratifications.

ASSUMPTIONS:

A majority of the lands within the Yellowstone Grizzly Bear Ecosystem have specific management direction through stratification as per the "Guidelines." All of the federally controlled lands in the NCDGBE (or elsewhere) are under the general management direction per requirements of the Endangered Species Act. In addition, the forest service lands have general management direction spelled out in the National Forest Management Act (NFMA), Forest Service Manual (FSM) Chapter 2670, and various Region One Manual Supplements. BLM lands have general management direction in the Federal Land Policy and Management Act (FLPMA) of 1976 (PL94-579). However, federal lands in the NCDGBE currently do not have interim guidelines relative to grizzly bear management of specific land areas as were developed for the YGBE.

The forest service intends to incorporate such direction for grizzly bear habitat management in each Forest Plan (due in 1983) as per direction in NFMA and FSM 2672. BLM will incorporate grizzly bear habitat management in their Resource Management Plan (due in 1983). The National Park Service is currently considering application of the "Yellowstone Guidelines" stratification system to Glacier National Park. The Flathead Tribal Council is currently considering a management plan including stratification that has been proposed by their biologists. It is not known what is currently being contemplated relative to future management direction on BLM or Blackfeet Indian Reservation lands.

Stratification, with attendant management direction, reflects differing intensities and importance of grizzly bear use. Management direction for each stratified area must provide adequate conservation measures to assure that the continued existence of the grizzly bear is not jeapardized. A "bear refuge" is not implied, but rather directions to managers on "how" to make an action compatible with bear management objectives rather than "what" is to be done. In addition, guidelines for stratification must recognize that reclassification upwards will be necessary if documented evidence supports that a specific area is vital to the survival of the species, or downward if it is determined to be relative unimportant.

The development of interim management direction and/or guidelines specific to grizzly bear management prior to 1983 (USFS) and for all other lands is recommended to expedite recovery.

N41. Areas for resolution and/or adjustment within the Lewis and Clark National Forest.

N411. 475,836* acres of stratified lands within occupied space and habitat that are in need of management direction.

N412. 304,064 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly bear use.

N413. 5,300 acres of private lands within the forest that are in need of stratification and management direction.

N42. Areas for resolution and/or adjustment within the Blackfeet Indian Reservation which include 138,000 acres of private lands and tribal and allotted lands are in need of stratification relative to grizzly bear use and need and management direction.

N43. Areas for resolution and/or adjustment within the Helena National Forest.

N431. 70,925* acres of stratified lands within occupied space and habitat that are in need of management direction.

N432. 103,148 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly use.

N433. 6,958 acres of private lands within the forest that are in need of stratification and management direction.

N434. 615 acres of state lands within the forest that are in need of stratification and management direction.

N44. Areas for resolution and/or adjustment within the Lolo National Forest.

N441. 146,942* acres of stratified lands within occupied space and habitat that are in need of management direction.

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*Essential habitat (1977) USFS.

N442. 87,087 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly bear use.

N443. 18,974 acres of private lands within the forest that are in need of stratification and management direction. Note: 800 acres are within USFS essential habitat (1977)

N45. Areas for resolution and/or adjustment within the Flathead National Forest.

N451. 1,667,100* acres of stratified lands within occupied space and habitat that are in need of management direction.

N452. 388,548 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly bear use.

N453. 161,872 acres of private lands within the forest that are in need of stratification and management direction.

N454. 18,737 acres of state lands within the forest that are in need of stratification and management direction.

N455. 38,400 acres of state forest lands (Swan State Forest) within occupied space and habitat in need stratification relative to grizzly bear use and needs and are in need of management direction (outside Flathead National Forest).

N46. Areas for resolution and/or adjustment within the Kootenai National Forest.

N461. 121,472* acres of stratified lands within occupied space and habitat that are in need of management direction.

N462. 4,047 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly bear use.

N463. 15,324 acres of state and private lands within the Kootenai National Forest east of Highway 93 that are in need of stratification and management direction relative to grizzly bear use.

*Essential habitat (1977) USFS.

N47. Areas for resolution and/or adjustment within the Flathead Indian Reservation.

N471. 223,511 acres of tribal and allotted lands that have been stratified by relative use and habitat components of grizzly bears are in need of management direction. Note: Management plan has been formulated and is pending approval of the Tribal Council.

N472. 20,910 acres of private lands within the reservation have been stratified relative to grizzly bear use but lack management direction.

N473. 9,510 acres of state lands within the occupied range of a grizzly bear that are in need of management direction.

N48. Areas for resolution and/or adjustments within Glacier National Park.

N481. 1,013,120 acres of occupied space and habitat that are in need of stratification and management direction relative to grizzly bear use.

N482. 713 acres of private lands that may require additional management direction.

N49. Areas for resolution and/or adjustments within Bureau of Land Management lands which includes 24,240 acres of BLM lands that are in need of stratification and management direction relative to grizzly bear use.

N49A. Areas for resolution and/or adjustment within private and State lands which includes 230,000 acres of private lands and 113,500 acres of State lands situated outside of National Forests, BLM, Glacier National Park or indian reservation boundaries, but within occupied territory that need to be stratified for relative grizzly bears use and attendant management direction developed.

Identify land parcels with actual or potential problems for grizzly bears.

N49B. Review all areas (federal, state, and private) following stratification and assignment of management direction to resolve differences between classifications made by land managers and recommendations made by research and wildlife managers; e.g., areas in Badger Creek, Montana Creek and Red Meadow Creek were not included in the

TABLE 3. OCCUPIED HABITAT, AGENCY MANAGEMENT STRATIFICATION WITHIN, AND DIFFERENCES IN NEED OF STRATIFICATION AND MANAGEMENT DIRECTION IN THE NCDGBE

MGMT. AGENCY	ACRES WITHIN OCCUPIED HABITAT	ACRES STRATIFIED BY GRIZZLY USE	ACRES WITHIN OCCUPIED HABITAT WITHOUT STRATIFICATION	ACRES IN NEED OF STRATIFICATION RELATIVE TO GRIZZLY USE	ACRES IN NEED OF MGMT. DIRECTION OR GUIDELINES SPECIFIC TO GRIZZLY USE
Blackfeet Indian Reservation	138,000 acres*	-0-	138,000 acres	138,000 acres	138,000 acres
Lewis & Clark Natl. Forest	779,900	475,836	304,064	304,064	779,900
Private land within	5,300	-0-	5,300	5,300	5,300
Helena Natl. Forest	174,073	70,925	103,148	103,148	174,073
Private lands within	6,958	-0- (39)	6,919	6,919	6,958
State lands within	615	-0-	615	615	615
Lolo Natl. Forest	234,029	146,942	87,087	87,087	234,029
Private lands within	18,974	-0- (800)	18,174	18,174	18,974
State lands within	Unknown				
Flathead Natl. Forest	2,055,648	1,667,100	388,548	388,548	2,055,648
Private Lands Within	161,872	-0-	unk	unk	161,872
State Lands Within	18,737	-0-	unk	unk	18,737
St. land**	38,400*	-0-	38,400	38,400	38,400

TABLE 3. CONTINUED

MGMT. AGENCY	ACRES WITHIN OCCUPIED HABITAT	ACRES STRATIFIED BY GRIZZLY USE	ACRES WITHIN OCCUPIED HABITAT WITHOUT STRATIFICATION	ACRES IN NEED OF STRATIFICATION RELATIVE TO GRIZZLY USE	ACRES IN NEED OF MGMT. DIRECTION OR GUIDELINES SPECIFIC TO GRIZZLY USE
Kootenai Natl. Forest	125,519	121,472	4,047	4,047	125,519
St & Private	15,324	-0-	15,324	15,324	15,324
Flathead Indian Reservation	253,931	253,931	-0-	-0-	253,931
Tribal & Alloted Lands	223,511	223,511	-0-	-0-	223,511***
Private Lands Within	29,910	20,910	-0-	-0-	20,910
State Lands Within	9,510	9,510	-0-	-0-	9,510
Glacier Natl. Park	1,013,120		1,013,120	1,013,120	1,013,120****
Private Lands Within	713	-0-	713	713	713
State lands within occupied range outside boundaries above	113,580*	-0-	113,580	113,580	113,580
Bureau of Land Management	24,240	-0-	24,240	24,240	24,240
Private lands within occupied range outside boundaries above	230,000*	-0-	230,000	230,000	230,000

* Estimated
** Swan River State Forest
*** Management Plan submitted to Tribal Council
**** GNP is operating under a Park-wide Management Plan

1977 Forest Service designation of essential habitat. Many wildlife managers and researchers believe these plus other areas belong in stratification and management direction designation equal to essential habitat or MS1.

Note: Stratification of habitat for relative use implies that the management direction will relate to direct grizzly bear mortality, indirect (habitat related) mortality and human/bear conflict potential. Private lands within and outside Federal agency administrative boundaries are frequently high risk areas for bears and often complicate agency management direction. Landholders should be encouraged by agency and county personnel to eliminate condi-tions that may create human/grizzly conflicts. Manage- ment direction described in the "Yellowstone Guide-lines" would be appropriate to follow in principle for problem solution. Long-range solutions may include closure, easements, leases or purchase of problem areas if warranted, and if other satisfactory solutions are unavailable.

N5. Monitor grizzly bear population and habitats.

N51. Monitor grizzly bear population prior to recovery.

N511. Develop and conduct an intensive monitoring system to measure the selected population parameters by using an appropriate experimental design with sufficient sampling effort to permit valid comparisons with the benchmark statistics in N111.

N512. Collate, analyze, and compare current research data data with benchmark statistics to determine recovery progress and plan compliance. Coordinate population analysis to assure a common understanding of techniques used in ongoing studies. Circulate appropriate reports.

N513. See Y513.

N514. Evaluate current mortality quota (N=25) annually and adjust if research so indicates.

N52. Monitor grizzly bear population following recovery.

N521. Develop and conduct an extensive monitoring system to index one or more of the selected population parameters and to provide information on the trends in geographical

and ecological distribution. This should be a systematic sampling method to allow valid assessments of population trends by managers.

N522. Standardize the monitoring procedures and reports and and deposit all reports with the Grizzly Bear Recovery Coordinator, who will submit reports to all relevant agencies and personnel.

N53. Monitor grizzly bear habitat prior to recovery.

N531. Develop a grizzly bear habitat classification/research and management system to determine the nature and extent of habitat components in the grizzly bear ecosystem. Use a mapping scale appropriate for valid assessments of trends (changes in quality, loss or gain) in habitat components. Standardize terminology (see BGP Special Report No. 41).

N532. Classify and map habitat components giving nonwilderness areas first priority.

N533. Establish a quality index for the extent and condition of the habitat components in the ecosystem.

N534. Establish a benchmark of present habitat values to measure cumulative effects of all actions over time that have impacted grizzly bear habitat.

N535. Monitor changes in grizzly bear use of habitat components under the various types and degree of human use (i.e. logging, mineral or energy exploration recreation, etc.).

N536. Determine and evaluate the results of habitat changes and modifications in order to assess the cumulative effects of these changes.

N537. Identify conservation and enhancement procedures and measures used successfully to improve habitat and report annually.

N54. Monitor grizzly bear habitat following recovery.

N541. Inventory and map the changes in the extent of habitat components every 5 years.

N542. Continue evaluation of present habitat values to measure cumulative effects of all actions over time that have impacted grizzly bear habitat.

N543. Coordinate and review agency actions and plans; report periodically on status of recommended actions and programs necessary for plan compliance--advise appropriate agencies on actions necessary to avoid relisting of species.

N6. Manage grizzly bear population and habitats.

N61. Develop and apply systematic management guidelines on federal lands prior to recovery to maintain, enhance or expand habitats; to make land use activities compatible with grizzly bear spacial and habitat requirements; to minimize the potential for conflicts; and to resolve human/bear conflicts.

N611. Develop and refine procedures for relocating grizzly bears.

N6111. Refine present procedures, expedite handling and search for new areas to relocate nuisance bears. Review interagency agreements (See Y6111).

N6112. Research and develop methods to retrain problem bears to develop aversive conditioning program that will cause the problem bear to avoid repeating the behavioral pattern that led to the human/bear confrontation (see Y6112 for additional comment).

N6113. Develop and coordinate interagency agreements and procedures to introduce grizzly bears into areas of former habitat or to bolster populations nearing extirpation outside the NCDGBE (see note following Y6113).

N612. Control or remove documented nuisance grizzly bears.

N62. Manage population and habitats on private and state lands prior to recovery by developing and applying systematic guidelines; recommend land use activities that are compatible with grizzly bear spacial and habitat requirements; minimize potential for grizzly/human conflicts; resolve conflicts (see N611 and N612).

N63. Continue management of population and habitats upon recovery of the grizzly bear population in the ecosystem, review control methods and harvest quotas for sport hunting of grizzly bears on non-Park lands.

N631. Intensify management activities and monitoring of grizzly bears in areas of sheep allotments; to reduce losses of both bears and sheep.

N632. Establish baseline data on grizzly bears for at least two years prior to the issuance of any permit for major construction activities that may create an unusual disturbance for the bears.

N633. Accelerate radio-tagging grizzly bears and increase monitoring efforts in areas where special permits or unusual activities may be impacting grizzly bears.

N7. Develop and initiate appropriate information and education programs. Reducing man-induced mortalities is a major factor in effecting the recovery of the grizzly bear. Therefore, it is crucial to the recovery effort that people understand reasons for actions in order to have a favorable attitude toward the bear. Private conservation organizations interested in the recovery of grizzly bears could be of assistance if they would disseminate approprite information in their publications and news releases.

N71. Sample, quantify and evaluate public attitudes toward grizzly bears, grizzly habitat protection and maintenance, land use restrictions, mitigating measures, relocation of bears hunting, nuisance bear control actions and habitat acquisition or easement.

N711. Sample and evaluate attitudes of people residing in or adjacent to grizzly bear management areas.

N712. Sample and evaluate attitudes of people geographically removed from grizzly bear management areas.

N72. Formulate ways to improve public attitudes and acceptance of habitat maintenance and protection, research, and management

N73. Agencies having the authority and responsibility for control actions will institute and carry out information and education programs to inform citizens having problems with grizzly bears of the appropriate procedures and contacts for assistance.

N74. Develop means to extend public attitudes to action plans and/or funding.

N8. Implementation of the Plan by jobs, priority and cost. To facilitate implementation the Fish and Wildlife Service will appoint a Grizzly Bear Recovery Coordinator to collate all relevant information on grizzly bears, coordinate and stimulate compliance and action to implement rcovery plan. Submit progress reports and conduct workshop and meetings as necessary (See Y81).

N9. Revise appropriate federal and state regulations to reflect current situations and facilitate implementation of actions necessary for species recovery including the initiation of international cooperation where appropriate.

FOOTNOTES

1/ Study area densities averaged 1 bear per 15 square miles; several research biologists suggested adjacent areas may harbor less bears or even half that density. Using these two extremes (1/15 mi^2 and 1/30 mi^2) to estimate upper and lower limits for the population in this ecosystem outside GNP, then adding 200 grizzly bears from GNP (Martinka 1974), a range of 440 to 680 bears was tentatively agreed upon by persons working on bear in this ecosystem. Because the four wilderness areas represent a very significant portion of this ecosystem (2,515 square miles) and because they have not been studied or sampled, it could be assumed they may harbor greater densities of bears than the peripheral areas based on the intact habitat, fewer disturbances, etc. Higher hunting success also seems to indicate this may be true, however no additional grizzly bears were added to the above estimates due to lack of data to support these assumptions.

2/ Servheen (1980) using the most conservative estimate for the NCDGBE population (1/30 square miles exclusive of Glacier National Park), computed an initial estimate of the numbers of adult females (4.5 years and older) in this ecosystem. From a sample of 180 bears of known sex and age (kills), Servheen (1980) developed a surviorship curve which indicated 29% of the population were adult females (65). To this estimate he added 60 females from GNP (Martinka 1974) to conclude that there may be as few as 130 adult females in the ecosystem. These data (29%) approximate the numbers of adult females from data gathered in GNP by Martinka (1974) in which he estimated that 29.8% of the population were adult females. Schaffer (1978), interpreting data from the Yellowstone ecosystem (Craighead et al., 1974), found 30.4% of the population were adult females.

7280 (total square miles) ÷ 30 = 242 bears
242 + 200 (GNP pop.) = 442 bears (lower est.)
242 x .29 = 70 + 60 (GNP) = 130 adult females
130 ÷ 3.4 reproductive cycle (Craighead et al. 1974) =
38 breeding females

Repeating the above process using the higher estimate (1 bear per 15 square miles), and adding GNP data, the upper estimate of 680 total bears (198 adult females of which 58 could be breeding females) is desired.

3/ The Endangered Species Act of 1973, as amended, requires federal agencies to carry out conservation programs for grizzly bears and other threatened and endangered species and to insure that any action authorized, funded or carried out by such agency does not

jeopardize the continued existence of these species or result in the destruction or adverse modification of their critical habitat. The National Forest Management Act Regulations (Federal Register Volume 44, No. 181 Sept. 17, 1979) re-emphasizes the above and further requires that "objectives be determined for threatened and endangered species that provide for, where possible, their removal from listing as threatened and endangered species through appropriate conservation measures, including the designation of special areas to meet the protection and management needs of such species. Forest Service Manual 2672 states the direction for implementing the intent of the National Forest Management Act Regulations.

National forests and national parks with lands in the Yellowstone Grizzly Bear Ecosystem have adopted the "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area" (December 1979). The "Guidelines" designate special areas which are stratified in terms of management direction reflecting the differing intensities and the importance of grizzly use. They provide for the protection and management needs of the species in accord with existing laws. The "Guidelines" provide interim direction while Forest Management Plans are being prepared. They will be incorporated either intact or amended into Forest Plans. Grizzly bear management guidelines for the NCDGBE do not exist. Guidelines similar in concept and content to those for the Greater Yellowstone Area are urgently needed, at least on an interim basis.

4/ The occupied space and habitat for each grizzly bear ecosystem was determined by qualified personnel in attendance at each of six workshops. The precision of designating occupied habitat was a function of the amount of formal research conducted in the respective areas and the degree of familiarity various qualified personnel have with specific areas or regions. Designation of the areas was based on what is biologically and ecologically practical and feasible for grizzly bears. Species occurrence and the presence of habitat components were major considerations. Delineated areas are those where management considerations for grizzlies are necessary. The boundaries include areas which have different relative values to grizzlies. Some areas may be necessary to species needs and survival, others may not be needed. Boundaries will be adjusted as data become available.

RECOVERY PLAN

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

Subgoal: Secure and/or maintain a viable, self-sustaining grizzly bear population in the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE) (Fig 4)

C1. Establish a population goal in reference to the present population conditions and limiting factors.

There are no documented population parameters for the CYGBE. Adequate data on this population or any of its sub-areas are lacking. Albert W. Erickson under contract with the Lolo National Forest in 1973-74 indicated that a few grizzly bears were present in the Thompson Falls, Plains and Trout Creek ranger districts and deemed the area capable of supporting a small resident population (Erickson 1976). Subsequently, Erickson under contract with the Kootenai National Forest in 1976-77 estimated that less than a dozen grizzly bears exist in the Cabinet Mountains, and that extirpation could result if specific management actions were not initiated in the near future (Erickson 1978). His estimate apparently does not include portions of the described ecosystem that are in the Yaak River drainage or west of the Cabinet Mountains in Idaho.

The Cabinet Mountains and the Yaak River drainage may be considered by some to be two distinct grizzly bear population centers. However, using all of the data available at the time of the workshop held in Libby, Montana, March 6,1980, those in attendance made the decision to consider both areas to be parts of one grizzly bear ecosystem. There is a break of some 10 or 12 miles between the occupied territory of the Cabinet Mountains and that of the Yaak area. The linking corridor is a series of 10-12 mountain peaks forming a high divide zone that would offer protection for bears moving between the two areas. Many biologists working in the general area believe that interchanges of grizzly bears between the Yaak area and the Cabinet Mountains and between Yaak and British Columbia are necessary for the continued existence of this population (See BGP Special Report No. 41).

Attendants of the meeting and area biologists familiar with the area, believe the habitat components and spacial requirements for the species are adequate. They have delineated approximately 1,800 square miles as the presently occupied range of grizzly bears in the ecosystem and believe the habitat will support a viable population.

In order to establish a goal for this population, without benefit of data equal to that of either the YGBE or the NCDGBE, a decision was made to use a minimum viable population requirement established by Shaffer (1978). Shaffer concludes, "A minimum viable population (MVP) for any given species in any habitat is tentatively defined as the smallest population having a 95% chance of remaining extant for 100 years despite the foreseeable effects of--." Using data available for the Yellowstone grizzly bears and a computer simulation for testing the relationship of population size and survival, he hypothesizes that a population of 30 to 70 grizzly bears within a minimum area of 2500 km^2 (965 mi^2) (Northern Rockies) to as much as 7400 km^2 (Brooks Range) (Shaffer 1978), is required to support a MVP. For purposes of erring on the side of the grizzly bear, the MVP population goal for this ecosystem was set at the upper limit of 70 bears for the presently delineated area of 1,818 mi^2 (1 bear/26 mi^2).

C11. State or determine the level at which the grizzly bear population is viable and self-sustaining.

C111. The grizzly bear population in the CYGBE will be viable and self-sustaining when monitoring efforts indicate that recruitment, natality, and mortality are at levels supporting a stable or increasing population. The population will be judged recovered (eligible for delisting) when it is determined to be viable at a population size of 70 bears or more and/or monitoring efforts document the following statistics or their biological equivalents computed as a running six year average:

Reproductive rate	0.524 to 0.593	Cubs/female divided by repro. cycle
Females with cubs of the year	7.0	(Martinka 1974a) (10% of total est. pop.)
Cubs/female	1.78	(Martinka 1974a)
Reproductive cycle	3.0 years	(Martinka 1974a)
	3.4 years	(Craighead et al. 1974)
Avg. annual known man-caused mortality 1968-78 (9 bears*)	less than 0.82 bears	(Greer 1980 pers. com.)

*One bear legally killed by a hunter in 1974.

C112. Re-evaluate population data (C111) as new information becomes available.

C12. Determine or state present population characteristics which are unknown at present.

C13. Identify or state the man-related population limiting factors if present population characteristics are less than those judged necessary to sustain a viable population.

C131. Identify or state the sources of direct mortality

C1311. Illegal hunting

C13111. Poaching, vandalism, malicious killing

C13112. Accidental losses resulting from mistaken identity by black bear hunters.

C13113. Private citizen control by livestock operators, apiarists, outfitters and resort operators in protection of property.

C1312. Accidental deaths

C13121. Road kills (highway, train, etc.)

C13122. Scientific error

C1313. Control measures

C13131. Agency (State, NPS, or USFWS) control

C131311. Livestock conflicts

C131312. Other property damage

C131313. Life threatening situations

C13132. Private citizen control

C131321. Self defense.

C132. Identify, estimate, or state activities which can indirectly limit grizzly bear populations through adverse habitat changes, human displacement of grizzly bears, grizzly-human conflicts or adverse conflict resolution.

C1321. Grazing operations

C1322. Timber operations (including road construction)

C1323. Mining, water impoundments and energy exploration/development

C1324. Recreation operations

C1325. Human development of conflicting enterprises; subdivisions, dog kennels, fish farms, boneyards, garbage dumps, etc.)

C1326. Cumulative impacts

C2. Redress population limiting factors.

C21. Reduce the numbers of bears lost to the population through direct man-caused mortality.

Recommended annual man-induced grizzly bear mortality goal for expediting species recovery is zero.

C211. Illegal hunting.

C2111. Provide a concerted law enforcement effort by developing a specially trained law enforcement team coordinated by the Fish and Wildlife Service to minimize the illegal killing of grizzly bears. One or more persons representing the Fish and Wildlife Service, Forest Service, State of Idaho, and State of Montana will be appointed. Close coordination with law enforcement officers in British Columbia and Alberta will be maintained. Each member will receive specialized training to work on illegal kills of grizzly bears. The team would be trained initially by the Border Grizzly Project (BGP) personnel in such matters as distribution, home ranges of identifiable bears, movements by season, mating habits, current location of radio-marked bears and other biological information that may be helpful to the team. Representatives from the Forest Service and Bureau of Land Management will be encouraged to attend in order to more ably assist in gathering field evidence.

All incidents of grizzly bear kills, suspected illegal activities, and rumors of kills will be communicated with the enforcement team, their respective agencies, and the BGP on a daily basis or as often as practical.

The Enforcement Team Leader will keep all members of the enforcement team and the BGP informed and will organize coordination meetings as needed.

Special emphasis will be directed at covert operations which may be operating commercially. The enforcement team will operate through an interstate, interagency agreement under the direction of the Fish & Wildlife Service. It is imperative that the Enforcement Team Leader establishes a line of communication and a rapport with all field personnel and field office staff in order that he may be notified immediately of a violation or threat of a violation.

Public assistance will be solicited in reporting suspected or known illegal kills. Persons furnishing information which leads to a finding of civil violation or a conviction of a criminal violation of 50 CFR, Part 17.40 regarding grizzly bears, can be rewarded up to one half of the fine or civil penalty not to exceed $2,500.

States having a toll free number for reporting violations or for information should publicize their number as a means of reporting grizzly bear problems and grizzly bear deaths.

C2112. Reduce accidental losses resulting from mistaken identity by black bear hunters.

C21121. The state conservation agencies will make information available to all black bear hunters to assist them in distinguishing between black and grizzly bears.

C21122. State agencies will issue special warnings to black bear hunters using areas frequented by grizzly bears.

C21123. The special enforcement team will investigate accidental grizzly kills and recommend prosecution when appropriate.

C2113. Reduce accidental deaths

C21131. All agencies will increase warning signs along highways and roads in high use grizzly bear areas.

C21132. All agencies will increase efforts to clean up carrion and other attractants along highways and other routes.

Suggested methods to address this problem can be found in "Guidelines" pages 15, 30 and 36. (See Footnote 3, YGBE)

C21133. State and federal agencies will seek the cooperation of railroad train crews in reporting all collisions resulting in the death of large animals that could attract grizzly bears. Removal or burial of such animals will be arranged.

C21134. Agencies responsible for licensing, conducting, or in any way overseeing rodent damage control programs using toxic substances in occupied grizzly bear habitat should use the most selective (but effective) rodenticide available, and use it in the lowest effective dosage. Poison bait will only be used under the on-site supervision of a certified applicator. Disturbances on the treatment site should be created for a minimum of three nights following application of any rodenticide in order to discourage scavenging by grizzly bears. Poisoning within grizzly bear habitat should be delayed as long as possible into July to minimize the potential for grizzly bears to consume poisoned rodents or bait (O'Gara 1980 pers. com.).

C21135. Reduce losses due to mishandling of bears, overdose of immobilizing drugs, or improper post-handling. Only experienced personnel who are working under an ESA permit and are certified by a sponsoring unit as knowledgeable in the application of capture techniques, immobilizing drugs, transportation of drugged animals, scientific data collecting, etc., will handle grizzly bears. The safest effective drugs available will be used.

C21136. Prepare detailed guidelines for trapping, immobilizing, transporting and handling grizzly bears.

C2114. Agency control on Federal lands will be in accordance with 50 CFR 17.40

C21141. Animal damage control officers or agency personnel will take actions similar to those found in the "Guidelines," pages 11, 27, 35, and 59, and will follow appropriate inter-agency agreements, when controlling grizzly bears involved in livestock conflicts.

C21142. All other agency control related to grizzly bears should be similar to actions indicated in the "Guidelines" directions starting on page 59 or guided by appropriate agreements.

C2115. Control by private citizens. The only legal citizen control of a grizzly bear is that related to self defense. The law enforcement team should carefully investigate each case of grizzly mortality alleged to be self defense.

C2116. Agency control on private and state lands. Follow principle described in the "Guidelines"procedures, pages 61 and 62 related to MS2, or other procedures developed by FWS, MFW&P, IF&G, and in accordance with Federal and State laws.

C212. See Y212, Part II

C213. See Y213 and N212, Part II

C22. Reduce or eliminate activities identified in C132 which indirectly limit grizzly bear populations through adverse habitat changes, human displacement of bears, changes in bear behavior induced by human intrusion, adverse grizzly/human conflicts or adverse or inadequate conflict resolution.

C221. Grazing, bee keeping operations, etc.

C2211. Develop and apply systematic management guidelines on Federal lands to make grazing operations, beekeeping, etc. compatible with grizzly bear spacial, and seasonal habitat requirements. Management direction is currently given in "Guidelines", pages 11, 27, 35 & 45.

C2212. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (C2211) as a cooperative extension effort.

C222. Timber operations (including road construction, reforestation, etc.)

C2221. Develop and apply systematic management guidelines on federal lands to make timber operations compatible with grizzly bear spacial and seasonal habitat requirements. Management direction is currently given in "Guidelines," pages 17, 32, 24 & 40.

C2222. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (C2221) as a cooperative extension effort.

C223. Mining and energy operations

C2231. Develop and apply systematic management guidelines on Federal lands to make water development and mining and energy operations compatible with grizzly bear spacial, and seasonal habitat requirements. Management direction is currently given in "Guidelines, " pages 17, 32, 38 & 48.

C2232. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (C2231) as a cooperative extension effort.

C224. Recreation activities

C2241. Develop and apply systematic management guidelines on federal lands to make recreation activities compatible with grizzly bear spacial and seasonal habitat requirements. Management direction is currently given in "Guidelines", pages 14, 28, 36 & 46.

C2242. On state and private lands, agencies and field personnel of agencies involved in grizzly bear management will communicate intent of "Guidelines" as described above (C2241) as a cooperative extension effort.

C225. Human development. Land management agencies, state agencies, county commissioners, county zoning boards, responsible for regulating homes, summer homes, cabins, camps, farm operations, etc., that may have attendant dog kennels, pig or goat farms, garbage dumps and boneyards, should give consideration to the needs

of grizzly bears in any actions requiring their approval when these activities invade the occupied habitat of the grizzly. For private lands not subject to the above restrictions, wildlife managers should give consideration to purchase, lease or easement if habitat components are necessary to survival of the species.

C226. Monitor and determine the cumulative impacts of past project actions. Determine the cumulative effects of all, or any combination, of the actions described above (C221-C225) that may adversely impact grizzly bears at a multiple or amplified level. Past adverse impacts on the bears and their habitat must be a major consideration in the evaluation of each new action (Jonkel 1979). New actions must be evaluated on a regional basis to avoid the cumulative effects of several well planned individual actions impacting bears from too many directions simultaneously. History records that at some point in time, probably associated with the degree of stress, grizzly bears no longer use certain portions of their former range. Therefore, each new action has the potential of being "the last straw," from the standpoint of the bear, and every effort must be made to evaluate each new action with respect to former and future actions.

C23. Coordinate, monitor and report on activities relating to redressing population limiting factors and monitor compliance with recovery plan.

C3. Determine the habitat and space appropriate to the achievement of the grizzly bear population goal.

C31. State or determine occupied space and habitat where management considerations for grizzly bears are necessary.

C311. Identify or state occupied grizzly bear space and habitat by landownership and administrative unit.

C3111. Occupied space and habitat were delineated by workshop members participating in a grizzly bear recovery planning workshop March 6, 1980, Libby, Montana (See Fig 4 and Table 4).

C3112. Occupied habitat boundaries will be corrected as new data become available.

C312. Identify or state U.S. Forest Service, Bureau of Land Management, state lands and National Park Service management stratifications within occupied space and habitat. See Table 4.

C32. Compare agency management stratifications by administrative unit with occupied space and habitat delineations and identify areas where additional management stratification or management direction is necessary. See Table 4.

C33. Correct data in Table 4 as new information is made available.

C34. Recommend critical habitat.

C35. Identify travel corridors connecting islands of habitat or grizzly bear ecosystems.

C4. Resolve differences between occupied space and habitat and agency stratifications within occupied habitat (Table 4) and/or adjust presently delineated stratifications.

ASSUMPTIONS

A majority of the land within the Yellowstone Grizzly Bear Ecosystem have specific management direction through stratification as per the "Guidelines." All of the federally controlled lands in the CYGBE (or elsewhere) are under general management direction as per requirements of the Endangered Species Act. In addition, the Forest Service lands have general management direction spelled out in the National Forest Management Act (NFMA), Forest Service Manual (FSM) Chapter 2680, and various Region One Manual supplements. However, federal lands in the CYGBE currently do not have interim guidelines relative to grizzly bear management of specific land areas.

The Forest Service intends to incorporate such direction for grizzly bear habitat management in each Forest Plan (due in 1983) as per direction in FNMA and FSM 2672.

Stratification, with attendant management direction, reflects the differing intensities and importance of grizzly bear use. Management direction for each stratified area must provide adequate conservation measures to assure that the continued existence of the grizzly bear is not jeopardized. In addition, guidelines for stratification must recognize that reclassification will be necessary if documented evidence supports that a specific area is vital to the survival of the species or conversely, shows it is of lesser importance.

The development of interim management direction and/or guidelines specific to grizzly bear management prior to 1983 for USFS lands and for all other lands is recommended to expedite recovery.

C41. Areas for resolution within the Kootenai National Forest.

C411. 514,754* acres of stratified lands within occupied space and habitat that are in need of management direction. 37/

C412. 319,141 acres of occupied space and habitat that are in need of stratification and management direction.

C413. 53,105 acres of state and private lands within the forest boundary that are in need of stratification and management direction.

C42. Areas for resolution within the Lolo National Forest.

C421. 62,280* acres of stratified lands within occupied space and habitat that are in need of management direction.

C422. 57,700 acres of occupied space and habitat that are in need of stratification and management direction.

C423. 1,475 acres of state lands within the forest boundary that are in need of stratification and management direction.

C424. 12,684 acres of private lands within the forest boundary that are in need of stratification and management direction.

C43. Areas for resolution within the Panhandle National Forest (adjacent to Cabinet Mountains)

C431. 69,848 *acres of stratified lands within occupied space and habitat that are in need of management direction.

C432. 148,896 acres of occupied space and habitat that are in need of stratification and management direction.

C433. 4,960 acres of state lands within the forest boundary that are in need of stratification and management direction.

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*Essential habitat 1977 (USFS)
37/ See Footnote 37/ NCDGBE pp. 80.

C434. 15,960 acres of private lands within the forest boundary that are in need of stratification and management direction.

C44. Areas for resolution within Bureau of Land Management lands which include 2,000 acres of BLM lands that are in need of stratification and management direction relative to grizzly bear use.

C45. Areas for resolution within private and state lands which includes 17,700 acres of private lands and 2,100 acres of state lands situated outside of National Forests and BLM boundaries, but within occupied territory that need to be stratified for relative grizzly bears use and attendant management direction developed including identification of parcels of state or private lands representing actual or potential problems to the recovery of the grizzly bear population.

Note: Stratification of habitat for relative use implies that the management direction will relate to direct grizzly bear mortality, indirect (habitat related) mortality, and grizzly/human conflict potential. Private lands within and outside Federal agency administrative boundaries are frequently high risk areas for bears and often complicate agency management direction. Landholders should be encouraged by agency and county personnel to eliminate conditions that may create human/grizzly conflicts. Management direction described in the "Yellowstone Guidelines" would be appropriate to follow in principle for problem solution. Long-range solutions may include closure, easements, lease, or purchase of problem areas if warranted and other satisfactory solutions are unavailable.

C46. Review all areas following stratification and assignment of management direction to resolve differences between classifications made by land managers and recommendations made by research and wildlife managers.

C5. Monitor grizzly bear population and habitats.

C51. Monitor grizzly bear population prior to recovery.

C511. Develop and conduct an intensive monitoring system to measure the selected population parameters by using an appropriate experimental design with sufficient sampling effort to permit valid comparisons with the benchmark statistics.

TABLE 4. OCCUPIED HABITAT, AGENCY MANAGEMENT STRATIFICATIONS WITHIN, AND DIFFERENCES IN NEED OF STRATIFICATION AND MANAGEMENT DIRECTION IN THE CYGBE

MGMT. AGENCY	ACRES WITHIN OCCUPIED HABITAT	ACRES STRATIFIED BY GRIZZLY USE	ACRES WITHIN OCCUPIED HABITAT WITHOUT STRATIFICATION	ACRES IN NEED OF STRATIFICATION RELATIVE TO GRIZZLY USE	ACRES IN NEED OF MGMT. DIRECTION OR GUIDELINES SPECIFIC TO GRIZZLY BEAR
Kootenai Nat'l Forest	833,895 acres	154,574 acres	319,141 acres	319,141 acres	833,895 acres
State & private lands within	53,015	-0-	53,015	53,015	53,015
Lolo Nat'l Forest	119,980	62,280	57,700	57,700	119,980
State lands within	1,475	-0- (690)	785	785	1,475
Private lands within	12,684	-0- (2672)	10,012	10,012	12,684
Panhandle Natl Forest	218,744	69,848	148,896	148,896	218,744
State lands within	4,960	-0-	4,960	4,960	4,960
Private lands within	15,960	-0-	15,960	15,960	15,960
Bureau of Land Management	2,000*	-0-	2,000	2,000	2,000
State lands within occupied outside boundaries above	2,100*	-0-	2,100	2,100	2,100
Private lands within occupied outside boundaries above	17,700*	-0-	17,700	17,700	17,700

* Estimated

C512. Collate, analyze, and compare current research data with data with benchmark statistics to determine recovery progress and plan compliance. Coordinate population analysis to assure a common understanding of techniques used in ongoing studies. Circulate appropriate reports.

C513. See Y513.

C52. Monitor grizzly bear populations following recovery.

C521. Develop and conduct an extensive monitoring system to index one or more of the selected population parameters and to provide information on the trends in geographical and ecological distribution. This should be a systematic sampling method to allow valid assessments of population trends by managers.

C522. Standardize the monitoring procedures and reports and deposit all reports with the Grizzly Bear Recovery Coordinator.

C53. Monitor grizzly bear habitat prior to recovery.

C531. Develop a grizzly bear habitat classification/research and management system to determine the nature and extent of habitat components in the grizzly bear ecosystem. Use a mapping scale appropriate for valid assessments of trends (changes in quality, loss or gain) in habitat components. Standardize terminology (see BGP Special Report No. 41).

C532. Classify and map habitat components giving non-wilderness areas first priority.

C533. Establish a quality index for the extent and condition of the habitat components in the ecosystem.

C534. Establish a benchmark of present habitat values to measure cumulative effects of all actions over time that have impacted grizzly bear habitat.

C535. Monitor changes in grizzly bear use of habitat components under various types and degree of human use (i.e. logging, mineral or energy exploration/ development recreation, etc.).

C536. Determine and evaluate the results of habitat changes and modifications in order to assess the cumulative effects of these changes for the entire grizzly bear ecosystem.

C537. Identify conservation and enhancement procedures and measures used successfully to improve habitat and report annually.

C54. Monitor grizzly bear habitat following recovery.

C541. Inventory and map changes in the extent of habitat components every 5 years.

C542. Continue evaluation of present habitat values to measure cumulative effects of all actions over time that have impacted grizzly bear habitat.

C543. Coordinate and review agency actions and plans; report periodically on progress of recommended action and programs necessary for plan compliance. Advise appropriate agencies on actions necessary to avoid relisting of species.

C6. Manage grizzly bear population and habitats.

C61. Develop and apply systematic management guidelines on federal lands to maintain, enhance and expand habitats, to make land use activities compatible with grizzly bear spacial and habitat requirements, and to minimize the potential for conflicts; and to resolve grizzly/human conflicts.

C611. Develop and refine procedures for relocating grizzly bears.

C6111. Refine present procedures, expedite handling, and search for new areas to relocate bears. Review interagency agreements (see Y6111).

C6112. Research and develop methods to rehabilitate problem bears; develop an aversive conditioning program that will cause the problem bears to avoid repeating the behavioral pattern that led to the human/bear confrontation (see Y6112 for additional comment).

C6113. Develop and coordinate interagency agreements and procedures to introduce grizzly bears into areas of former habitat or to bolster populations nearing extinction (see note following Y6112).

C612. Control or remove documented nuisance grizzly bears after giving consideration to the recommended mortality level (see Y612 and footnote).

C62. Develop and apply management guidelines on private and state lands that maintain or enhance habitats; recommend land use

activities compatible with grizzly bear requirements for space and habitat; minimize potential for, and resolve, grizzly/human conflicts (see C611).

C63. Continue to manage populations and habitats on all lands following recovery in the ecosystem. Refine control methods and develop a coordinated system for control of population. Sport hunting will be a consideration under a harvest quota system.

C631. Establish baseline data on grizzly bears for at least two years prior to the issuance of any permit for major construction activities that may create an unusual disturbance for the bears.

C632. Accelerate radio-tagging grizzly bears and increase monitoring efforts in areas where special permits or unusual activities may be impacting grizzly bears.

C7. Develop and initiate an appropriate information and education program. Reducing man-induced mortality is a major factor in effecting the recovery of the grizzly bear. Therefore, it is crucial to the recovery effort that people understand reasons for actions in order to have a favorable attitude toward the bear. Private conservation organizations interested in the recovery of grizzly bears could be of assistance if they would disseminate appropriate information in their publications and news releases.

C71. Sample, quantify, and evaluate public attitudes toward grizzly bears, grizzly habitat protection and maintenance, land use restrictions, mitigating measures, relocation of bears, hunting, nuisance bear control actions and habitat acquisition or easement.

C711. Sample and evaluate the attitudes of people residing in or adjacent to grizzly bear management areas.

C712. Sample and evaluate attitudes of people geographically removed from grizzly bear management areas.

C72. Formulate ways to improve public attitudes and acceptance of habitat maintenance and protection, research and management.

C73. Agencies having the authority and responsibility for control control actions will institute and carry out information and education programs to inform citizens having problems with grizzly bears of the appropriate procedures and contacts for assistance.

C74. Develop means of extending public attitudes to action plans and/or funding.

C8. Implementation of the Plan by jobs, priority and cost. To facilitate implementation the Fish and Wildlife Service will appoint a Grizzly Bear Recovery Coordinator to collate all relevant information on grizzly bears, coordinate and stimulate compliance and action to implement recovery plan. Submit progress reports and conduct workshops and meetings as necessary (See Y81).

C9. Revise appropriate federal and state regulations to reflect current situations and facilitate implementation of action necessary for species recovery including the initiation of international cooperation where appropriate.

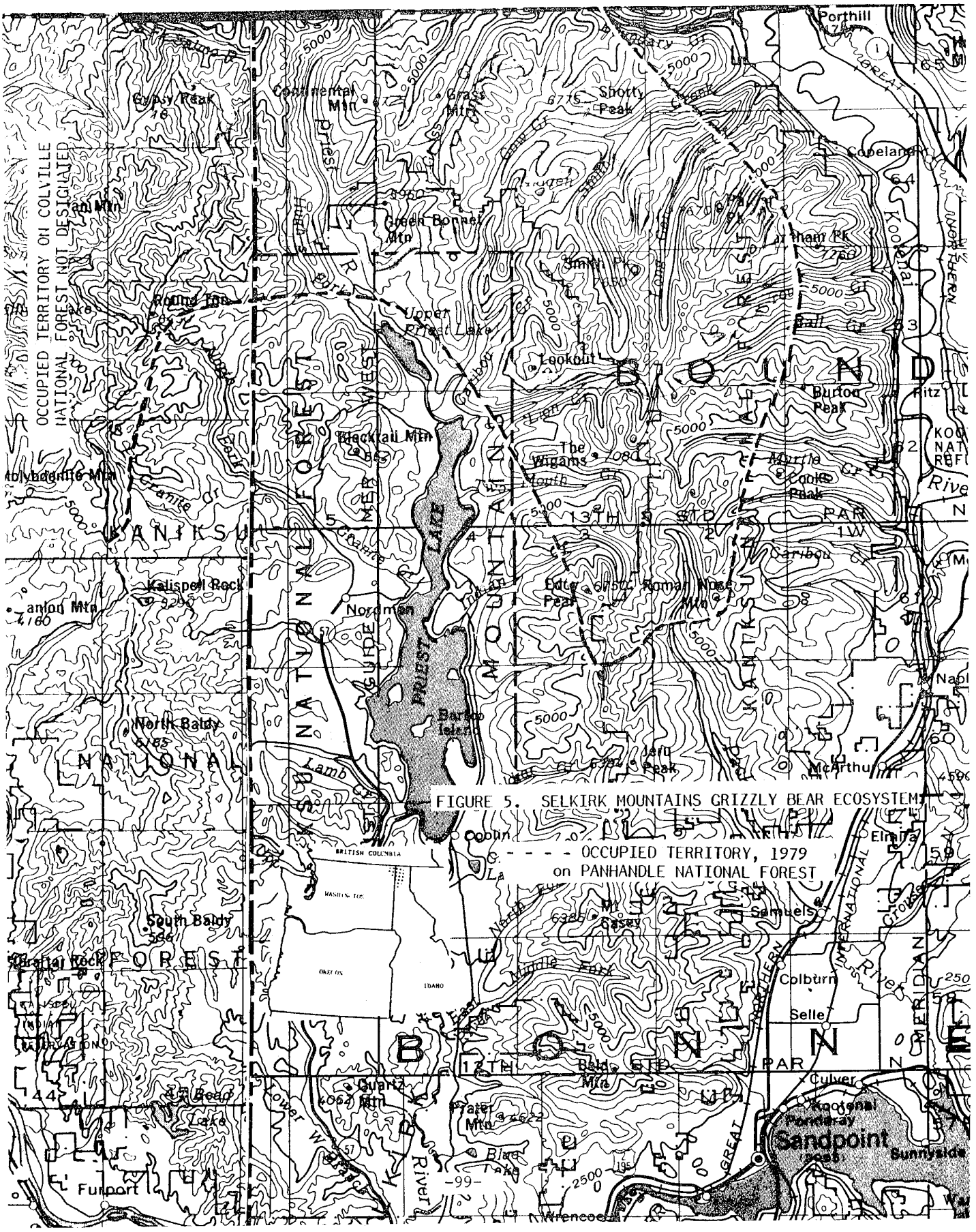


FIGURE 5. SELKIRK MOUNTAINS GRIZZLY BEAR ECOSYSTEM

- - - - - OCCUPIED TERRITORY, 1979
on PANHANDLE NATIONAL FOREST

FIGURE 7
SELWAY-BITTERROOT
GRIZZLY BEAR ECOSYSTEM
DISTRIBUTION LIMITS UNKNOWN

RECOVERY PLAN

SELKIRK MOUNTAINS, SELWAY-BITTERROOT WILDERNESS AND NORTH CASCADE MOUNTAINS GRIZZLY BEAR ECOSYSTEMS

Subgoal: Secure, maintain or re-establish grizzly bear populations in the Selkirk Mountains (S), Selway-Bitterroot Wilderness (SB), and North Cascade Mountains (NC) areas at viable population levels. (Figs 5, 6 and 7.)

1 (S,NC,SB) Determine the present status of the grizzly bear population in each of the three ecosystems.

Data on these three grizzly bear ecosystems are lacking. Only a few observations or other evidence noting the existence of grizzly bears are being recorded. Whether this is a result of a lack of effort or a scarcity of bears, or both, is uncertain. Presently there does not appear to be much enthusiasm for increasing the numbers of grizzly bears in these areas. There has been no concerted effort to determine the status of each population and a very limited amount of data are available on the extent and quality of the habitat. The high cost of collecting data in these ecosystems may detract from the effort necessary to recover grizzly bears in the YGBE, NCDGBE and CYGBE.

2 (S,NC,SB) Determine the space and habitat necessary to support a viable population of grizzly bears in each of the three ecosystems.

3 (S,NC,SB) Determine the appropriate actions necessary or develop a more refined recovery plan for each grizzly bear ecosystem based on the data developed in Steps 1 and 2 above.

Note: There is little that can be done at this time except exercise the normal protective actions in accordance with current federal and state regulations. Until items 1 and 2 are executed, and the data made available, informed management decisions will be difficult.

Several wildlife biologists familiar with the Selkirk Mountains area are of the opinion that there is sufficient evidence on the grizzly bear population, at least in that portion of the ecosystem in Idaho, to

formulate a recovery plan similar to that of the CYGBE. A greater commitment by state wildlife agencies and federal and state land managers to determine the present status of the population and the extent and quality of the occupied grizzly bear range is needed before a viable population goal can be estimated.

Biologists participating in the workshops and subsequently have not been able to unanimously agree on how many populations are necessary for recovery of the species in the conterminous 48 states. For practical purposes and with the welfare of the species in mind, three areas were chosen to concentrate on a recovery effort--YGBE, NCDGBE and CYGBE. Other populations are expected to receive maximum protection under state and federal laws. A continued effort should be made by state and federal agencies to gather data on grizzly bears as funds permit, but not in a manner that will detract from the primary goal of the recovery plan.

FIGURE 8

WILDLIFE DISTRIBUTION MAPPING

BIG GAME SERIES

GRIZZLY BEAR

DISTRIBUTION AND RELATIVE ABUNDANCE

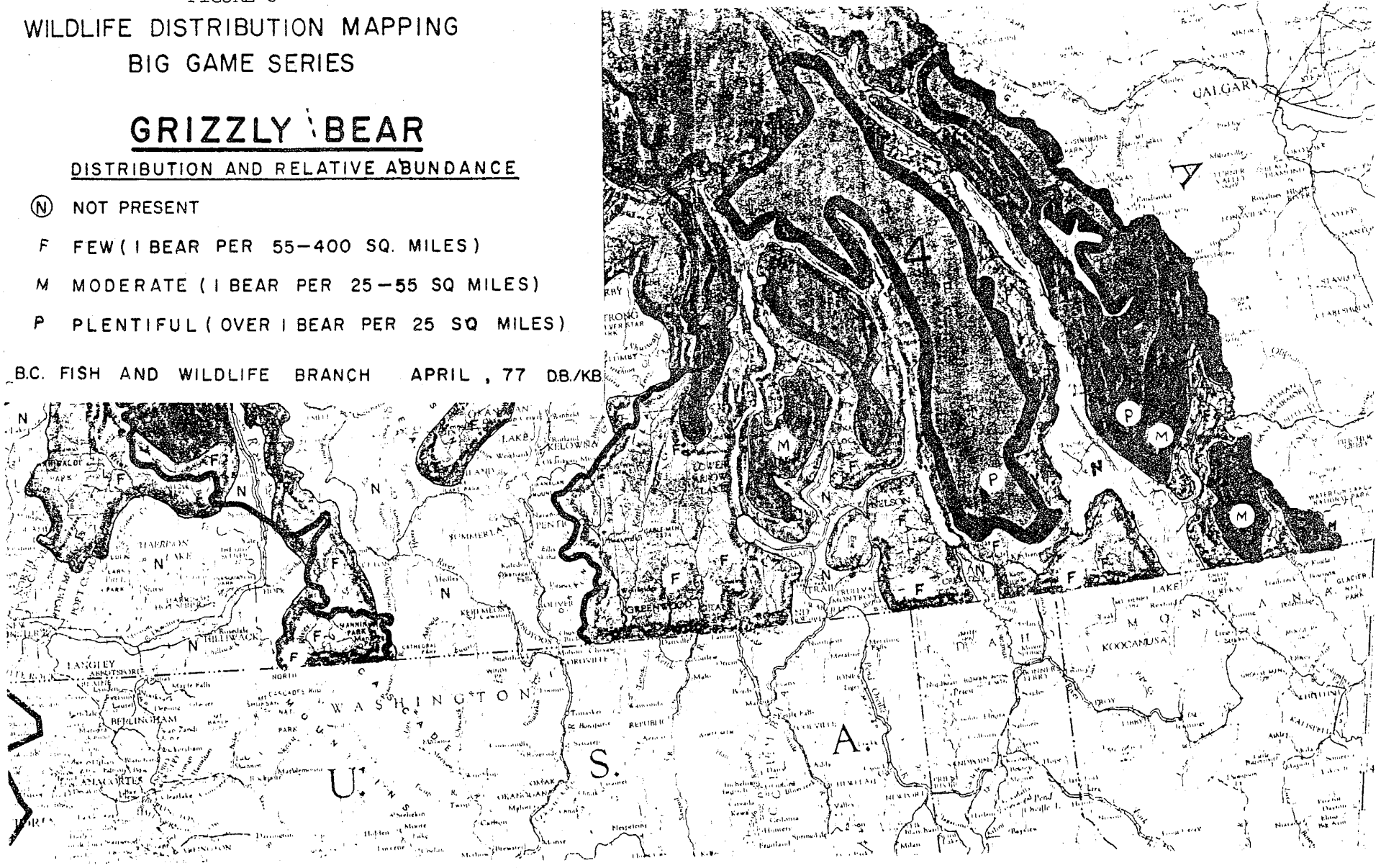
Ⓝ NOT PRESENT

F FEW (1 BEAR PER 55–400 SQ. MILES)

M MODERATE (1 BEAR PER 25–55 SQ MILES)

P PLENTIFUL (OVER 1 BEAR PER 25 SQ MILES)

B.C. FISH AND WILDLIFE BRANCH APRIL , 77 DB./KB



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PART III

JOB IMPLEMENTATION AND BUDGET

Assignments of estimated costs and jobs are summarized on the following pages.* Specific information for jobs listed can be found in Part II. Estimates are based on costs of projects currently being conducted in the YGBE (IAGBST), jobs ongoing in the NCDGBE (BGP), Forest Service projects of similar design, Bureau of Land Management estimates, National Park Service estimates and costs of current programs by state wildlife agencies. States have the alternative of funding through their own resources, Pittman-Robertson cost sharing, Section 6 of ESA, or other federal cost sharing programs. Federal agencies are expected to budget and allocate funds to accomplish assignments.

Priorities of jobs were assigned as follows:

Priority one (1) - Those actions absolutely necessary to prevent extinction of the species.

Priority two (2) - Those actions necessary to maintain the species' current population status.

Priority three (3) - All other actions necessary to provide for full recovery of the species.

When several lead agencies are listed, it is expected that cooperation and coordination will resolve any problems.

*GOALS AND OBJECTIVES WILL BE ATTAINED AND FUNDS EXPENDED CONTINGENT UPON APPROPRIATIONS, PRIORITIES, AND OTHER BUDGETARY CONSTRAINTS.

ABBREVIATIONS

BGP	Border Grizzly Project
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CEA	County Extension Agents
CRCB	County Rodent Control Board
DCA	Department of Community Affairs
EPA	Environmental Protection Agency
FS	U.S. Forest Service
FWS	U.S. Fish and Wildlife Service
IAGBST	Interagency Grizzly Bear Study Team
IDL	Idaho Department of Lands
IF&G	Idaho Fish and Game Department
ITD	Idaho Transportation Department
MDA	Montana Department of Agriculture
MDH	Montana Department of Highways
MDL	Montana Department of Livestock
MDNRC	Montana Department of Natural Resources and Conservation
MDSL	Montana Department of State Lands
MFW&P	Montana Department of Fish, Wildlife & Parks
MSFD	Montana State Forestry Division
NPS	National Park Service
USGS	U.S. Geological Survey
WDG	Wyoming Department of Game
WG&F	Wyoming Game and Fish Department
WSC	Wyoming State Commission
WSF	Wyoming State Forestry
WSL	Wyoming State Lands
WWD	Washington Wildlife Division

GENERAL CATEGORIES FOR IMPLEMENTATION SCHEDULES

Information Gathering - I or R (research)

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Management - M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Acquisition - A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal
6. Fee title
7. Other

Other - O

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

PART III

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (FST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
02	Develop a specially trained law enforcement team to reduce illegal grizzly bear deaths	Y2111	1	unknown	6*	LE		2,000	800	800	
							WG&F	700	250	250	
							NPS	700	250	250	
							IF&G	700	250	250	
							MTFW&P	1,800	400	400	
							FS	1,500	1,500	400	
01	Distribute pamphlets to black bear hunters to identify differences between black bears and grizzly bears	Y21121	2	continuous			MTFW&P*	1,000	1,000	1,000	
							IF&G*	1,000	1,000	1,000	
							WG&F*	800	800	800	
					6	PA	FS, BLM	No costs - distribution only			
01	Special warning to black bear hunters, hunting in grizzly bear habitat	Y21122	2	continuous	6	LE	MFW&P*, FS, IF&G* WG&F*	BLM costs included in Y21121			
01	Warning signs along highways and high use roads in occupied grizzly bear range	Y21131	3	As required	6	SS	NPS* WG&F	-0-	costs to be		
							FS* BLM	-0-	estimated when		
							MDH* MTFWP,	IF&G -0-	research determines		
							WSC*	-0-	areas of probable		
							ITD*	-0-	conflict		
M7	Clean up carrion along roads to avoid attracting grizzly bears	Y21132	3	continuous	6	ADC	NPS* BLM FS* MFW&P MDH* IF&G ITD* WC&F WSC*	Costs included in ongoing programs; Grizzly Bear Recovery Coordinator will urge appropriate agencies to take necessary action			
M7	Clean up carrion that may attract grizzly bears to railways	Y21133	3	continuous	6*	SE ADC	FS, BLM MTFW&P NPS, WF&G IF&G	Grizzly Bear Recovery Coordinator Will initiate proper action with railroads and seek assistance from other agencies			

*Denotes Lead Agency

PART III

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M5	Reduce losses due to mishandling bears and prepare guidelines	Y21134 Y21135	1	con-tinuous	6*	SE	MFW&P, IF&G NPS, BLM, WG&F	1,000	200	200	Grizzly Bear Recovery Coordinator will prepare and distribute guidelines and maintain update
M7	Reduce potential for grizzly bear losses due to improper rodent control or mishandling rodenticide	Y21136	2	con-tinuous			EPA*, MDA appropriate state agencies in ID & WY IF&G, WG&F, FS, MFW&P, BLM				Require applicator to follow guidelines and take necessary precautions; Animal Damage Control Supervisor will arrange checks for compliance
M5	Control nuisance grizzly bears causing damage or threatening public safety	Y2114 Y2116 Y21141 Y21142	1	con-tinuous	6*	ADC		10,000	10,000	10,000	
							MFW&P*	5,000	5,000	5,000	
							WG&F*	6,250	6,250	6,250	
							IF&G*	5,000	5,000	5,000	
							NPS*	35,000	35,000	35,000	
							FS, BLM				
02	Supervise removal of problem bears by licensed hunter	Y212	3	un-known	6	LE	IF&G* WG&F* MFW&P*	cost assigned to agency choosing this option			
04	Appoint a Grizzly Bear Mortality Coordinator for all grizzly bear ecosystems in the conterminous 48 states	Y213	1	con-tinuous	6*	SE		2,000	2,000	2,000	
							MFW&P	25,000	25,000	25,000	
							WG&F, BLM	5,000	5,000	5,000	
							IF&G, NPS, FS	5,000	5,000	5,000	

*Denotes Lead Agency

PART III

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M3	Apply "Guidelines to make livestock grazing on federal lands more compatible with the requirements of grizzly bears	Y2211	1	con-tinuous	6	SE	FS*, BLM*, WG&F, IF&G MFW&P, MDSL, IDL, WSF	All agencies having surface management responsibilities will fund the necessary activities to fully implement "Guidelines" direction			
01	Communicate intent of "Guidelines" as described on pages 11, 27,35, and 59-64 as a cooperative extension effort on private and state lands relative to grazing	Y2212	2	con-tinuous	6*	SE ES	MDSL, IDL FS*, BLM* IF&G*, MFW&P* WG&F*, WSF, NPS	All agencies will encourage personnel to communicate with private land owners, lease holders of state lands and state land managers to take actions outlined in "Guidelines" whenever possible			
M3	Apply "Guidelines" to make timber operations on federal lands more compatible with grizzly bear spacial and habitat requirements	Y2221	1	con-tinuous	6	SE	FS*, BLM* MFW&P, IF&G, MDSL, WSF, IDL, WG&F	All agencies having surface management responsibilities will fund the necessary activities to fully implement "Guidelines" direction.			
01	Communicate intent of "Guidelines" as described on pages 6, 21,34, 59-64 as a cooperative extension effort on private and state lands relative to timber management	Y2222	2	con-	6*	SE ES	FS*, BLM* WG&F*, IF&G* MFW&P*, MDSL IDL, WSF,NPS	All agencies will encourage personnel to communicate with private landowners, lease holders of state lands and state land managers to take actions outlined in "Guidelines" whenever possible			
M3	Apply "Guidelines" to make mining and energy operations under federal jurisdiction compatible with requirements of grizzly bears	Y2231	1	con-tinuous	6	SE	FS*, BLM,* NPS*, MFW&P, WG&F, IF&G	All agencies having management responsibilities will fund the necessary activities to fully implement "Guidelines" direction			

PART III

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
01	Communicate intent of "Guidelines" as described on pages 17,32,38, 59-64 as a cooperative extension effort on private and state lands relative to mining and energy operations	Y2232	2	con-tinuous	6*	SE ES	FS*,BLM*, WG&F*, IF&G* MFW&P*, MDSL, IDL, WSF,NPS	All agencies will encourage personnel to communicate with private land owners, lease holders of state land and state land managers to take actions outlined in "Guidelines" whenever possible			
M3	Implement guidelines for recreational activities to make them more compatible with spacial and habitat requirements of grizzly bears on federal lands	Y2241	1	con-tinuous	6	SE	BLM*, FS*, NPS*, MFW&P, WG&F, IF&G	All agencies having management responsibilities will fund the necessary activities to fully implement "Guidelines" direction			
01	Communicate intent of "Guidelines" as described on pages 14,28,36, and 59-64 as a cooperative extension effort on private and state lands relative to recreation development or pursuit	Y2242	2	con-tinuous	6*	SE ES	FS*, BLM*, WG&F*, IF&G* MFW&P*, MDSL IDL, WSF, NPS	All agencies will encourage personnel to communicate with private land owners, outfitters, resort operators, lease holders of state lands and state land managers to take actions outlined in "Guidelines" whenever possible.			
04	Consider the needs of grizzly bears when reviewing permits for development in occupied range via county zoning, state regulations and by applying the "Guidelines" on federal lands.	Y225	2	con-tinuous	6*	SE ES	MFW&P*, WG&F* IF&G*, BLM* FS* State lands, regulatory agencies, EPA, all county or regional zoning boards, county commissioners	In addition to a cooperative extension effort by all agencies, duties of the Grizzly Recovery Coordinator will include developing guidelines to assist state, local, and private interests in assessing and planning projects and activities that will be compatible with grizzly bear management			

PART III

YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I1	Determine the cumulative effects of all actions impacting grizzlies and through mid-range interagency planning, avoid placing stress on them; leave space for bears to retreat to and still be available to return to the project area when the project is concluded	Y226	1	2 yr.	6*	SE	FS* BLM* NPS* MFW&P, WG&F, IF&G	10,000 10,000 2,000 10,000	10,000 10,000 2,000 10,000	-0- -0- -0- -0-	
O4	Coordinate, monitor, and report on activities relating to redressing population limiting factors; monitor compliance with recovery plan	Y23	2	continuous	6*	SE	FS, NPS MFW&P, BLM WG&F, IF&G, WSF, MDSL, private landowners, DNRC, public	Costs included in Grizzly Bear Recovery Coordinator's duties			
I2	Adjust occupied habitat boundaries habitat stratification and management direction and acreages as new information becomes available	Y311 Y312 Y32 Y33	2	continuous	6*	SE	All agencies, public	Included in Grizzly Bear Recovery Coordinator's duties			
I3	Recommend Critical Habitat	Y34	3	2 yr.	6*	SE	NPS, WY&G, IF&G, MFW&P, BLM, WSF, MDSL, FS, private landowners DNRC, public	25,000	25,000	-0-	

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
M3	Make recommendations on 9,000 acres of private and state lands within the Shoshone National Forest relative to conservation of grizzly bears; alternatives include purchase, trade or a cooperative extension service, see Y2212, Y2222, Y2232, Y2242, Y225	Y41	2	1 yr.	6*	SE	FS*, WG&F*, WSF*, BLM, NPS, private landowners, public	Administrative costs			
M3	Make recommendations on 7,025 acres on private and state lands within the Targhee National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, or a cooperative extension service, see Y2212, Y2222, Y2232, Y2242, Y225	Y421	1	1 yr.	6*	SE	IF&G*, FS* NPS, BLM, private landowners, public	Administrative costs			
04	Resolve differences in agency stratification and management direction on 38,000 acres of habitat on the Targhee National Forest; research recommends MS2 be reviewed for MS1 designation	Y422	2	1 yr.	6	SE	FS*, IF&G*, NPS, BLM independent research biologists, public	Costs are included in ongoing programs; commitments and understandings on controversial issues must be resolved via meetings or other means of communications			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M3	Make recommendations on 3,820 acres of private and state lands within the Bridger-Teton National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, or a cooperative extension service, see Y2212, Y2222, Y2232, Y2242, Y2241	Y431	2	1 yr			FS*, WG&F* WSF*, private landowners BLM, public	Administrative costs			
04	Resolve differences in agency stratification and management direction on approximately 9,300 acres of occupied habitat on the Bridger-Teton National Forest. MS2 to MS1	Y432	1	1 yr	6	SE	FS*, WG&F*, NPS, BLM, independent research biologists, public	Costs are included in ongoing programs; commitments and understandings on controversial issues must be resolved via meetings or other means of communication			
I2	Stratify according to grizzly bear use and needs, 176,000 acres of Gallatin National Forest and determine management direction. Consideration for management direction equivalent to MS3 in "Guidelines" should be given for certain areas along highways and in high public use areas	Y441	1	2 yr	6	SE	FS* NPS, MFW&P, private landowners, public MDSL	10,000	10,000	-0-	

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
04	Review 20,000 acres of area between Taylor Fork and Muddy Creek along the Gallatin-Madison Divide for inclusion in occupied grizzly habitat. See final environmental statement for Buck Creek-Yellow Mules area	Y442	2	1 yr.	6	SE	FS* MFW&P MDSL, private landowners public	1,000	-0-	-0-	
04	Review differences in agency stratification and management direction on approximately 20,000 acres of occupied habitat; unspecified management designation to MS1	Y443	1	1 yr.			FS*, NPS, MFW&P, public private landowners	Costs are included in ongoing programs; mutual agreements and understandings on controversial issues must be resolved via meetings, etc.			
M3	Make recommendations on 33,000 acres of private and state lands within the Gallatin National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, or through a cooperative extension service, see Y2212, Y2222, Y2232, Y2242, Y225.	Y444	2	1 yr.			FS*, MFW&P*, MDSL*, BLM, public, private landowners	Costs are included in ongoing programs; controversial issues can be resolved via meetings and other communications			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	PROGRAM (6a)	OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
M3	Make recommendations on 2,000 acres of state**and private lands within the Custer National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, or through a cooperative extension program, see Y2212, Y2222, Y2232, Y2242,Y225	Y45	2	1 yr.			FS*, MFW&P*, MDSL*, private landowners, public	Administrative costs			
I2	Stratify according to grizzly bear use and needs of all BLM administered lands within the occupied range of grizzly bears in Idaho and Montana; determine management direction	Y481 Y482	2	2 yr.			BLM* MFW&P, public private landowners, IF&G	5,000	5,000	-0-	
I2	Identify all state and private lands within occupied grizzly bear range, stratify in terms of use and importance, and determine management direction necessary for species recovery.	Y49	2	2 yr.	6*	SE	MFWYP*, WG&F* IF&G*, FS, BLM, MDSL, IDSL, WSF	Costs included in duties of the Grizzly Bear Recovery Coordinator with assistance from all agencies			
04	Coordinate, monitor, and report on activities, meetings and communications relative to resolving differences and determining management direction for grizzly bear habitat designation; monitor compliance with recovery plan	Y49a	2	con-tinuous	6*	SE	MDSL, IDSL, FS, WSF, public, WG&F, private landowners IF&G, BLM, NPS, MFW&P	Include in duties of the Grizzly Bear Recovery Plan Coordinator Administrative costs			

* *Unknown

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
R1	Develop and conduct intensive monitoring system for determining population parameters prior to recovery and an extensive population monitoring system for use following recovery; conduct habitat surveys to refine current delineations and habitat stratification	Y511 Y521 Y531	1	8 yr.	6*	SE	NPS* FS* WG&F MFW&P IF&G BLM, public private research	250,000 60,000 35,000 25,000 25,000 5,000	250,000 60,000 35,000 25,000 25,000 5,000	250,000 60,000 35,000 25,000 25,000 5,000	
I4	Collate, analyze, compare and report on research data and techniques used to evaluate recovery progress and plan compliance	Y512	2	continuous	6*	SE	IF&G, NPS MFW&P, IDSL FS, BLM, WG&F, MDSL, WSF, private landowners, public	Include in duties of the Grizzly Bear Recovery Coordinator			
04	Standardize observation report form and encourage agencies to use them; verification and dissemination of reports	Y513	3	continuous	6*	SE	 FS, BLM, WG&F, NPS, MFW&P, IF&G, MDSL, WSF, IDSL, public, private landwoners	Include in duties of the Grizzly Bear Recovery Coordinator Administrative costs			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
04	Standardize procedures and report	Y522	3	con-tinuous	6*	SE	Public, NPS FS, MFW&P, BLM, private research	Included in costs of Grizzly Bear Recovery Coordinator			
I3	Refine habitat delineation and classification of habitat; establish a quality index of habitat components; establish a benchmark of present habitat values to measure effects over time (before and after recovery) monitor changes in habitat due to human use prior to recovery	Y532 Y5321 Y5322 Y5323 Y5324	3	3 yr.	6	SE	FS* NPS* WG&F, IF&G MFW&P, MDSL IDSL, WSF	25,000 40,000	25,000 40,000	25,000 40,000	
04	Submit an annual repoort to effected or cooperating agencies and individuals on management practices used successfully to improve grizzly bear habitat	Y5325	3	con-tinuous	6	SE	FS* NPS* BLM* MFW&P, WG&F IDSL, WSF, IF&G	500 500 100	500 500 100	500 500 100	
I2	Inventory and map changes in habitat components periodically and continued evaluation of changes in habitat to measure cumulative effects over time following recovery	Y541 Y542	3	con-tinuous			FS*, NPS,* BLM*, MDSL*, WSF*, IDSL*, MFW&P, WG&F IF&G, public, private landowners	Costs to be estimated at time of recovery			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
04	Coordinate ongoing activities and monitor plan compliance	Y543	2	continuous	6*	SE	WG&F, BLM, FS, IF&G, MFW&P, NPS public, private landowners	Costs included in Grizzly Bear Recovery Coordinator			
M3	Manage populations and habitats on federal lands prior to recovery	Y61	1	continuous			WG&F*, IF&G*, FS*, NPS*, BLM*, MFW&P* Public	Administrative costs			
M5	Develop and refine procedures for relocating grizzlies expeditiously; continue search for new release area	Y611 Y6111	2	2 yr.	6*	SE ADC	MFW&P*, WG&F*, IF&G*, NPS*, FS, BLM, Public	Assign to Grizzly Bear Recovery Coordinator; continue present administrative meetings			
R4	Research and develop methods to rehabilitate problem bears	Y6112	2	unknown	6*	SE	WG&F*, IF&G* MFW&P*, NPS* FS, BLM Public	Contract for the necessary research at a university with the capabilities to hold the test bears and to observe their training behavior under the most natural conditions			
M2	Develop and coordinate procedures for re-introduction of bears into areas of former habitat or into areas of low densities outside the YGBE that need a population infusion	Y6113	3	unknown	6*	SE	FS*, NPS*, WG&F*, IF&G*, MFW&P*, WWD*, Wildlife agencies of other states* Public, adjacent landowners	Starting with a joint meeting of all interested states, determine areas available and interest of the general public			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M5	Control nuisance grizzly bears	Y612	1	continuous	6*	ADC	MFW&P*, NPS* WG&F*, IF&G*, FS, BLM	Costs included in Y2114 and Y2116			
M3	Manage populations and habitat prior to recovery by developing guidelines for state and private lands to maintain or enhance habitat by recommending land use activities compatible with grizzly bear requirements; minimize potential for problems relative to grizzly bears	Y62	2	continuous	6*	SE	WSF*, MDNRC* MFW&P*, WG&F*, IF&G*, WSF* IDSL*, MDSL* FS*, BLM*, DNRC* public, private landowners	Administrative costs			
M3	Manage population and habitats on all lands following recovery, refine control methods, harvest quotas and develop a coordinated system for sport hunting on non-park land	Y63	3	continuous	6*	SE	WG&F*, MFW&P* MDNRC*, IF&G* WSF*, IDSL* MDSL*, BLM* Public	Administrative costs			
M3	Intensify management and monitoring of sheep allotments in grizzly bear range	Y631	1	continuous			FS* BLM* Public, all agencies	5,000 Unknown if	5,000 applicable	5,000	
I2	Establish baseline data on grizzlies in areas where construction permits are to be considered	Y632	1	unknown			All agencies, public	Necessary studies should be funded by appropriate agency			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I1	Monitor radio-tagged grizzly bears in areas where permits issued are impacting grizzly bears	Y63	1	un-known			FS*, all agencies, public	Necessary studies should be funded			
I14	Sample and evaluate public attitudes toward grizzly bears	Y71 Y712	3	1 yr	6*	SE PA	media, public all agencies	30,000 Future costs to be included in National Hunting and Fishing Survey conducted every 5 years	-0-	-0-	
I14	Sample and evaluate attitudes of persons residing in or adjacent to grizzly bear management areas	Y711	3	1 yr			WG&F* IF&G* MFW&P* All agencies, media	4,000 3,000 6,000	-0- -0- -0-	-0- -0- -0-	
01	Formulate ways to improve public attitudes and acceptance of habitat protection, research and management relative to grizzly bears	Y72	3	con-tinuous	6*	PA	MFW&P*, IF&G* WG&F*, private conservation organizations	Increase numbers of articles concerning grizzly bears in agency publications (Montana Outdoors, Wyoming Wildlife, Audubon Leader, etc.) and increase use of public information programs, both regional and national. National conservation organizations are in the most favorable position to launch a nationwide program			

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YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
01	Inform citizens having grizzly bear problems of appropriate procedures and contacts for immediate assistance	Y72	2	continuous	6*	SE ADC		Include in Recovery Coordinator, use public assistance	duties of Grizzly Bear programs, news releases		
							MFW&P	Include in	I & E programs		
							WG&F	Include in	I & E programs		
							IF&G	Include in	I & E programs		
							all other agencies				
04	Appoint a Grizzly Bear Recovery Coordinator to collate relevant data, coordinate and stimulate agency compliance, and report to all agencies as necessary	Y8	2	continuous	6*	SE	All agencies	50,000	50,000	50,000	
03	Revise appropriate federal and state regulations to facilitate implementation of actions necessary for species recovery	Y9	1	unknown	6*	LE SE	WG&F*, IF&G* MFW&P*, FS, BLM, WSF, MDSL DNRA and other appropriate agencies	Administrative costs			

NOTE: Cost estimates are recommended only and were derived from present cost estimates of ongoing studies. The recovery plan recognizes that funding constraints of state and federal agencies may preclude blanket acceptance.

PART III

NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REC. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
02	Develop a specially trained law enforcement team to reduce illegal grizzly bear deaths	N21111	1	unknown	6*	LE		2,000	800	800	
							NPS	700	250	250	
							MFW&P	1,000	400	400	
							BIA/Tribes	700	400	400	
							FS	1,500	1,200	400	
							BLM	500	200	200	
01	Distribute pamphlets to better identify differences in blacks and grizzly bears	N21112	2	continuous	6	PA	MFW&P*, FS BLM	Costs included in Y21121			
01	Special warning to black bear hunters, hunting in occupied ranges of grizzly bears	N21121	2	continuous	6	LE	MFW&P*, BLM FS	Costs included in Y21121			
03	Develop regulations to reduce man-caused mortality of female grizzly bears and review current hunting program annually in light of research and general knowledge of grizzly bears	N21122	1	1 yr.	6	LE SE	MFW&P*, BIA	Regulations set at annual meeting			
							FS, BLM	Administrative costs			
01	Warning signs along highways and high use roads in occupied grizzly bear range	N21131	3	as required	6	SS	NPS*, FS*, MDH*, BLM, MFW&P, BIA	Costs to be determined when research or management determines areas of conflict			
M7	Clean up carrion along roads and railroads to avoid attracting grizzly bears	N21132 N21133	3	continuous	6	SE ADC	NPS*, FS*, MDH*, BIA, MFW&P	Costs included in ongoing programs; Grizzly Bear Recovery Coordinator will urge appropriate agency to take necessary action			

*Denotes Lead Agency

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M7	Reduce potential for grizzly bear losses due to improper rodent control or mishandling of rodenticide in occupied grizzly bear range	N21134	2	continuous	6	SE	EPA*, MDA, CRCB, CEA, MDL, MFW&P	Require applicator to follow guidelines and take necessary precautions; Animal Damage Control Area Manager will arrange checks for conformance.			
M5	Reduce losses due to mishandling bears for research and translocations	N21135 N21136	1	continuous	6*	SE	NPS*, MFW&P*	Costs included in guidelines to be prepared for Yellowstone Grizzly Bear Ecosystem			
M5	Control of nuisance grizzly bears causing damage to property, livestock or threatening public safety	N21141 N21142 N2115 N2116	1	continuous	6*	ADC	 NPS* MFW&P* BIA/Tribes* FS, BLM, Public	12,000 25,000 20,000 1,000	12,000 25,000 20,000 1,000	12,000 25,000 20,000 1,000	
04	Appoint a Grizzly Bear Mortality Coordinator	N212	1	continuous	6*	SE	MFW&P	Included in Y213 costs			
M3	Develop and apply systematic management guidelines on all federal lands to make grazing, timber operations, mining and energy explorations and development, recreation, water development and human development compatible with requirements of grizzlies; review past practices and impacts	N2211 N2221 N2231 N2241	1	continuous	6	SE	FS*, NPS*, BIA/Tribes* BLM*, MWF&P EPA, DNRC	For elements N2211 through N2241 all agencies having surface management responsibilities will fund the necessary research and monitoring to develop and apply systematic management guidelines for those activities that affect grizzly bears or their habitats and develop positive management programs to aid in the conservation and recovery of the bear			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
01	Communicate the intent of the developed guidelines as a cooperative extension effort on private and state lands relative to grazing, mining and energy exploration and development, water development, human development, recreation activities and silvacultural practices	N2212 N2222 N2232 N2242	2	continuous	6*	SE ES	MFW&P*, FS* BLM* BIA/ Tribes*, DNRC*, State and county zoning regulatory agencies*, Public	All agencies will encourage personnel to communicate with private landowners, leaseholders of state lands, state land managers to take actions similar to those outlined in "Guidelines" (YGBE) whenever possible to aid in the conservation of grizzly bears			
04	Consider the needs of grizzly bears when reviewing permits for development in occupied range via county zoning, state regulations, and by formulating guidelines on federal and state lands	N225	1	continuous	6*	SE ES	MFW&P*, DNRC* MDSL*, BIA/ Tribes, BLM, FS, EPA, county state and regional zoning boards county commissioners, public	In addition to a cooperative extension effort by all agencies, the duties of the Grizzly Bear Recovery Coordinator will include developing guidelines to assist state, private and local interests in assessing and planning projects that will be compatible with grizzly bear conservation.			
11	Determine the cumulative effects of all actions impacting grizzly bears and through mid-range interagency planning, avoid placing additional stress on them, leave space for bears to retreat to and be available to return to project area when the project is concluded	N226	1	2 yr.	6*	SE	 FS* BLM* NPS* BIA/Tribes* MFW&P, DNRC, MDSL	10,000 20,000 5,000 10,000	10,000 20,000 5,000 10,000	-0- 20,000 -0- -0-	

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
O4	Coordinate, monitor and report on activities relating to redressing population limiting factors; monitor compliance with recovery plan	N23	2	con-tinuous	6*	SE	FS, BLM public BIA/Tribes MDSL, DNRC private land-owners, public	Costs included in Grizzly Bear Recovery Coordinator			
I2	Correct occupied habitat delineation as new data become available	N3112 N33	2	con-tinuous	6*	SE	MFW&P, FS BIA/Tribes, DNRC, MDSL, private land-owners, public, BLM	Include in duties of Grizzly Bear Recovery Coordinator			
I3	Recommend Critical Habitat	N34	3	2 yr.	6*	SE	BIA/Tribes FS, BLM, MFW&P, DNRC private land-owners, MDSL public	25,000	25,000	-0-	
I3	Identify travel corridors	N35	2	3 yr			NPS*, FS* MFW&P, BIA/ Tribes, DNRC* MDSL*, BLM*	Costs included in N533			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
04	Determine management direction on 475,836 acres stratified relative to grizzly bear use on the Lewis and Clark National Forest	N411	1	2 yr.	6	SE	FS* MFW&P, BLM, MDSL, private landowners	5,000	5,000	-0-	
I2	Stratify relative to grizzly bear uses and needs and determine management direction per stratification 304,064 acres of occupied grizzly bear range on the Lewis & Clark National Forest	N412	1	3 yr	6	SE	FS* BLM* MDSL* private landowners, MFW&P, public	10,000	10,000	10,000	
M3	Make recommendations on 5,300 acres of private lands within the Lewis & Clark National Forest relative to conservation of grizzly bears; alternatives include purchase, trade or cooperative extension service per N2212, N2222, N2232, N2242, N225	N413	2	1 yr			FS*, all agencies, private landowners, public	Administrative costs			
I2	Stratify according to grizzly bear use and needs 138,000 acres of land in occupied grizzly bear range on the Blackfeet Indian Reservation; management plan	N42	2	3 yr			BIA/Tribes* All agencies, private landowners	10,000	10,000	10,000	
M3	Determine management direction on 70,925 acres stratified re: grizzly bear use on the Helena National Forest	N431	1	2 yr	6	SE	FS* MFW&P, BLM, public	5,000	5,000	-0-	

PART III

NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification 103,148 acres on the Helena National Forest	N432	1	2 yr	6	SE	FS* BLM, MDSL PUBLIC	10,000	10,000	-0-	
M3	Make recommendations on 6,958 acres of private lands within the Helena National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, or cooperative extension service, per N2212, N2222, N2232, N2242, N225	N433	2	1 yr	6	SE	FS*, BLM, MFW&P, private landowners, public	Administrative costs			
M3	Make recommendations on 615 acres of state land within the Helena National Forest relative to conservation of grizzly bears; see alternatives above (N433)	N434	3	1 yr	6	SE	FS*, MDSL* MFW&P, public	Administrative costs			
M3	Determine managemement direction on 146,942 acres stratified relative to grizzly bear use on the Lolo National Forest	N441	1	1 yr	6	SE	FS* MDSL, MFW&P, BIA/Tribes DNRC, public	May be completed Administrative costs			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	PROGRAM (6a)	OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification 87,087* acres of occupied grizzly bear range on the Lolo National Forest	N442	1	2 yr	6	SE	FS* MFW&P, DNRC, MDSL, BIA/ Tribes, public	5,000	5,000	-0-	
M3	Make recommendations on 18,974* acres of private and state lands within the Lolo National Forest relative to conservation of grizzly bears; see alternatives above (N433)	N443	2	1 yr	6	SE	FS*, Public MFW&P, DNRC, MDSL, BGP, BIA/Tribes private landowners	Administrative costs			
M3	Determine management direction on 1,667,100 acres stratified relative to grizzly bear use on the Flathead National Forest	N451	1	2 yr	6	SE	FS* MFW&P, NPS, BIA/Tribes, public	10,000	10,000	-0-	
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification on 388,548 acres of occupied grizzly bear range on the Flathead National Forest	N452	1	2 yr	6	SE	FS* MFW&P, NPS BIA/Tribes public	10,000	10,000	-0-	

*Acres of occupied habitat determined by Lolo National Forest, excludes Rattlesnake area

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M3	Make recommendations on 180,609 acres of private and state lands within the Flathead National Forest relative to conservation of grizzly bears; see alternatives above (N433)	N453 N454	2	1 yr	6	SE	FS* MFW&P, NPS, public, BIA/ Tribes, private landowners	Administrative costs			
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification 38,400 acres of occupied grizzly bear range on the Swan State Forest	N455	2	2 yr	6	SE	DNRC* FS, MDSL, MFW&P, public	5,000	5,000	-0-	
M3	Determine management direction on 121,472 acres stratified relative to grizzly bear use on the Kootenai National Forest	N461	1	2 yr	6	SE	FS* MFW&P, public	7,000	7,000	-0-	
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification 4,047 acres of occupied grizzly bear range on the Kootenai National Forest	N462	1	2 yr	6	SE	FS*, public MDSL, MFW&P	Included in N461			
M3	Make recommendations on 15,324 acres of state and private lands within the Kootenai National Forest relative to conservation of grizzly bears; see alternatives (N433)	N463	2	1 yr	6	SE	FS*, MFW&P Private landowners, public	Administrative costs			

NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			STATUS/COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification 223,511 acres of occupied grizzly bear range on the Flathead Indian Reservation	N471	1	1 yr	6	SE	BIA/Tribes* FS, MFW&P, MDSL	Plan is completed			
M3	Make recommendations on 20,910 acres of private lands within the Flathead Indian Reservation relative to conservation of grizzly bears	N472	2	1 yr	6*	SE	BIA/Tribes* MFW&P*, FS	Administrative costs			
M3	Make recommendations on 9,510 acres of state lands within Flathead Indian Reservation relative to conservation of grizzly bears	N473	2	1 yr	6*	SE	BIA/Tribes* MDSL*, DNRC MFW&P, public	Administrative costs			
I2	Stratify relative to grizzly bear use and needs and determine management direction per stratification of 1,013,120 acres of occupied grizzly bear habitat	N481	1	1 yr	6	SE	NPS*, FS, BIA/Tribes MFW&P	Administrative costs			
M3	Make recommendations on 713 acres of private lands within the Glacier National Park relative to conservation of grizzly bears; see alternative actions (N433)	N482	2	1 yr			NPS*	Administrative costs			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I2	Stratify relative to grizzly use and needs and determine management direction per stratification 24,240 acres of occupied grizzly range on the Bureau of Land Management lands within occupied grizzly range	N49	1	2 yr	6	SE	BLM* FS, MFW&P, Public	5,000	5,000	-0-	
M3	Make recommendations on 230,000 acres of private and state lands outside the national forest boundaries; stratify and determine management direction necessary for recovery and importance to conservation of grizzly bears; alternatives include purchase, trade, lease or cooperative extension service per N2212, N2222, N2242, N225	N49A	2	1 yr	6*	SE	MFW&P*, MDSL* DNRS*, FS, BLM, public	Administrative costs			
04	Review all areas and resolve any differences between research land managers	N49B	2	1 yr	6*	SE	Public, NPS, FS, MFW&P BLM, BIA/ Tribes	The Grizzly Bear Recovery Coordinator will develop lines of communication between agency personnel and conduct workshops			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
R1	Develop and conduct an intensive monitoring system for determining population characteristics prior to recovery and an extensive monitoring system for use after recovery; evaluate habitat, determine habitat stratifications and refine habitat delineations in the six study areas listed below:	N511 N521 N531 N532	1	un-known	6*	SE		75,000 To be distributed between all active study areas	75,000	75,000	
	Glacier National Park and Whitefish Range						NPS*, FS*	50,000 20,000	30,000 10,000	30,000* 10,000	
					6*	SE	MFW&P*, BIA/Tribes*, DNRC*, MDSL*, private research, public				
	Blackfeet Indian Reservation				6		BIA/Tribe* NPS, FS, MFW&P, public	20,000	30,000	30,000	
	Bob Marshall, Great Bear & Scapegoat Wilderness Areas				6		FS* Public, BLM MFW&P	95,000	95,000	95,000*	
	Swan Valley and Mission Mountains (East)				6		FS* DNRC, MFW&P BIA/Tribes, public	55,000	55,000	55,000*	
	*Costs may be reduced if personnel, traps, bait and gear could be airlifted										

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
	Mission Mountains (West) and Rattlesnake				6		BIA/ Tribes* MFW&P, MDSL, public, private research, FS*	20,000 10,000	20,000 10,000	20,000 10,000	
	Rocky Mountain Front and Lincoln Area				6		FS* MFW&P* BLM* MDSL, Public, private research	25,000 50,000 20,000	25,000 50,000 20,000	25,000 50,000 20,000	

NOTE:

A. Research in Glacier National Park must be coordinated with research on the Blackfeet Indian Reservation and with research on the North Fork of the Flathead River and Whitefish Range; if possible, work on grizzly bears in Canada adjacent to the border should also be coordinated.

B. Research in the wilderness areas (Bob Marshall, Scapegoat and Great Bear) should be coordinated with research on the Rocky Mountain Front, the Swan Valley-Mission Range and in Glacier National Park.

1. A continuation of work on the Flathead Reservation will be coordinated with Swan Valley-Mission Range work according to reports from the Salish-Kootenai Tribes.

Therefore, for best results, greatest census efficiency and maximum coverage at minimum cost, all projects should be funded and ongoing simultaneously. All projects should be closely coordinated with the Border Grizzly Project.

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I4	Collate, analyze, compare and report on research and techniques to evaluate recovery progress and plan compliance	N512	2	continuous	6*	SE	Public, FS, BLM, MFW&P	Included in duties of the Grizzly Bear Recovery Coordinator			
O4	Standardize procedures and report form and encourage agencies to use them; verification and dissemination of reports	N513 N522	2	continuous	6*	SE	MFW&P, BLM BIA/Tribes, FS, Public, Private research	Included in costs of Grizzly Bear Recovery Coordinator			
I1	Evaluate current mortality quota (N=25) annually and adjust if research so indicates	N514	1	continuous	6*	SE	MFW&P* Public, NPS, FS, BLM, BIA/Tribes	Administrative costs			
I2	Determine nature and extent of habitat, map, refine habitat delineations prior to recovery	N533 N534 N535 N536	3	3 yr			NPS* FS* DNRC* MDSL* BLM* MFW&P, BIA/ Tribes, private research public	20,000 30,000 5,000 10,000 5,000	20,000 30,000 5,000 10,000 5,000	20,000 30,000 5,000 10,000 5,000	
O4	Submit an annual report to personnel on management practices successfully used to improve habitat	N537	3	continuous	6		All agencies involved	Administrative costs			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I2	Inventory and map changes in habitat components periodically following recovery	N541 N542	3	continuous			FS*, NPS* BLM*, DNRC* MDSL*	To be determined at time of recovery			
O4	Coordinate and review agency actions and plans; monitor plan compliance	N543	2	continuous	6*	SE	Public, NPS FS, MFW&P BIA/Tribes DNRC, MDSL, private research	Included in cost of Grizzly Bear Recovery Coordinator			
M3	Manage population and habitats on federal lands prior to recovery by applying systematic management guidelines to maintain or enhance habitats, etc.	N61	1	continuous	6*	SE	FS*, BLM* NPS*, DNRC*, MDSL*, MFW&P* Public, private landowners, private research	Administrative costs			
M5	Develop and refine procedures for relocating grizzly bears; continue search for new areas	N611	2	2 yr	6*	SE ADC	MFW&P*, NPS* FS, BLM, Public, private landowners	Included in duties of Grizzly Bear Recovery Coordinator; continue present interagency meetings			
R4	Research and develop methods to rehabilitate problem bears	N6111	2	unknown	6*	SE	MFW&P*, NPS* BLM, FS, public	Contract for necessary research at a university with capabilities to hold the test bears and observe reactions under most natural conditions			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M2	Develop and coordinate procedures for reintroduction of grizzly bears	N6112	3	unknown	6*	SE	FS*, NPS*, appropirate state agencies, MFW&P, IF&G, WG&F, public, private landowners, Alberta, British Columbia, Alaska, others	Costs dependent on rate of participation, public meetings, etc. (see Y6113)			
M5	Control or remove documented nuisance grizzly bears	N612	1	continuous	6*	ADC	MFW&P*, FS public, BLM BIA/Tribes	Costs included in N21141 and N21142			
M3	Manage population and habitats on private and state lands prior to recovery by developing and applying systematic guidelines and recommending land use activities	N62	2	continuous	6*	SE	MFW&P*, FS BLM, public, BIA/Tribes private research	Administrative costs plus leadership by the Grizzly Bear Recovery Coordinator to reach agreement between involved agencies and private landowners on management guidelines			
M3	Manage population and habitats on all lands following recovery in the NCDGBE, review control methods, harvest quotas, etc.	N63	3	continuous	6*	SE	MFW&P*, FS, BLM, public, BIA/Tribes private research	Administrative costs plus leadership by the Grizzly Bear Recovery Coordinator to reach agreement between involved agencies and private landowners on management guidelines			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M3	Intensify management and monitoring of sheep allotments in occupied grizzly range	N631	1	continuous			FS*, BLM* All agencies public	5,000 Unknown	5,000	5,000	
I2	Establish baseline data on grizzly bears in areas where construction permits are to be considered	N632	1	unknown			FS*, BLM* MFW&P*, DNRC* MDSL*, NPS BIA/Tribes all agencies, private research	Necessary special studies should be funded			
I1	Monitor ratio-tagged grizzly bears in areas where special permits are impacting grizzly bears	N633	1	unknown			FS*, BLM* MFW&P*, NPS* NDRC, MDSL, BIA/Tribes public, private research	Necessary special studies should be funded by appropriate agency			
I14	Sample and evaluate public attitudes toward grizzly bears	N71 N712	3	1 yr	6*	SE PA	Public, all agencies, media	Costs to be included in Y71 and National Hunting and Fishing Survey conducted every 5 years			
I14	Sample and evaluate attitudes of persons residing in or adjacent to grizzly bear management areas	N711	3	1 yr			MFW&P*, all agencies, media	Costs included in Y711			

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NORTHERN CONTINENTAL DIVIDE GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
01	Formulate ways to improve public attitudes and acceptance of habitat protection, research and management relative to grizzly bears	N72	3	continuous	6*	PA	MFW&P*, private conservation organizations	Increase number of articles concerning grizzly bears in agency publications (Montana Outdoors, Audubon Leader, etc.) and increase use of public information programs, both regional and national. National conservation organizations are in the most favorable position to launch a nationwide program			
01	Inform citizens having grizzly bear problems of appropriate procedures and contacts for immediate assistance	N73	2	continuous	6*	SE ADC	MFW&P*, all other agencies	Include in duties of Grizzly Bear Recovery Coordinator, use public assistance programs, news releases, etc. include in State I&E programs			
01	Develop means to extend public attitudes to action plans	N74	3	1 yr	6*	PA	All agencies	Administrative costs			
04	Appoint a Grizzly Bear Recovery Coordinator to collate relevant data, coordinate and stimulate agency compliance, and report to all agencies as necessary	N8	2	continuous	6*	SE	All agencies	Costs included in Y8			
03	Revise appropriate federal and state regulations and initiate international cooperation where appropriate to facilitate implementation of actions necessary for species recovery	N9	1	unknown	6*	LE SE	MFW&P*, FS BLM, MDSL, DNRC, other appropriate agencies	Administrative costs			

Note: Cost estimates are recommended only and were derived from present cost estimates of ongoing studies. The recovery plan recognizes that funding constraints of state and federal agencies may preclude blanket acceptance.

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	PROGRAM (6a)	OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
02	Develop a specially trained law enforcement team to reduce illegal grizzly bear deaths	C2111	1	un-known	6*	LE	MFW&P, IF&G	Costs included in Y2111 and N21111. An additional trainee from Idaho and Montana may be included for this grizzly bear ecosystem			
01	Distribute pamphlets to black bear hunters to better identify differences in blacks and grizzlies	C21121	2	con-tinuous	6	PA	MFW&P*, IF&G* FS, BLM	Costs included in Y21121			
01	Special warning to black bear hunters, hunting in occupied range of grizzly bears	C21122	2	con-tinuous	6	LE	MFW&P*, IF&G* FS, BLM	Costs included in Y21121			
01	Warning signs along highways and high use roads in occupied grizzly range	C21131	3	as re-quired	6	SS	FS*, MDH*, BLM, MFW&P, IF&G, public, county comm-issioners	Costs to be determined when research or management determine areas of conflict			
M7	Clean up carrion along roads to avoid attracting grizzlies	C21132	3	con-tinuous	6	SE ADC	MFW&P*, IF&G* MDH*, FS* ITD*, BLM, public, county comm-issioners	Costs included in ongoing programs; Grizzly Bear Recovery Coordinator will urge appropriate agencies to take necessary action			
M7	Clean up carrion along railways to avoid attracting grizzlies	C21133	3	con-tinuous	6*	SE ADC	MFW&P* IF&G* FS, public	Costs included in ongoing programs; Grizzly Bear Recovery Coordinator will urge appropriate agencies to take necessary action			

*Denotes Lead Agency

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CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M7	Reduce potential for grizzly losses due to improper rodent control or mishandling of rodenticides in occupied grizzly range	C21134	2	continuous	6	SE	EPA*, MDA, CRCB, CEA, MDSL, MFW&P, appropriate agencies in Idaho	Require applicator to follow guidelines and take necessary precautions; Animal Damage Control Area Supervisor will arrange checks for conformance			
M5	Reduce losses due to mishandling bears for research and translocation	C21135	1	continuous	6*	SE	MFW&P*, NPS	Costs included in guidelines to be prepared for Yellowstone Grizzly Bear Ecosystem			
M5	Control of nuisance grizzlies causing damage to property, livestock or threatening public safety	C2114 C2116 C21141 C21142	2	continuous	6*	SE	 MFW&P* IF&G* all agencies	2,000 2,000 1,000	2,000 2,000 1,000	2,000 2,000 1,000	
04	Grizzly Bear Mortality Coordinator	C213	1	continuous	6*	SE	MFW&P	Included in Y213 costs			
M3	Develop and apply systematic management guidelines on all federal lands to make grazing, timber operations, mining and energy exploration and development, water development, recreation and human development compatible with requirements of grizzlies; review past practices and impacts	C2211 C2221 C2231 C2241	1	continuous	6	SE	FS*, BLM* USGS*, IDL MDSL	For elements C2211 through C2241 all agencies having surface management responsibilities will fund the necessary research and monitoring to develop and apply systematic management guidelines for those activities that affect grizzlies or their habitats and develop positive programs to aid in the conservation and recovery of the bear			

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CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
01	Communicate the intent of the "Guidelines" as a cooperative extension effort on private and state lands relative to grazing, mining and energy exploration and development, water development, recreation activities and silviculture	C2212 C2222 C2232 C2242	2	continuous	6*	SE ES	FS*, BLM*, IF&G*, MFW&P*, DNRC*, MDSL*, IDL*, Public, county extension agents	All agencies will encourage personnel to communicate with private landowners, lease holders of state lands, state land managers to initiate actions similar to those outlined in the "Guidelines" whenever possible to aid in the conservation of grizzly bears			
04	Consider the needs of grizzly bears when reviewing permits for development in occupied habitat of grizzly bears via county zoning, state regulations, and by formulating guidelines on federal and state lands	C225	3	continuous	6*	SE ES	FS*, MFW&P*, County zoning boards* IF&G* DCA*, BLM public, MDSL IDL, county commissioners county extension agents	In addition to a cooperative extension effort by all agencies, the duties of the Grizzly Bear Recovery Coordinator will include developing guidelines to assist state, private and local interests in assessing and planning projects that will be compatible with grizzly bear management			
I1	Determine the cumulative effects of all actions impacting grizzlies and through mid-range interagency planning, avoid placing additional stress on them, leave space for bears to retreat to and be available to return to the project area when the project is concluded	C226	1	2 yr	6*	SE	FS* BLM* Private landowners, MFW&P IF&G, MDSL, IDL, public	5,000 10,000 2,000	5,000 10,000 2,000	-0- -0- -0-	

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CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
04	Coordinate, monitor and report on activities relating to redressing population limiting factors; monitor compliance with recovery plan	C23	2	con-tinuous	6*	SE	BLM, FS, Public, private landowners, all other agencies	Costs included in duties of the Grizzly Bear Recovery Coordinator			
I2	Correct occupied habitat delineations as new data become available	C33	2	con-tinuous	6*	SE	MFW&P, IF&G FS, BLM, IDL DNRC, MDSL, private land-owners, public	Include in duties of the Grizzly Bear Recovery Coordinator			
I3	Recommend Critical Habitat	C34	2	2 yr	6*	SE	BLM, FS, private land-owners, all other agencies, public	10,000	10,000	-0-	
I3	Identify travel corridors	C35	2	3 yr			FS*, BLM* MDSL*, IDL* IF&G, MFW&P, Public, private research	Costs included in C533			
04	Determine management direction on 514,574 acres stratified relative to grizzly use on the Kootenai National Forest	C411	1	2 yr	6	SE	FS* MFW&P, BLM, IF&G, public, private landowners	5,000	5,000	-0-	

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
I2	Stratify relative to grizzly use and needs and determine management direction per stratification 319,141 acres of occupied grizzly range on the Kootenai National Forest	C412	1	2 yr	6	SE	FS* MFW&P, IF&G BLM, public	10,000	10,000	-0-	
M3	Make recommendations on 53,105 acres of private lands within the Kootenai National Forest relative to conservation of grizzly bears; alternatives included purchase, trade or cooperative extension service per C2212, C2222, C2232, C2242, C225	C413	2	1 yr			FS*, public, all agencies private landowners	Administrative costs			
M3	Determine management direction relative to grizzly bear on 62,280 acres of land stratified (1977) for grizzly use on the Lolo National Forest	C421	1	1 yr			FS*, Public all agencies	This job item may be completed for this forest (no confirmation)			
I2	Stratify relative to grizzly use and needs and determine management direction per stratification on 57,700 acres of grizzly range on the Lolo National Forest	C422	1	2 yr			FS*, Public, all agencies	This job item may be completed on this forest (no confirmation)			

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M3	Make recommendation on 12,684 acres of private lands and 1,475 acres of state lands within the Lolo National Forest relative to conservation of grizzly bears; alternatives include purchase, trade, lease, or cooperative extension service per C2212, C2222, C2232, C2242, C225	C423	2	1 yr	6	SE	FS*, MDSL* IDL*, MFW&P, IF&G, private landowners	Administrative costs			
M3	Determine management direction on 69,848 acres that were stratified as essential habitat in 1977 on the Panhandle National Forest (CYGBE)	C431	1	2 yr	6	SE	FS* BLM, IF&G, public	10,000	10,000	-0-	
I2	Stratify relative to grizzly use and needs and determine management direction per stratification 148,896 acres of occupied grizzly range in the Panhandle National Forest (CYGBE)	C432	1	2 yr	6	SE	FS* IF&G, BLM, public	5,000	5,000	-0-	
M3	Make recommendations on 4,960 acres of state lands and 15,960 acres of private lands within the Panhandle National Forest (CYGBE) relative to conservation of grizzly bears; alternatives include trade, purchase lease or cooperative extension service per C2212, C2222, C2232, C2242, C225	C433 C434	2	1 yr	6	SE	FS*, BLM, IDL public, private landowners	Administrative costs			

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
I2	Stratify relative to grizzly use and needs and determine management direction per stratification 2000 acres of BLM lands in CYGBE	C44	2	2 yr	6	SE	BLM* FS, IDL, IF&G public	500	500	-0-	
M3	Make recommendations on 17,700 acres of private lands and 2,100 acres of state lands outside national forest boundaries relative to conservation of grizzly bears; alternatives include purchase, trade, lease, or a cooperative extension service, see C2212, C2222, C2232, C2242, C225	C45	2	1 yr	6	SE	IDSL*, IF&G*, MDSL*, DNRC*, MFW&P*, FS, public, private landowners	Administrative costs			
I2	Identify each land parcel of state and private lands that present a special problem for grizzlies	C45	2	continuous	6*	SE	Public, MFW&P, IF&G, BLM, IDL, MDSL	Included in duties of Grizzly Bear Recovery Coordinator			
R1	Develop and conduct an intensive monitoring system for determining present population characteristics prior to recovery and an extensive monitoring system for use following recovery; evaluate habitat stratifications, and refine delineations in the CYGBE	C46 C511 C521 C531 C532	1	unknown	6*	SE	 FS* MFW&P* IF&G* BLM* MDSL, IDL, public, private research	25,000 50,000 10,000 10,000 5,000	25,000 50,000 10,000 10,000 5,000	25,000 50,000 10,000 10,000 5,000	

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	PROGRAM (6a)	OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
I2	Determine nature and extent of habitat, map, refine habitat delineations, etc.	C533 C534 C535 C536	3	3 yr			FS* BLM* MDSL* IDL* IF&G, MFW&P, Public, private research	10,000 1,000 5,000 2,000	10,000 1,000 5,000 2,000	10,000 1,000 5,000 2,000	
04	Submit annual report to agencies and personnel of management practices successfully used to improve habitat	C537	3	continuous			All agencies	Administrative costs			
I2	Inventory and map changes in habitat components periodically following recovery	C541 C542	3	continuous			FS*, BLM* MDSL*, IDL* DNRC*	to be determined at the time of recovery			
04	Coordinate and review agency actions and plans; monitor plan compliance	C543	2	continuous	6*	SE	Public, MFW&P FS, BLM, IF&G private research	Included in duties of Grizzly Bear Recovery Coordinator			
M3	Manage populations and habitats on federal lands prior to recovery by developing and applying systematic guidelines to maintain and enhance habitats, etc.	C61	1	continuous	6*	SE	FS* BLM* MDSL* IDL* MFW&P, IF&G Public, private research	5,000 2,000 1,000 2,000 2,000	5,000 2,000 1,000 2,000 2,000	-0- -0- -0- -0- -0-	

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
M5	Develop and refine procedures for relocating grizzlies; continue search for new areas	C611	2	2 yr	6*	SE ADC	MFW&P*, IF&G* NPS, FS, public	Included in duties of Grizzly Bear Recovery Coordinator; continue interagency meetings			
R4	Research and develop methods to rehabilitate problem bears	C6112	2	un-known	6*	SE	NPS*, MFW&P* FS, BLM, Public	Contract for necessary research at a university with capabilities to hold the test bears and observe reactions under most natural conditions			
M2	Develop and coordinate procedures for reintroduction of grizzlies	C6113	3	un-known	6*	SE	NPS*, appro-priate state agency* MFW&P, WG&F IF&G, public, private land-owners, Alaska, Alberta, Bri-tish Columbia, others	Costs dependent on rate of participation, public meetings, etc.			
M5	Control or remove documented nuisance grizzlies	C612	1	con-tinuous	6*	ADC	MFW&P*, IF&G* BLM, FS, public	Costs included in C2114 and C2116			

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
M3	Manage population and habitats on private and state lands by developing and applying guidelines and recommending land use activities compatible with grizzly bears	C62	2	continuous	6*	SE	MFW&P*, IF&G* FS, BLM, public. private landowner	(See N62)			
M3	Manage population and habitats on all lands in CYGBE; refine control methods	C63	3	continuous	6*	SE	MFW&P*. IF&G*. BLM. FS public. private research	Administrative costs (See N63)			
I2	Establish baseline data on grizzly bears in areas where construction permits are being considered or likely to be considered	C631	1	unknown			FS*, BLM*, MDSL*, IDL*, MDFW&P, IF&G Public	Necessary special studies should be funded by the appropriate land management agency			
I2	Accelerate radio-tagging grizzly bears in areas of special permit and monitor movements	C632	1	unknown			FS*, BLM*, MDSL*, IDL*, MFW&P, IF&G, PUBLIC	Necessary special studies should be funded by appropriate land management agency			
I14	Sample and evaluate public attitudes toward grizzlies	C71	3	1 yr	6*	SE PA	Public, all agencies, media	Costs to be included in National Hunting and Fishing Survey conducted every 5 years			

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY (1)	PLAN TASK (2)	TASK (3)	PRIORITY (4)	TASK DURATION (5)	RESPONSIBLE AGENCY* FWS REG. (6)	RESPONSIBLE AGENCY* PROGRAM (6a)	RESPONSIBLE AGENCY* OTHER (7)	FISCAL YEAR COSTS (EST) (Yr. following Plan approval) 1ST YR (8)	2ND YR	3RD YR	COMMENTS (9)
I14	Sample and evaluate attitudes of persons residing adjacent to grizzly bear management area and those geographically removed from the area	C711 C712	3	1 yr			MFW&P*, IF&G* media, all agencies	Costs included in Y711 and Y712			
01	Formulate ways to improve public attitudes and acceptance of habitat protection, research and management relative to grizzly bears	C72	3	con-tinuous	6*	PA	MFW&P*, private conservation organizations	Increase numbers of articles concerning grizzly bears in agency publications (Montana Outdoors, Audubon Leader, etc.) and increase use of public information programs; both regional and national. National conservation organizations are in the most favorable position to launch a nation-wide program.			
01	Inform citizens having grizzly bear problems of appropriate procedures and contacts for immediate assistance	C73	2	con-tinuous	6*	SE ADC	MFW&P*, IF&G* All other agencies	Included in duties of Grizzly Bear Recovery Coordinator. use public assistance programs, news releases, etc. Include in I & E programs			
01	Develop means to extend public attitudes to action plans and/or funding	C74	3	1 yr	6*	PA	All agencies	Administrative costs			

PART III

CABINET-YAAK GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
04	Appoint a Grizzly Bear Recovery Coordinator to collate relevant data, coordinate and stimulate agency compliance, and report to all agencies as necessary	C8	2	con-tinuous	6*	SE	All agencies	Costs included in Y8			
03	Revise appropriate federal and state regulations to facilitate implementation of actions necessary for species recovery including the initiation of international cooperation where appropriate	C9	1	un-known	6*	LE SE	MFW&P*, IF&G* MDSL, FS, BLM, DNRC, other appropriate agencies	Administrative costs			

Note: Cost estimates are recommended only and were derived from present cost estimates of ongoing studies. The recovery plan recognizes that funding constraints of state and federal agencies may preclude blanket acceptance.

PART III

SELKIRK MOUNTAINS GRIZZLY BEAR ECOSYSTEM
SELWAY-BITTERROOT GRIZZLY BEAR ECOSYSTEM
NORTH CASCADE MOUNTAINS GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
	Determine the present status of the grizzly bear populations in each grizzly bear ecosystem										
I1	S - Selkirk Mountains	1	3	un-known			FS* IF&G* WWD* Public, all agencies	30,000 20,000 20,000	30,000 20,000 20,000	30,000 20,000 20,000	
I1	SB - Selway Bitterroot	1	3	un-known			FS* IF&G* MFW&P* Public, all agencies	40,000 30,000 10,000	40,000 30,000 10,000	40,000 30,000 10,000	
I1	NC - North Cascade Mountains	1	3	un-known			FS* NPS* WWD* Public, all agencies	30,000 30,000 20,000	30,000 30,000 20,000	30,000 30,000 20,000	

PART III

SELKIRK MOUNTAINS GRIZZLY BEAR ECOSYSTEM
SELWAY-BITTERROOT GRIZZLY BEAR ECOSYSTEM
NORTH CASCADE MOUNTAINS GRIZZLY BEAR ECOSYSTEM

GENERAL CATEGORY	PLAN TASK	TASK	PRIORITY	TASK DURATION	RESPONSIBLE AGENCY*			FISCAL YEAR COSTS (EST) (Yr. following Plan approval)			COMMENTS
					FWS REG.	PROGRAM	OTHER	1ST YR	2ND YR	3RD YR	
(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)	(8)			(9)
	Determine the space and habitat necessary to support a viable population in each grizzly bear ecosystem										
I2	S - Selkirk Mountains	2	3	un-known			FS*, IF&G* WWD*, Public, all agencies	Costs included in Plan Item			1
I2	SB - Selway Bitterroot	2	3	un-known			FS*, NPS*, WWD*, Public, all agencies	Costs included in Plan Item			1
I2	NC - North Cascade Mountains	2	3	un-known			FS*, NPS* WWD*, Public, all agencies	Costs included in Plan Item			1

Note: Cost estimates are recommended only and were derived from present cost estimates of ongoing studies. The recovery plan recognizes that funding constraints of state and federal agencies may preclude blanket acceptance

APPENDIX A

COMPUTER MODELING

Chris Servheen, consulting with Bunnell and Tait, used two population estimates extrapolated from densities of three study areas and Glacier National Park, plus the age structure and survivorship data from a kill sample (Greer, 1979), to apply a computer model to a bear population in the NCDGBE. They applied different levels of human-induced mortality and varying levels of natural mortality and reproductive rates, to estimate the long-term effects of those parameters on this population. The computer model was developed by Fred Bunnell and David Tait at the University of British Columbia.

The model employed two initial population estimates, 440 bears (low) and 680 bears (high) (see footnotes NCDGBE); two survivorship rates of .8 .9 .8 18 x .9 (cubs to age 22 years) (highest), and .8 .9 .7 .7 .7 .7 .7 .7 .14 x .94 (cubs to age 22) (lowest); and two reproductive rates 2.3 cubs/3.0 cycle (high) and 1.78 cubs/3.4 cycle (low):

1) Both populations increased rapidly in the simulation when the high survivorship and high reproductive rates were used with a man-induced mortality of 12 bears.

2) Both populations declined when low survivorship and the low reproductive rate were used with a man-induced mortality of 12 bears. In fact, both populations declined in this simulation, when the man-induced mortality was reduced to 0.

3) Increasing the man induced mortality to 24 bears and using the high survivorship and high reproductive rate the higher initial population increased slowly.

4) Again, using the higher population estimate, highest survivorship with the lowest reproductive rate, the population remained stable when man-induced mortality was at 0.

Note: Actual survivorship data on this population is non-existent, data on litter size, reproductive cycles and densities are based on very limited data. The simulation model is a tool that is totally data dependent and must be viewed in this light. The test did indicate research needs and will give others interested in simulation models for grizzly bears a starting place.

The level of specific sex and age mortalities by man or the natural mortality and recruitment will probably never be precisely determined (Greer pers. com. 1980). McCullough (1979), indicates that high proportions of adult males may suppress survival of subadult age classes.

The sophisticated simulations for bear populations with few mortalities, limited current data, and historical assumptions appear to indicate exaggerated trends that do not appear to coincide with existing field observations.

Similarly, estimates for the rate of population growth or decline (implied from life tables and fecundity) in small populations with small changes each year, are inadequate for estimating rate of population change, or status (Tait and Bunnell, 1980).

APPENDIX B

Comments by agency on Agency Review Draft
of the Grizzly Bear Recovery Plan.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
P.O. Box 2417
Washington, D.C. 20013

2670

JAN 16 1981

Mr. Lynn A. Greenwalt
Director, Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Greenwalt:

This letter contains Forest Service comments on the agency review draft of the Grizzly Bear Recovery Plan. After this plan is approved, the Forest Service will prepare an action program to implement appropriate parts of the Recovery Plan.

The Recovery Plan presented information in Tables 2, 3, and 4, maps, and written text, which depicted current occupied grizzly bear habitat, current grizzly bear populations, and recovery goals. We have extrapolated from this information to estimate population numbers by ownership or management units. We feel that these preliminary estimates will be useful in establishing Forest Service objectives during planning processes. We would like to work with you to refine these population objectives. Our specific comments on the draft plan are as follows:

1. The disparity in our extrapolated bear numbers and densities between the Yellowstone Grizzly Bear Ecosystem (YGBE) and the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE) is confusing. The two ecosystems are almost identical in area, yet meeting the population parameters established for recovery results in 306 bears (1/28 sq. mi.) in the YGBE and 650 bears (1/13 sq. mi.) in the NCDGBE. The matter is further confused by the indication that 70 bears would be considered a recovered population in the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE) (page 108, Recovery Plan).

While not questioning the recovery objectives set forth in the Plan, we would like to see a better biological explanation of why population parameters resulting in such widely varying population numbers within each ecosystem were selected as the recovery goals.

2. Each of the ecosystems has a variety of landownerships (Tables A-D). The NCDGBE is particularly fractured with 11 ownerships. How were the carrying capacities of the private, State, and Indian Reservation lands considered in the determination of population parameters needed for recovery?

6300-11 (1/80)

3. Table D indicates that less than one-third of the area needed to support a minimum viable population (MVP) of 70 bears, is available on public lands in the United States portion of the Selkirk Mountains. Irrespective of ownership pattern, a population of bears does still exist in the Selkirks. Given the ownership patterns, there appear to be three options for managing the United States portion of the Selkirks:

a. Disregard the grizzly population.

b. Maintain United States habitat in a condition to support a density of one grizzly per 26 square miles, in hopes that management on Canadian and private lands would maintain a similar capacity, and a MVP would be maintained.

c. Intensively study the current grizzly population and map habitat, with the goal of manipulating habitat to increase bear densities to the greatest extent possible.

It appears to us that the Selkirk population is peripheral in the United States and we do not control adaquate habitat to achieve recovery. Therefore, we would recommend a management scheme per item b above.

4. We are concerned about the lack of public involvement or use of the NEPA process in development of this plan. The U.S. Fish and Wildlife Service (FWS) contends that a recovery plan simply prescribes what must be done to achieve recovery and recommends that various agencies implement the plan, and that it is not a decisionmaking document.

We believe the Recovery Plan is a decisionmaking document in that it sets a goal in terms of population parameters resulting in numbers of bears and it delineates occupied habitat, or the area necessary to achieve the goals.

The proposal to increase current numbers of grizzly bears is a highly controversial matter and can have significant effects on the human environment. This is evidenced by the outcome of formal consultations, relative to the grizzly bear, on timber sales on the Gallatin National Forest, hard-rock mining on the Kootenai National Forest, road construction on the Flathead National Forest, and oil and gas leasing on the Lewis and Clark National Forest. In each of these consultations, a jeopardy opinion was issued, resulting in significant changes in the original management plans for other resources. Comments (letters) we have received from the general public and newspaper articles indicate that grizzly bear management is a controversial subject and not everyone wants more bears.

The 1976 FWS proposed rulemaking to delineate 13 million acres as critical habitat for the grizzly bear was extremely controversial. The recovery plan proposes a recognition of some 12.3 million acres as occupied grizzly habitat. We believe that such designation will be highly controversial, especially if it is not explained and the public is not allowed to comment. Some factions of the public might perceive that we have delineated de-facto critical habitat without going through the proper procedures as outlined in Federal Register Vol. 44, August 15, 1979.

A careful review of the following portions of CEQ regulations seems in order: 1502.3, 1508.3, 1508.8, 1508.11, 1508.14, 1508.17, 1508.23 and 1508.27.

Regardless of whether the FWS feels that the Recovery Plan is in compliance with NEPA or not, the Forest Service, through the land management planning process, will achieve necessary public input and comply with NEPA as programs and actions identified in the Recovery Plan are implemented.

5. Occupied habitat, as delineated in the Recovery Plan, was developed at various meetings. The Forest Service objected to the lack of mapping criteria at several of these meetings, to no avail. Although several Forests disagree with the Recovery Plan's delineation, the Forest Service will officially accept these delineations We wish to go on record, however, as being strongly opposed to the lack of mapping criteria.

6. Page 1. It may not be possible to "remove" the limiting factors, as stated in objective 3. Perhaps "regulate" the factors is a more realistic objective.

7. Page 4, paragraph 2 of the plan states that social, political, and economic (nonbiological) factors were not considered in plan development, and such nonbiological aspects will have to be dealt with by administrators. We fear that not addressing these nonbiological aspects may be a serious impediment to implementing the Recovery Plan. As stated above, this is a highly controversial subject. If the plan does not consider and incorporate social, political, and economic factors, it will likely receive resistance from the public.

8. Page 9. Since the stepdown portion of the Recovery Plan (Y61111) calls for research on aversive conditioning of bears, it might be useful in this section on Behavior to summarize existing information on this subject.

9. Page 12. The most current citation on the grizzly studies in Teton Wilderness, Wyoming, should read:

> Hoak, J.H., T.W. Clark, and J.L. Weaver. 1980. Grizzly bear ecology in Bridger-Teton National Forest, Wyoming. In C. Heslow, ed. Fifth Intern. Conf. on Bear Research and Management. In press.

10. Page 19, line 19. Should "relative" read "relevant?"

11. Page 26. In the section on Natality, there is no information presented on litter sizes. It is particularly important to provide such data because this is one of the monitored population parameters.

Also, in the section on Natality, it may be useful to cite H. Picton's paper relating decreased precipitation in the Yellowstone area during the past 10 years to decreased litter sizes for grizzly bears during this same period.

12. Page 30. The section on Mortality jumps right into the specific case of mortality in the dens. A more logical sequence might be to proceed from a general discussion of mortality causes and rates to more specific cases.

13. Page 33. The questions raised here, regarding aggressive behavior of bears and conditioning possibilities, are a good addition to the Plan. Would it be more appropriate to place them in the section on Behavior? Also, in line 7, "aggressive" is misspelled.

14. Pages 39 and 40. The discussion on timber harvesting should be expanded to explain the specific consequences of timber harvesting, positive and negative. Also, the consequences of the associated factors involved with timber harvesting, such as road construction, should be discussed separately.

15. Page 41. Why no reference to Knight's work on denning which is the most up to date?

16. Page 50. Our records show very few reports of grizzly bear sightings south of Bitch Creek. None are recorded as far south as Leigh Creek. Therefore, we recommend that occupied habitat for the Targhee National Forest be shown only as far south as Bitch Creek (North Fork of the Teton River).

Also, for table 2 (page 66) the acreage summary should be:

	Occupied Habitat
MS1	180,000[1/]
MS2	159,680[2/]

A correction on this master map was made in 1980 by the Shoshone National Forest and has been provided to Don Brown, Recovery Plan Coordinator. The acreage figures in Table 2, page 66, reflect this revision but the 1979 map used in the plan does not show the correction. We suggest the updated map be used to avoid confusion and to accurately represent occupied habitat on the Shoshone National Forest. A copy of the correct map (Enclosure 1) is enclosed for reference.

1/ Mt. Two Top and Winegar Hole

2/ Moose Creek Plateau (Reas Pass to Robinson Creek)

17. Page 51, Y111. We recognize the need to establish a reference point for a recovery target. However, we recommend the parameters that represent the population of the period 1959 to 1969 be presented in the Plan with qualification. The parameters reflect a population that was heavily dependent on an artificial food source (dumps). Therefore, it is possible that with the more natural conditions of today, a population demonstrating the target parameters may not be obtainable.

We recommend this point be emphasized in the Plan and that an action item be written that describes the need to continually evaluate the parameters used to describe a recovered population. The Plan should document that the target parameters may change as more information is gathered. It may be most appropriate to discuss this matter on page 2.

18. Page 54, Y211. The listing of three separate figures (11, 6, and 5) as the maximum limit to man-caused mortalities is confusing and unnecessary. We recommend the number offered by the recovery planning group (6) be used.

19. Page 54, Y21111. We suggest the law enforcement arm of the Forest Service be specifically identified as a cooperator.

20. Page 60, Y2221. The sentence "Supplemental guidelines for MS-1 and MS-2 lands have been prepared and are available (Mealey pers. com. 1980)" should be deleted. This statement does not belong in the Recovery Plan as the supplemental guidelines have not been reviewed or agreed upon by the parties to the approved "Guidelines." If and when these supplemental guidelines would be used, they could be incorporated into the revised or amended "Guidelines."

21. Page 61, Y2251. The last sentence refers to "species managers." What are "species managers?" This term should be clarified to assign responsibility to the proper agency.

22. The section on "Assumptions," page 63, leaves the connotation that Region 1 is doing nothing relative to management of grizzly bear habitat outside of designated essential habitat. We would like to see a statement added which recognizes the ongoing Forest planning process. For example, "Planning, as per the National Forest Management Act, is now underway on the Gallatin and Custer National Forests. This planning effort is addressing management of grizzly bears and their habitat."

23. Page 64, Y422. Past records indicate bears have occupied this area, but habitat quality does not justify MS1. No recent sightings have been made in this area.

24. Page 65, Item 4441. The Forest Service has accepted the acreages as presented in the Recovery Plan.

25. The maps indicating occupied habitat in the recovery plan are difficult to read because of the small scale. However, it appears there is an inconsistency between the acres of occupied habitat on the Custer NF indicated in Table 2 (page 66) and the area delineated on the map. The acres in the Table are correct, but the map seems to be in error. We have enclosed a Forest map (Enclosure 2) with the correct area scribed.

In addition, the 156,500 acres of occupied habitat on the Custer NF should be broken out as follows: MS1 - 32,000 acres; MS2 - 124,500 acres. These designations are considered interim to completion of the Forest Plan.

26. We suggest the Tables depicting occupied habitat in the plan indicate square miles as well as acres, since the text refers to densities of bears in square mile terms. It would also be helpful if the acres and square mile figures were totaled.

27. Page 71, Y612. Also, the following should be inserted at the end of Y612: ". . ., per the criteria and steps provided on pp. 59-62 of the Guidelines."

28. Item Y65 (page 72) may be unworkable, and the need for such a requirement is not clear. It may be unworkable in that other laws and regulations may preclude a 2-year delay between permit requests and the decision as to whether to allow the activity (e.g. 1892 mining law; 1922 oil and gas leasing law). In addition, the past work done by the Craigheads, current work being done by the Interagency Yellowstone Grizzly Bear Team, and habitat mapping being done by the Forests, has brought together a considerable amount of information on grizzlies and their habitat. The wording in Y65 seems to imply that site specific information is needed. These same thoughts apply to items N64 (page 103) and C63 (page 124). In some cases baseline data may need to be collected but, in others, sufficient information may be available.

29. Page 74, Item C. The referenced figure should be 3 rather than 1.

30. The last sentence in the first paragraph on page 92 is incorrect. The Lolo National Forest addressed grizzly bear management on 162,181 acres in their Draft Forest Plan (April 1980). The final plan will consider bear management on all acres identified in the Recovery Plan. All other Forest Plans will do likewise.

31. The figure given for "Acres Stratified by Grizzly Use" for the Kootenai NF in Table 4, page 121, is incorrect. The correct figure is 514,754.

32. Page 137, Y2241. Under Estimated Cost column, the statement should read the same as in Y2231 two paragraphs above. The statement as written does not apply to Federal lands.

33. Page 138, Y2251. This action does not agree with the text as written on page 61. The Action should be to apply the "Guidelines" in occupied ranges rather than "restrict" or "withhold" permits. Certain permits and/or types of development may not impact the grizzly bear. The option to permit, restrict, or deny should be left open pending an assessment of the proposal.

34. Page 139, Y411, Y421, Y431; Page 140, Y443; Page 141, Y451. These plan items assign the Forest Service as having lead responsibilities for making recommendations on private land relative to conservation of the grizzly bear. The Forest Service has limited authority for such a role but will be happy to cooperate. This may be more appropriately assigned to the State wildlife agency and the U.S. Fish and Wildlife Service.

35. Page 142, Y511, Y521, Y531. This Action item should be expanded in order to clarify how and who will do the actual monitoring of the parameters. Monitoring the status of the grizzly bear is the basic responsibility of the Fish and Wildlife Service and the State wildlife agencies. The Forest Service would have basic responsibility for monitoring habitats on National Forest System lands and some responsibilities under the NFMA regulations for monitoring the bear in cooperation with State agencies and the FWS.

36. Pages 142 and 143, Y532, Y5321, Y5322, Y5323, Y5324. These actions and the supporting text on page 69 are vague and are not clear as to what should be done. Y5323 calls for establishment of benchmarks of present habitat values to measure the cumulative effects of actions. This is not consistent with other sections which speak to habitat components. We suggest that benchmarks be established for habitat components rather than values.

37. Page 145, Y65 and Y66. The statement in the Estimated Cost column, ". . . should include cost in permit fees," should be deleted. This is not a legitimate cost to be passed on to a permit applicant. It is an administrative cost incurred the same as any environmental analysis report on any proposed permit or project. Furthermore, the Forest Service has no basis for passing such a fee on to the applicant.

38. We have a concern about the Interagency Grizzly Bear Study Team and duties inferred upon them by the Recovery Plan. The Study Team can complete many jobs and collect much of the information called for in the Recovery Plan. However, the Study Team is a representative of member agencies and must serve the agencies' needs. The Study Team must not unilaterally be assigned or undertake responsibilities without agreement and direction being provided by the Study Team Steering Committee and its member agencies.

At this time, we do not believe the Draft Recovery Plan should designate any duties for the Study Team. Either the Recovery Plan must delete all references to the Study Team in Section III and the Job Implementation and budget section or the Steering Committee and member agencies must agree to the actions the Study Team will perform before the Plan is finalized and approved. The first option would expedite approval of the Recovery Plan.

We believe it would be best if the Recovery Plan did not refer to the Study Team, other than to recognize their technical capabilities.

We certainly appreciate the opportunity to review this draft of the Grizzly Bear Recovery Plan. Mr. Don Brown and others who contributed to the plan have done a commendable job. The Forest Service will assign top priority to those actions needed to achieve the recovery of this magnificent animal.

Sincerely,

for R. MAX PETERSON
Chief

Enclosure

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:
N1621(496)

MAR 13 1981

Memorandum

To: Director, Fish and Wildlife Service
Acting Deputy
Through: Assistant Secretary, Fish and Wildlife and Parks

From: DEPUTY Director, National Park Service

Subject: Comments on the Grizzly Bear Recovery Plan Draft

General Comments: This second version of the Grizzly Bear Recovery Plan seems to be a well organized far reaching approach towards balancing the interrelated problems of bear management, human impacts, habitat requirements, and societal needs. For example, the reduction of human caused mortality seems the most readily solvable problem leading to population recovery, and the mechanism of using interagency enforcement teams to police the illegal take of grizzlies is certainly appropriate. On the other hand, most of the difficulties we encountered in the plan are derived from the lack of reliable data pertaining to grizzly bear population dynamics. As an example, the data used to describe "recovered" populations are based variously on estimates (with large variances) which by their nature are probabilistic, are generated from models and not real populations, or are based on data obtained by questionable methods. Despite such apparent limitations the available data are all that exist and hence, they must be used in the decision making process. Consequently, the plan should stress two points: a) more indepth data should be obtained from the populations here considered, and b) present decisions concerning grizzly bear management should be regarded as subject to modification as our knowledge increases. Finally, the literature review is generally thorough and documents the issues adequately. The few instances where facts are mentioned without sources, and the occasional typographical error can be easily corrected in the final version.

Specific Suggestions:

** Page 22: Table 1 is an interesting comparison among various populations. It should be clearly noted in the caption that the density data difference between areas may actually result from differences in study methods, seasonality, length and depth of study, etc.

** Page 23: The first paragraph is simply meaningless, beginning with the introductory sentence. What is meant by "space is a species communal home range"? We suspect Professor Sagan would disagree vehemently. What evidence exists for grizzly bears exhibiting "communal" social behaviors of any kind?

** Page 33: Please offer citations for statement about retraining theories and practices. How would the recovery team plan to develop such a grizzly bear retraining program? Could similar techniques be used for black bears?

** Page 34: The main paragraph (added since the first draft) implies hunting is needed for grizzly bear population regulation. This seems ill advised, given the lack of any appropriate mortality data to support the notion. The continued implication that "relatively few problems" are encountered in non-park is a functioning of hunting (whether illegal or legal) is inaccurate given Servheen's (1979) statement that the fewer problems in non-park may be more likely a function of lower bear/man ratios in such areas.

** Page 51: Y111 - Reproductive rate should be 0.658 (not 0.650) (Craighead, et al 1971). Most of the data presented here are derived from models predicting DECLINING bear numbers. What is rationale for using these data to define a healthy recovered population? Is it wise to allow 17-19% man caused mortality? Knight (1980) suggests no more than 5% man caused mortality should be permitted. Furthermore, such percentages could change as the population densities are known to change.

** Page 52: Y121 - Average known man caused mortality was reported by Knight, et al (1978) at 11.000 should be regarded as conservative; "...until the population status and trends are determined, we cannot afford this high mortality rate if the present population size is to be maintained." They state the number of unreported (illegal?) grizzly deaths may be substantial.

** Page 53: Y13133 - Please include appropriate paragraphs discussing "grizzly rehabilitation training" in narrative portion of the plan.

** Page 59: Y212 - "Nuisance bear" requires careful, precise definition. At present it means any bear someone doesn't happen to want.

** Page 79: N121 - There appears to be a substantial discrepancy in reproductive rates shown in this table. Is there a typographical error?

(Citations here refer to bibliography of the draft plan)

Year of the Visitor

ADDRESS ONLY THE DIRECTOR, FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES

FEB 03 1981

Memorandum

To: Deputy Associate Regional Director, Region 6 (ARD/FA)

From: Director

Subject: Comments on the Grizzly Bear Recovery Plan, Agency Review Draft.

The following are comments on the Agency Review Draft of the Grizzly Bear Recovery Plan. We have combined comments from OES and the Division of Wildlife Ecology Research (Denver Wildlife Research Center and the Assistant Leader, Montana Cooperative Wildlife Research Unit).

1. Page 1, Goal and Objectives. Recovery should be defined, i.e., "To remove the grizzly bear from threatened status in the 48 conterminous United States" as stated on page 46, Part II. Objective (1), "...species recovery" should be changed to "viable self-sustaining populations." Population goals do not necessarily totally represent species "recovery" since the listing involved consideration of factors and threats beyond population numbers. This is only one, albeit important, aspect of recovery.

2. Page 2, paragraph 2, line 2. Who "generally concluded" the viability of the Yellowstone population; the bear researchers, recovery plan preparers, etc.? Page 2, paragraph 3, line 5. Change "recovered population in that ecosystem" to "viable self-sustaining populations in that ecosystem."

3. Page 3, paragraph 1, line 5. "determining" is misspelled. Page 3, paragraph 3, line 1. "Mark L. Shaffer (1978)" should be "Stephen C. Shaffer."

4. Pages 3-4. The discussion of the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE) population goals is unclear and contradictory. Was the computer model used to determine the population parameter values and population goal for the CYGBE (Page 3, paragraph 3)? In the last paragraph, page 3 it is stated that simulation analysis should not be used to determine final or total numbers of bears in these ecosystems (Yellowstone and Northern Continental Divide); yet, item C111, page 108, in the step-down outline bases recovery on these parameters. What is the justification for using them on the Cabinet-Yaak Ecosystem? Why was the decision made to use the model when remnant populations in Europe contradict "this premise?" These decisions may be valid but the justification is not obvious. Does not the model use the same

assumptions which raised objections on page 2 and 4 when applied to the Yellowstone situation? The statement that this is a "dynamic plan" is not reinforced due to the lack of mechanisms to periodically reevaluate the population parameters and the assertions that the species will be "judged recovered" based on these parameters. On page 4, paragraph 2, non-biological aspects should not be avoided and in fact were not avoided. For example, on page 49 it is indicated that cooperation and coordination between individuals and among agencies is the most important factor in saving the grizzly. Also, in the recovery plan outlines for each population there are references to non-biological aspects such as monitoring for compliance with the recovery plan and sampling and evaluating public attitudes. This paragraph is misleading.

5. The section on "Perspective" Part I (starting on page 1) should be rewritten to state, rather than defend the source of the data. This section is confusing and at times seems contradictory, as outlined in 4 above.

6. The systematic discussion on pages 5-6 is indefinite. The recovery plan should call for work to clarify the taxonomy of the grizzly and brown bears, which is out of date. The recovery plan should recommend such work if funding requests are to receive a high priority.

7. Page 9, add the following statement: Encounters between humans and bears in Glacier National Park would indicate that these concepts have not been understood.

8. Page 11, lines 5 and 6. What is meant by "this peripheral range." What areas or populations were included in this?

9. Page 14. Why are the grizzlies in Colorado not included in the discussion? They are also protected under the Act and the plan should at least address the need to ascertain the grizzly's status in Colorado. Page 14, paragraph 2, line 6. Bridger-Teton, not Bridger, Teton.

10. Page 15, paragraph 2. Are the "...notorious plains grizzlies..." documented to be extant and different taxonomically or as a population, from grizzly bears in Glacier National Park or those west of the divide? If this is possibly the case it should be included as an item to be studied in the taxonomic studies of the species.

11. Pages 15, 16 and 17. Grizzlies in Canada interchange with bears in the Cabinet-Yaak (C), North Cascade (NC), Northern Continental Divide (N) and possibly the Selway-Bitterroot (SB) Ecosystem populations. This interchange has been identified as important. It would, therefore seem important to include this in the step-down outline, such as, establishing international cooperation and/or agreements with Canada on research and management of grizzlies.

12. Page 17, last paragraph, line 6. Does this include interchange with the North Cascades?

13. Pages 17, 19 and 20, "Corridors." Maintaining corridors has been identified as an important aspect for "inter-isolate dispersal between populations." This was also one of the factors for the basis of listing the grizzly under Section 4(a)(1)(5) of the Act. This needs to be considered in the individual populations step-down outlines as an objective, as outlined in the Abbreviated Step-down Outline, Item 35. Is there a need to establish translocations to the Yellowstone ecosystem to maintain gene flow or can corridors be established? How will "gene flow" be accomplished with the Yellowstone population?

14. Page 29, paragraph 2, last line. The statement, "the need to provide maximum protection for females is essential to recovery" is not specifically addressed in the step-down outlines. How will this be implemented?

15. Page 32, (4) and (5). What is "erosion of habitat" and "eroding habitat?" Is this referring to "change" or "loss" of habitat? The meaning is unclear. Cannot logging be considered beneficial at times if cutting blocks are properly designed and site preparation is properly done based on current research results? This potential is reinforced later in the plan on page 37 (last paragraph) and page 39 (3rd paragraph).

16. Page 40, paragraph 1, line 2. Is the "correlation" a statistical correlation? If not, terminology should be changed.

17. Page 46, paragraph 1. "North" and "true" are misspelled. What is the "human force spreading across the land?" This needs to be restated.

18. Page 47, paragraph 4. Change "Recovery levels are defined..." to "Viable self-sustaining populations are defined..." Last paragraph, line 1. Add "necessary" between "equivalents" and "for."

19. Page 48, Objective. Change "recovery status" to "recovered status."

20. Page 49, Abbreviated Step-down Outline, Item 35. "Identify travel corridors to connect habitat islands or grizzly bear ecosystems." Add this item to the individual population outlines pages 63, 91, 117 and the Implementation Schedules (IS).

21. Page 49, Item 41. "...by administrative area" can be consolidated into Item 4 on all outlines, unless other methods of resolution are known. Then they should be stated under additional Items 42, 43, etc.

22. Page 49, Add Item 5 (51 and 53) "Monitor Populations, Habitats" to the IS for the Selkirk (S), NC and SB populations. This would be appropriate and justified as a method to determine population status. Add Item 6, "Manage populations and habitats" to the S, NC and SB population's IS. This would also be appropriate.

23. Page 49, Abbreviated Step-down Outline, Item 53. "Populations" is misspelled. Renumber "53. Monitor populations after recovery" to Item 52 and renumber Item "52. Monitor habitats before and during recovery" to Item 53 to conform to the individual population outlines. Change the second Item "61." to "62."

24. Page 49, Add Item 9 to Abbreviated Step-down Outline to conform to individual population outlines.

25. Pages 51, 78 and 108, Items Y, N and C 111. Change "judged recovered" to "judged viable self-sustaining" or "optimum sustainable." This is the stated goal. Population parameters are only one element required to achieve delisting or "recovery." We agree with the need to establish a measurable goal for the grizzly populations. Page 108, C 111. Change "CGYBE" to "CYGBE."

26. Pages 51, 78 and 108. Add Item Y, N and C 112. "Reevaluate population criteria (in 111.) as new information becomes available." Also add to the implementation schedule. This is needed because of statements based on the divergence of opinions over the Craighead's Yellowstone data (reference page 2), the need to use the most current and best available data (reference page 3) and to add to the dynamic plan concept (reference page 4).

27. Pages 52 and 79, Items Y and N 121. The presentation of this data and data in 111 are unclear. Which factors correspond to one another? Where more than one number is indicated for a criteria, which takes precedence? Should this be expressed as a range? These tables should be clarified. Is cub-sex ratio important?

28. Page 53, Y 13133. This should be explained. What is grizzly rehabilitation training?

29. In Items Y, N, and C 1326,226,2261, and 542; Y 5323, C 534, and N 534. Change "cumulative effects" to "cumulative impacts" thus avoiding confusion with the more restrictive Section 7 definition of "interrelated and inter-dependent actions." What agency will be responsible for tabulating this? How will it be used?

30. Add the following to the appropriate Implementation Schedules and assign agency responsibilities:

    a. Y 21135 and C 21136; Y and C 21141 and 21142; Y and C 21151 and N 21141; Y and N 212 (There is no equivalent in Cabinet-Yaak narrative); Y 311; C and N 3112; C and N 3122 and Y 32.

31. Pages 54, 83 and 109. Items Y, N and C 2. Under "Redressing population limiting factors," there is a sensitive question that needs addressing. What special consideration is provided for female bears who happen to merely be in the area of, or actually implicated in a conflict situation? Female survival is disproportionately crucial compared to males. Where does the agency (especially Park Service) policy recognize this in their actions following an incident?

32. Page 57, Y 21136; Page 86, N 21124; and Page 112, C 21134. These recommendations for rodent control in grizzly habitat seem to need revision. The first sentence is not inaccurate but it is misleading. It implies that agencies have a choice of toxicants or toxicant concentration levels. It would seem that in most, if not all, control programs on public lands there is only one toxicant option. Also, disturbance for 3 days after baiting does not seem practical, due to the long time that poisoned rodents and stored bait can remain available. If control needs to be done in an area heavily used by grizzlies, then there should be consideration of alternatives such as plastic-net protection or increased stocking rates (in the case of gopher control programs on forest land).

33. On Page 57, Y 21134; page 113, N 21135, but missing from page 87, N 2113-the following statement occurs: "Drugs demonstrated to be dangerous to bears will not be used." While the intent is reasonably clear, the statement could be construed to prohibit the use of virtually any drug on bears since all of them are dangerous at high dosage. We suggest rewording to: "The safest effective drugs available will be used in all immobilization efforts."

34. Pages 63, 91 and 117. Renumber Y, C, and N 33 to Y, C and N 34 to conform to the Abbreviated Step-down Outline (page 48). Change "designate Critical Habitat" to "recommend Critical Habitat" on all outlines. Add Item 33 as in the Abbreviated Step-down Outline to each population step-down outline.

35. Pages 68, 100 and 122, Item Y, C and N 511. It might be benefical to develop monitoring systems whose results are comparable among populations though the techniques might vary.

36. Pages 68, 100 and 122. Add Items Y, C and N 5112 - "Periodically analyze adequacy of monitoring system for arriving at population parameters."

37. Pages 70, 102 and 124. Change Items 61 through 64 on all the population outlines to correspond to the abbreviated outline items 6 through 64, page 49.

38. Page 77, N 1, paragraph 1. This discussion and computation of the average annual mortality rate (17.8 percent) is not clearly presented. The reader cannot follow how the 17.8 percent was calculated or from where this figure was derived.

39. Page 78, N 1, paragraph 1, last sentence. Wording implies that a population (number or density) goal comparable to Glacier National Park (GNP) was applied to the remainder of the ecosystem. This creates a problem if the reader infers that the plan will strive for GNP-level bear densities throughout the entire ecosystem. This should be clarified to avoid possible misinterpretation.

40. Page 136, Y 21136; Page 148, N 21124. It does not seem that EPA should be the agency with lead responsibility for monitoring rodent control programs; it should be the individual agencies managing the subject lands. Page 136, Y 21136; Page 148, N 21131; Page 163, C 2114. In our review, we did not find where a compensation plan for livestock owners is allowed, but $183,000, $74,000 and $15,000 respectively (over a 3 year period) is proposed for control work. With the status of the grizzly bear being of concern, it follows that nonlethal methods of conflict resolution should be paramount and compensation might be one approach.

41. Place comments on duties of the Grizzly Bear Recovery Coordinator under the appropriate section in the step-down outlines not in the IS. Other extensive comments on agency responsibility should be in the step-down narratives not under estimated costs in the IS (i.e. items C 21134, C 2211; C 2212 - page 163).

42. Page 172. Add Item 81 to S, NC and SB population outlines and IS's.

43. The literature citation section needs improvement. Sources are not always completely identified or described as to what they are (typed, mimeographed, in-service). Some citations are in reverse chronology. K. L. McArthur is cited heavily from unpublished reports. His affiliation is not specified. His reports are often used as a secondary source from which to cite original work. Since some of the papers come from standard journals (i.e., J.W.M.), this kind of tertiary paraphrasing is awkward.

In summary, we appreciate the effort and thought that went into the Plan. However, we believe the statements which imply that meeting the stated population goals will result in "recovery" should be reworded. We agree with the need to state measurable population goals, but that these goals are one of many factors which need resolution before the species can be considered "recovered" and thus delisted. For example, adequate regulatory mechanisms must be quantified and identified for "recovery" to insure the continued existence of the bear once delisted. We realize some regulatory mechanisms are now in existence, however, the plan does not identify specifically what else is needed and at what point these mechanisms are sufficient to delist the Grizzly Bear. Other factors which we believe have not been adequately addressed for implementation include: maintenance of travel corridors for genetic interchange between populations; the importance of interchange of individuals between Canada and the U.S. for the well being of the species in ecosystems of the U.S.; specific measures needed to enhance female survival rates; and the need to reevaluate the population criteria as better data is obtained. Explanations of the population criteria could be improved and stated more clearly.

Attached are comments submitted from the Division of Law Enforcement, the Environmental Protection Agency, U.S. Forest Service and the National Park Service. We hope these comments will assist in completing the plan. Please send us five copies of the Plan for approval.

Attachments

UNITED STATES GOVERNMENT

Memorandum

FISH AND WILDLIFE SERVICE
PORTLAND, OREGON

TO : Regional Director, Region 6, Denver, Colorado DATE: October 30, 1980

FROM : Assistant Regional Director, Federal Assistance, Region 1, Portland, Oregon (AFA-SE)

SUBJECT: Agency Review Draft -- Grizzly Bear Recovery Plan

We have completed our review of the Grizzly Bear Recovery Plan and have the following comments for your consideration.

Page 54, Element Y21111

In those situations where more than one LE SAC District is involved in an area, an Agent from each District should be included in the specially trained law enforcement team. This action will facilitate rapid communication of information and enhance coordination of effort.

Pages 57-58, Element Y21136

While FWS may have responsibilities for overseeing and in some instances conducting rodent control projects in grizzly bear habitats, the activity of creating disturbances in the treatment site for three nights following application of any rodenticide should not be a part of that responsibility. This is implied in Part III, page 136, and we wish to reiterate this thought here.

In overview, the Plan is well-written, good format and appears to address the major concerns for this species.

Thank you for the opportunity to offer these comments.

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UNITED STATES GOVERNMENT

Memorandum

U S FISH & WILDLIFE SERVICE
Region 2, Albuquerque, New Mexico 87103

TO : Regional Director, FWS, Region 6 DATE: November 17, 1980

FROM : Acting Regional Director, Region 2 (SE)

SUBJECT: Agency Review Draft--Grizzly Bear Recovery Plan

We have reviewed the subject plan and concur with the proposed recovery efforts. The plan developers are to be congratulated for putting together a management tool that quantifies goals, while recognizing the data supporting these indices are weak.

We support the ranking of tasks within the ecosystems and would encourage similar direction be provided that would rank the ecosystems themselves. This suggestion is made because of the magnitude of the recovery efforts, funding constraints, and different degrees of threat to the six grizzly bear ecosystems. This form of direction, as well as that proposed, will be changed as data dictates.

We appreciate the opportunity to review the plan.

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS: Post Office Box 25486, Denver Federal Center, Denver, Colorado 80225
STREET LOCATION: 134 Union Blvd, Lakewood, Colorado 80228

IN REPLY REFER TO:
FA/ES/Bear, Grizzly--
Recovery Plan

NOV 21 1980

MEMORANDUM

To: Area Manager, Billings

From: Acting Regional Director, Region 6

Subject: Grizzly Bear Recovery Plan, Agency Review Draft

We offer the following comments on the Agency Review Draft of the Grizzly Bear Recovery Plan.

1. Page 3, second paragraph--Somewhat confusing because "Colorado grizzlies" is included in the parentheses with the other four ecosystems.

2. Page 8, first paragraph, second sentence--Is "when" supposed to precede "grizzlies have characteristic patterns of behavior"? Otherwise, it does not seem to fit the rest of the paragraph or the behavior of the grizzly.

3. Page 9, first paragraph, first sentence--Appears that this should be broken into two sentences, or perhaps the comma can be replaced by a semicolon.

4. Page 10--The "Past Distribution" section has a lot of information on present distribution. Perhaps this section should be renamed.

5. Page 12, last paragraph--Appears to be out of place.

6. Page 15, first paragraph, last sentence--Appears that this should be broken into two sentences.

7. Page 15, last paragraph, first sentence--"Ecosystem" should be capitalized.

8. Page 16, second paragraph, third sentence--What is meant by "the occupied range may be expanded"? Do you mean by biologists as more information is gained, or by bears?

9. Page 16, second paragraph, last sentence--"Grizzly" is misspelled.

Save Energy and You Serve America!

10. Page 17, last paragraph, third sentence--Suggest changing "should be a necessary part" to "is a necessary part."

11. Page 20, last paragraph, fourth sentence--Should be rewritten.

12. Page 21, first paragraph, last sentence--What are the population estimates?

13. Page 25, first paragraph, second sentence--Should be broken into two sentences.

14. Page 25, second paragraph--Isn't there sufficient information on the Yellowstone Grizzly Bear Ecosystem to give an average for males and females?

15. Page 25, third paragraph, second sentence--Suggest you change it to read "Age and sex structures are dynamic variables influenced by so many factors, such as habitat conditions, time of the year observations are made, hunting, etc., that trying to determine an average population may not be appropriate."

16. Page 27, last sentence--After they reach maturity.

17. Page 32, first paragraph--Part (3) needs to be rewritten or a sixth category added, as not all livestock kills are the result of careless livestock husbandry. The sow and yearling killed this summer in the rancher's corral was surely not the result of poor husbandry. A semicolon should be used at the end of part (3) and the "and" removed.

18. Page 35, fourth paragraph, last sentence--It appears that this belongs in last paragraph of page 34.

19. Page 39, third paragraph, second sentence--Need a comma after "Conversely." The third sentence needs an "of" between "effects" and "clearcutting."

20. Page 45--Is this summary out of place? It is not a summary of the preceding part of the Plan.

21. Page 46--"Primary Goal" should be changed to "Primary Objective" to conform with "Endangered and Threatened Species Recovery Planning Guidelines." Can this objective be made more definitive? If possible, we need to define at what point the grizzly can be delisted.

22. Page 48--We suggest you omit the word "Objective" and use the sentence as an introduction to the stepdown outline. As it appears now, someone could mistakenly use it as the objective of the Plan.

23. Page 51, third line--Change "Subgoal" to "Subobjective." Perhaps there should be a statement indicating that the footnotes are located at the end of the section.

24. Page 51, Y111--This is not really an objective. Appears like it should be used as text under the subobjective, Y1, or Y11.

25. Page 52--Does the information in Y121 accomplish plan item Y12? This is not really an objective, so it should probably be used as text under Y12 or elsewhere.

26. Page 54--Appears that Y211 can be used as text under Y21 and Y2111 moved up to Y211.

27. Page 58 and 59--Appears that Y21151 and Y21161 can be used as text under Y2115 and Y2116, respectively.

28. Page 59, Y22--Suggest you change to "Reduce or eliminate activities identified in Y132, i.e., those which indirectly limit . . . ."

29. Each ecosystem section is so long with so many plan items that it is hard to visualize entire recovery programs for each ecosystem. Would it be possible to prepare foldout sheets for each ecosystem that list the plan items? Most of our other recovery plans have these foldout sheets.

30. Many of the above comments made on the Yellowstone Ecosystem also apply to the stepdown plans for the other ecosystems.

31. Page 77, N1--A population estimate is given for the Northern Continental Divide Ecosystem, but one was not given for the Yellowstone Ecosystem, an ecosystem for which we have more complete data.

32. Page 130--Why not break 1 and 2 down further to show what needs to be done to accomplish these plan items?

33. Page 130, 1--Suggest you change the third sentence in the paragraph to "Presently, there does not appear to be any noticeable enthusiasm beyond the field biologist level for increasing the numbers of grizzlies in any of these areas."

34. Page 130, 147 and 162--No plan items beginning with the digit 1, are listed. Does this mean that the information presented in Part II for Y1, N1, and C1 accomplishes these plan items? If so, this information should appear in Part I rather than Parts II and III.

35. Page 137, Y2242--Under "Action", "cooperative" is misspelled.

36. Listing all the plan items separately for each of the three main ecosystems causes much duplication. This greatly increases the size of the Plan and makes recovery seem much more formidable than what it is. If plan items beginning with the digit 1 could be moved to Part I, then it seems that other plan items for the three ecosystems could be combined into one stepdown plan in Part II. Part III could remain as it is, i.e., the letters Y, C, and N could be used in front of the plan item numbers identifying who needs to accomplish each plan item in the different ecosystems, and what the estimated cost is.

Clyde Jones

CLYDE [illegible]

UNITED STATES GOVERNMENT

memorandum

DEC 0 1 1980

TO: Commissioner of Indian Affairs

SUBJECT: Agency Review Draft - Grizzly Bear Recovery Plan

FROM: Acting Regional Director, Region 6 (Attention: James C. Gritman)
U.S. Fish and Wildlife Service, Denver, Colorado

It appears that the step-down Grizzly Bear Recovery Plan will provide substantial ecological data on grizzly bears. Since the plan will impact two of the Indian reservations within the Northern Continental Divide Grizzly Bear Ecosystem, the Flathead and Blackfeet, tribal and Bureau of Indian Affairs involvement will be essential, not only to the tribal resource programs involved, but to the overall success of the plan. As such, the Bureau supports all phases of the step-down plan where tribal and Bureau involvement is outlined and insures that Bureau and tribal coordination with the other agencies will be pursued.

In order for the recovery plan to meet its goals and objectives, funding for the project will be crucial. At the present time, funding for any specific phase of such a step-down plan has not been requested or appropriated. Since Bureau and tribal involvement in the overall plan will be significant to the success of the recovery of the grizzly bear, funding for this project on the reservations may be likely, provided that satisfactory project proposals by the respective Bureau agencies and/or tribes are submitted for approval.

In order to fully implement the proposed plan on Indian lands, additional funding will be necessary. Since Indian reservations are not eligible for funding through the various "Federal wildlife conservation funds" for such projects, securing of funds for implementation of the activities on Indian lands may be delayed. Recommendations, however, will be made within the Bureau-funding process to secure necessary dollars for implementation of grizzly bear recovery projects.

We will recommend that close cooperation be maintained with the tribes and Bureau agencies in implementing the proposed recovery plan. This will be crucial in reaching overall Grizzly Bear Recovery Plan objectives.

No other comments specific to any of the activities in the step-down plan will be made at this time. We appreciate the opportunity to review the Draft Recovery Plan.

U.S. FISH & WILDLIFE SERVICE RECEIVED DEC 5 1980 REGIONAL DIRECTOR DENVER, COLO.

William Hartt

RECEIVED
DEC - 8 '80
ENDANGERED SPECIES

OPTIONAL FORM NO. 10 (REV. 7-76) GSA FPMR (41 CFR) 101-11.6 5010-114

3E

UNITED STATES GOVERNMENT

memorandum

DATE: November 28, 1980

REPLY TO ATTN OF: Agriculture

SUBJECT: Agency Review Draft - Grizzly Bear Recovery Plan

TO: Regional Director, Region 6
U.S. Fish & Wildlife Service, Denver, Colorado

From: Assistant Area Director, Resources

The draft plan was sent to the Blackfeet and Flathead Indian Reservations within the Northern Continental Divide Grizzly Bear Ecosystem. We have attached the comments received from Flathead Agency, those from Blackfeet will be forwarded upon receipt. As we are all aware the interest, studies and management levels on and adjacent to Flathead Reservation present the best circumstances for initial implementation of a grizzly bear recovery program. The management plan developed for Flathead Indian Reservation is in draft stage and will be reviewed by the Tribal Council in the near future.

Our summation of the Job Implementation and Budget position shows the lead responsibility estimated costs of $112,250 for Blackfeet Reservation and $62,250 for Flathead Reservation to be spent over a three year period.

We would pose to you the question of whether or not the GBRP will be interpreted by you as one of the specific Fish & Wildlife Service resource commitments under the Fish & Wildlife Assistance to Indian's Policy. This specific policy being: "Therefore, the Service will with the consent of the tribes and using Service resources, develop and implement fish and wildlife plans on Indian lands for resource programs important to the national missions and goals of the Service and primary concern to the Department of the Interior. Example situations would involve migratory bird management areas, endangered species recovery plans, anadromous fish restoration projects, and areas of important fish and wildlife habitats".

Alternatively, we would need a cost schedule for personnel, transportation, per diem, etc. in order to support special funding requests for this program.

Assistant Area Director, Resources

Attachment

RECEIVED
DEC - 2'80

U.S. FISH & WILDLIFE SERVICE DEC 1 1980 DENVER, COLO.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10 (REV. 7-76) GSA FPMR (41 CFR) 101-11.6 5010-114

UNITED STATES GOVERNMENT

Memorandum

TO : Area Director, Billings Area Office
Attention: Agriculture - George Jennings

DATE: November 14, 1980

FROM : Superintendent, Flathead Agency

SUBJECT: Draft Grizzly Bear Recovery Plan Comments.

This Recovery Plan for a species that is so wide ranging, but yet has localized areas that are critical, magnifies the cooperative agency effort necessary to achieve recovery of populations. The Flathead Agency has participated in efforts to provide for and manage grizzly bears for more than 3 years. Our intensive research here has been concluded by a contract with the Border Grizzly Project at the University of Montana. Now our efforts here will include implementation of guidelines into land management activities such as forestry and range, monitoring effects of timber sales in grizzly bear habitat, monitoring population parameters and to stratify habitat for management. We will cooperate with all agencies involved in this effort.

We feel the costs, tasks and priority assignments listed in Part III-Job Implementation and Budget are realistic to accomplish the stated goals. Cooperative efforts for funding will be necessary to insure concurrent studies and management implementation. The proposed $21,000 per year for three years on the Flathead Indian Reservation would undoubtedly have to be secured by a special funding request.

The management plan developed for the Flathead Indian Reservation is in draft stage and will be reviewed by the Tribal Council in the near future. This plan coincides with the goals and standards of the Recovery Plan and includes implementation of management guidelines. Cooperation on a regional level with all agencies involved is included and is critical for management and recovery of the grizzly bear.

Richard Whitesell
Superintendent

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

November 21, 1980

U.S. Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240

Attention: Pete Poulos, Office of Endangered Species

Dear Pete:

As requested we have reviewed the draft Recovery Plan for the Grizzly Bear. We appreciate the opportunity to comment on this draft document. Ed Pitz a wildlife biologist on our staff has prepared the attached comments for your consideration. Hopefully these will be useful in developing a final recovery plan for the grizzly.

Sincerely yours,

Raymond W. Matheny

Raymond W. Matheny

NOV 17 RECD

In relation to EPA's regulatory responsibility of pesticides the document gives only scant mention of pesticides; and then only in relation to recommendations on the use of rodenticides. No discussion is given as to which rodenticide; what target species, or other factors related to field rodent control and potential impacts on grizzlies from their use. In the absence of such a discussion the recommendations given are meaningless.

Without considering toxicity, potential for exposure, and what risk is considered acceptable, the recommendation is made to use the most selective (but effective) rodenticide. It is possible that the most selective (but effective) could impact the grizzly, either directly or indirectly.

The recommendation on rodenticides proceeds to indicate "poisoning within grizzly bear habitat should be delayed as long as possible into July to minimize the potential for grizzlies to consume poisoned rodents or baits (O' Gara per. com. 1980)." Again, without clarification, this statement makes little sense. Why would delaying treatment until after July reduce the potential for grizzlies to consume poisoned rodents or baits? Do food habits change or what?

In addition to rodenticides, the use of other pesticides could adversely impact the species, and therefore some consideration would seem appropriate. For example, are any herbicides used in the known range of the grizzly, and if so, would the resulting habitat modification jeopardize the recovery plan; or are any insecticides used in the known range and what impacts might these cause?

However, our major criticism of the document is that the proposed recovery plan is not easily understood or followed. There appears to be several reasons for the lack of clarity; not the least of which is unclear writing. The following are just a few examples:

Page 2

"Recognizing that observation and management conditions at that time were different from now, a comparable population, its equivalent parameters, or the biological equivalents, as well as the space and habitat used by that population are assumed to represent a recovered population in that ecosystem"

Page 18

"The trend in the numbers of grizzlies in the NCDGBE appears to be downward when the added stress of increasing habitat encroachment by increasing numbers of people is considered, the need for action is obvious."

Page 28

"Prior to first estrus, a male grizzly may be more inclined to dispatch a female for food than to enter into a social agreement for mating."

(I was not aware that male grizzlies had an estrus cycle)

Page 31

"There is insufficient evidence to fully assess the degree of mortality in the younger age classes of bears to adult bears. Pearson (1975), Egbert and Stokes (1976), and Nagy and Russell (1979) in McArthur (1979) indicate that it may be an important factor. If younger bears are not killed directly by aggressive adults, dispersing subadults may be forced to choose submarginal home range or areas near human habitation equally dangerous to their survival."

If there is insufficient evidence to assess the degree of mortality in younger age classes, then what meaning does it have to conclude that dispersing subadults are faced with an equally dangerous situation?

In addition, the construction of this paragraph is obviously cumbersome.

Page 41

"Denning habitat descriptions and activity have been described for the Mission Mountains (Montana) by Servheen (1980)."

I presumed the subject was denning of grizzlies and not mountains.

We would strongly suggest an editorialization of the document. We would be happy to review it again following editorial changes.

We agree with your last statement on page 45, and if this draft document is an example of the all-out concerted effort, the future of the grizzly looks bleak.

Ed Fite

Ed Fite
Wildlife Biologist
Ecological Effects Branch

STATE OF MONTANA

DEPARTMENT OF
FISH AND GAME

Helena, Montana 59620
March 20, 1981

Mr. Don W. Minnich, Regional Director
U. S. Fish and Wildlife Service
P. O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Dear Mr. Minnich:

We have reviewed the Agency Review Draft of the Grizzly Recovery Plan. This draft is the result of a good effort - I believe Don Brown has done an excellent job with a very difficult subject. We do have some concerns; following are our comments. I am sorry they are so late.

First of all, I believe several of the assumptions implicit in this Recovery Plan are, at best, highly questionable. I understand the legal implications of the threatened status, but use of the word "recovery" in this document is misleading. The term "recovery" implies that the species needs to be recovered and that it is not recovered now. This is an assumption based on an arbitrary definition. Several times throughout this Plan, suggestions are made that are "necessary to assure the recovery of the grizzly." Twice in the summary on page 45 it states that the grizzly is declining - an assumption of even less substantiality. Finally, it should be pointed out that the initial act of classifying the grizzly as a threatened species was, in our opinion, arbitrary and without justification.

Our most serious criticism of this recovery plan concerns the definition of "recovery." We agree with the statement on page 1 of the introduction, that it "should provide viable, self-sustaining populations in perpetuity." We do not believe that population size (above some minimum) is necessarily related to a viable, self-sustaining population. Population stability is a function of a balance between recruitment and mortality rates. This recovery plan seems to imply that some previous population level must be achieved in order for it to be "recovered." It should be clarified that the level agreed upon for a recovered Yellowstone population (equal to or greater than during the Craighead study) will almost certainly be higher than a minimum viable population. The point is that "recovery" and "minimum viable population" are not synonymous.

We support a recovery level above the minimum viable population. The Yellowstone population should be assumed to be recovered when it is equal to or greater than the level during the Craighead study (a population which was increasing in the face of limited hunting in Montana and Wyoming). Recovery for the Northern population would be a level equal to or greater than the 1974-75 level when it was declared threatened.

The recovery plan lists several criteria or parameters that will be used (as a running 6-year average) to judge population recovery. Several of these, including reproductive, mortality, cubs per female and reproductive cycle are rates; females with cubs of the year and man-caused annual mortality are real numbers. We submit these are two different types of numbers, are not comparable and cannot be averaged with the same meaning.

A rate is the result of a sampling procedure and is representative of the entire population for a given year. As such, an average gives each year equal weight. A real number may be the result of a sample, but the intention is to achieve a complete enumeration; as such, anything less than a full enumeration does not represent the population that year. This would appear to be especially true of females with cubs of the year where the number seen is more a function of observability than the effort expended observing. Observability is a function of weather, season, vegetation growth, observing conditions, observer experience, conditioned responses of the bears, etc.-- observing effort might only be a minor factor.

When numbers are averaged, the average is automatically skewed in the direction of the number furthest from the average. This is acceptable when averaging rates; it is not acceptable when averaging numbers resulting from observability bias which are not representative of that year's actual situation.

If females with cubs is to be one of the criteria used, and if it is intended to be a maximum enumeration, then all information gathered should be used to obtain the best possible figure. For example, if the number of females with yearlings exceeds the number of females with cubs observed the previous year (as is the case with Knight's 1975 and 1976 data), then the females with cubs figure from the previous year should be adjusted upwards.

This is a useful criterion and findings will be compared to those of the Craighead study. Without an "observability index," however, the figures will not be comparable. It is important that such an index be developed and, by the end of the study, that it is acceptable to management as well as the research team. Periodic review of these efforts by a technical review panel would help guarantee its acceptance.

It must be acknowledged that forest management practices continue to adversely affect the grizzly bear. That "timber harvest is most beneficial as a grizzly bear habitat management tool ...." is an oversimplification and, at best, misleading. If timber harvest is to enhance grizzly habitat, the surrounding areas must be maintained as cover and free from disturbances until the cut over area has recovered - this seldom if ever, happens.

Natural burns, which have the potential of improving habitat conditions, are still generally suppressed, including wilderness fires. The above statement

regarding adjacent cover areas also holds true for areas surrounding burned areas.

If management is expected to monitor population and habitat trends, more manpower and money will be needed. We are presently working with land management agencies on timber sales and roads, but seldom get to look at a sale area more than once. Ideally, we should make prelogging, logging and postlogging inspections of critical habitats just to make sure that our recommendations, or at least some guidelines, are followed. It does little good to develop guidelines and make timber and road management recommendations unless someone is available to see whether or not they were followed. Perhaps this could be a responsibility of the Grizzly Recovery Coordinator.

I have discussed other aspects of the Plan with Don Brown and do not believe they warrant repeating in this letter.

The Montana Department of Fish, Wildlife, and Parks is currently supporting grizzly investigations with a significant portion of our tightened budgets. We do not believe the same level of commitment has been made by some of the other responsible agencies. The low level of involvement and commitment by the land managing agencies has been disappointing. We believe the federal agencies can, and should, do more than they have for the grizzly.

We believe the recommendations in this plan, if followed, could provide answers to many of the questions still unanswered and help guarantee a bright future for the grizzly in Montana.

I appreciate the opportunity to comment. Again, I am sorry they are late.

Sincerely,

James W. Flynn
Director

mh

cc: Don Brown

STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
600 SO. WALNUT ST. – P.O. BOX 25
BOISE, IDAHO 83707

April 2, 1981

Mr. Don L. Brown
Grizzly Bear Recovery Plan Leader
Department of Fish, Wildlife and Parks
1420 East Sixth
Helena, Montana 59601

Dear Don:

This is a final comment on the Grizzly Bear Recovery Plan and replaces the one I sent to you July 28, 1980 and one sent to Mr. Wayne Brewster November 20, 1980.

Please use the changes agreed by you and Lloyd Oldenburg in Denver, March 13, when you reviewed each of my previous comments.

Thank you for all the effort which it has taken to get this plan to where it is now.

If you have further questions, please call.

Sincerely,

Jerry M. Conley
Director

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

EARL G. THOMAS
DIRECTOR

November 13, 1980

James C. Gritman
Acting Regional Director
U.S. Department of Interior
Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Re: FA/SE/Bear, Grizzly--Rec. Plan

Dear Mr. Gritman:

We have reviewed the Grizzly Bear Recovery Plan and have the following comments:

Abbreviated step-down outline, page 49

We are not certain how this outline relates to the recovery plan. It appears to be directed toward working the plan into the management of the grizzly by State and Federal agencies. The outline is very broad and we see little wrong with it. However, the location of plan implementation (step 8) seems out of sequence. It seems more logical to begin implementation of the plan prior to steps 5, 6 and 7.

Recovery Plan: Population Monitoring Y 1 - Y 121 (page 51 and 52)

We do not agree with the concept of making the attainment of the population parameters as reported by the Craigheads a measure of the success of recovery. Available data should be used to make the best estimates of the bears now present. A population objective should be established and population parameters should be measured and used to estimate future population levels. Once the objective for population size is reached, the population parameters will establish management strategies to be followed to maintain the population at the objective level. The list of population parameters presented or their biological equivalents are not independent. Actual values for these statistics may vary from those measured by the Craigheads or the Interagency Grizzly Bear Study Team (IAGBST) while population recovers and does very well. We believe a more realistic approach would be one based on an objective for population size with a monitoring system based on the analysis of reproduction and mortality data on an annual and cumulative basis.

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ENDANGERED SPECIES

Re: FA/SE/Bear, Grizzly--Rec. Plan

Illegal hunting: Y 2111. (page 54 and 55)

The concept of a law enforcement team seems reasonable but jurisdictional and supervisory problems may make the team ineffective. A more reasonable approach would seem to be a more loosely structured approach with U.S.F.W.S. enforcement personnel assisting state personnel with the solution of violations within each state's area of jurisdiction. As long as the grizzly remains federally listed, the U.S.F.W.S. would take the lead in these enforcement activities. Upon delisting, the states would take the lead.

Reduce Accidental Deaths: Y 2113 - Y 21131 (page 57)

The Wyoming Game and Fish Department does not have the capability of keeping highways free of carrion. We will, however, encourage the State Highway Department to increase their efforts in grizzly habitat.

Y 21133. The likelihood of this department moving carrion away from railroad tracks seems remote. Even if these animals are in an accessible area, this Department lacks the resources and time to do this on a large scale. However, if mortality of grizzly bear along railroads becomes a significant problem, this Department would do everything possible to assist in reducing these mortalities.

Y 21134. The statement is made that a sponsoring unit must certify a drug before it is used on bears. What is a sponsoring unit?

Agency Control of Grizzlies: Y 2114 (page 59)

Y 212 and Y 612. The control of specific problem bears with a licensed hunter is feasible. Public hunting should be considered as a tool to manage grizzly populations, in addition to the supervised taking of problem bears.

Cost of the Recovery Plan to WG&FD

The following estimate of costs to the Department is preliminary, but should give some idea of actual costs:

Task	Cost
1. Trained law enforcement team member, it is likely that with the various obligations resulting from the plan (i.e. carrion removal, public education, handling of problem bears, and enforcement) will require, at the very least, one-half man.	$15,000.00 a year

Re: FA/SE/Bear, Grizzly--Rec. Plan

2.	The implementation of this plan is predicated on the continuation of the IAGBST.	$35,000.00 year
3.	Public Education, $8,800.00 first year.	$ 1,300.00 year
4.	Grizzly Bear Recovery Coordinator.	$ 6,250.00 year
5.	Grizzly Bear Mortality Coordinator.	$ 850.00 year
6.	Research and Development.	$ 5,000.00 year
7.	Administrative time - 1 man month.	$ 2,300.00 year

We estimate that the cost to this Department the first year could be as much as $69,700.00 and $45,700.00/year thereafter. This cost is certainly not excessive if the option is extinction of the grizzly bear. However, costs could be reduced if alternatives were considered to some of the items in the recovery. One alternative would be for the U.S.F.W.S. to accept greater fiscal responsibility for this plan.

Thank you for providing us with the opportunity to comment.

Sincerely,

W. DONALD DEXTER
ASSISTANT DIRECTOR-OPERATIONS

WDD:SS:cg

UNITED STATES GOVERNMENT

memorandum

DATE: October 1, 1980

REPLY TO ATTN OF: Leader, Wyoming Cooperative Fish & Wildlife Unit

SUBJECT: FA/SE/Bear, Grizzly Recovery Plan

TO: Regional Director, Region 6

SE

I have reviewed the Grizzly Bear Recovery Plan. Overall, I feel that the Plan is well written and provides a good direction for maintaining the grizzly population.

Some general comments:

1. The Plan seems to be directed towards recovery of the grizzly population for hunting. This is fine, however, there are many more people who would just like to see the bears and photograph them. The Plan does discuss public education. This should, if possible, include protected visit sites for the public.

2. Habitat enhancement is mentioned several times in the Plan. The key to maintaining the bear population is through habitat maintenance. Emphasis should be placed on determining the habitat and food requirements of the grizzly. Reference is made to space. The Plan also addresses fragmentation. This is good; however, what happens when roadways, transmission lines and wood lots are cut? What is the minimal size habitat necessary to support a viable grizzly population? How do we maintain such an area with human pressures?

3. The Plan refers to the Shaffer model. This model only provides a reference point base on available data. The Plan itself questions some of the data. Thus, the model should be the beginning point. More field studies are necessary to provide better data and larger samples to make such models effective.

I agree with the major priorities established by the Plan; funding levels, however, seem low. It may be necessary to concentrate efforts in areas such as Yellowstone where the bear population is large.

U.S. FISH & WILDLIFE SERV. RECEIVED OCT - 9 1980 DENVER, COLO.

RE 5D
OCT 10 '80

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF GAME
600 North Capitol Way, GJ-11 Olympia, WA 98504 206/753-5700

Acting 11/6

31 October 1980

U.S. FISH & WILDLIFE SERV. RECEIVED NOV 4 1980 REGIONAL DIRECTOR DENVER, COLO.

James C. Gritman
Acting Regional Director
P. O. Box 25486
Denver Federal Center
Denver, CO 80225

FA/SE/Bear, Grizzly Rec. Plan

Dear Mr. Gritman:

Regarding the Agency Review Draft of the Grizzly Bear Recovery Plan. I have reviewed the document and have made the following observations.

Washington has marginal grizzly populations in Selkirk Mountains and the North Cascades. You have termed these "Grizzly Bear Ecosystems" SMGBE and NCGBE. It is our observation that these areas in Washington represent an insignificant portion of range for a Canadian population. We have found no evidence of denning in Washington. Consequently, your treatment implies that political sub-division creates separate grizzly populations from Canada and makes them the responsibility of the political entity at which you can point a finger.

The primary goal on p. 46: "To remove the grizzly bear from threatened status in the 48 conterminous United States" is the epitome of the above rationale. Somebody in planning, not familiar with the problem, might assume that since the grizzly is only present in four or five states, the other 43 or 44 states are under the gun. As we both know, the "48 conterminous United States" is considered biologically as a separate entity, possibly because most Americans believe the "lower 48" is the center of the Universe. In this consideration, it is important to think of Alaska and Hawaii, not as states, but as territories or satellites which are not a part of the central core.

Grizzlies are rare in Washington, although you have identified that we have two of the seven Grizzly Bear Ecosystems. pp 171-172 identifies WWD to expend $120,000 over three years to determine the status and habitat of grizzlies in these two "ecosystems". We have already done this to our satisfaction within the budgetary limitations under which we operate. We are not sure that spending $120,000 would tell us anything about the + 10 grizzlies which we don't already suspect. We are sure that spending $120,000 would not recover the grizzly in Washington. We do not have $120,000 nor even $1,000 which we can spend on this problem. Our Nongame budget is already committed in other areas and it appears to us that these proposed grizzly expenditures would be a waste of public funds.

RECEIVED NOV -5 '80

James C. Gritman
31 Oct. 1980
Page 2

Following are some observations about the statements in the text:

(1) p.3: Minimum Viable Population (MVP) 30-70 bears. When adjacent Canadian areas are included, our populations may be that large.

(2) p.3: Minimum area required to support MVP: 405 mi^2. When Canadian areas are included, we have minimum area required.

(3) p.9: While females with young comprise less than 20% of population, they caused 79% of the injuries to people. We have not observed females with young in Washington and have not had injuries to people.

(4) p.11, 45: extinctions should be changed to extirpations. "Extinction" refers to species loss not removal from one area.

(5) P. 12, 13: 1800 and 1975 grizzly range by Schneider is undoubtedly an overstatement in that 1800 map shows entire state as grizzly range. Regardless of reference, 1800 is the broad-brush approach and 1975 nit-picks. If 1800 is inaccurate for Washington, I suspect it is for Oregon and Nevada also. We realize that the dramatic "then and now" is typical treatment for rare animals.

(6) p.14: Colorado's kill is similar to ours for 1979 and is the only positive evidence of a grizzly population. We have sightings over the years in the Selkirks. What about Colorado sightings?

(7) p. 17: Interchanges between all other populations are feasible, and consideration to protect travel corridors should be a necessary part of future land plans. Between Selkirks and Cascades this is doubtful through Washington, although I have not looked at possibilities in Canada. Protecting a travel corridor across Pend Oreille, Columbia, Sampoil and Okanogan rivers is far fetched.

(8) p.18: Grizzly Bear Ecosystems in the conterminous 48 States 1979. It shows BGE in only four states. The other 44 have nothing to do with it.

(9) p.19: Natural habitats---resemble islands---will become---isolates of formerly larger contiguous habitat. This is speculation. It may have always been this way.

(10) p.19: ---maintaining corridors for inter-isolate dispersal between populations. See (7) above.

(11) p. 25: Minimum home range (square miles): Males-189 (64 to 543); females-72 (40 to 190). We may not have enough room for grizzlies.

(12) p.28: Grizzlies have one of the lowest reproductive rates among terrestrial animals. This is characteristic of many extinct species and may be an indicator that like those already gone, they are programmed for extinction by their biology as well as their loss of habitat to man.

(13) p.30: "The only good grizzly is a dead one". Not heard in Washington because they are so rare.

(14) p.34: People who---provide unnatural food---share responsibility for future damage and violence committed by grizzlies. Maybe true, but a hard pill for a mauled victim to swallow.

(15) p. 38: 90% of aerial radio relocations of instrumented grizzlies were in dense cover---(but)--- only 1% were more than a kilometer from an opening. Seems the "plains grizzly" doesn't like the open plains.

(16) pp 41-42: Denning habitat may be a population limiting factor. Have not found dens in Washington.

(17) p.43: budgetary constraints---supervisory commitment----half-hearted attempts to barely comply---with provisions of---the Recovery Plan. Inadequate funding or lack of full cooperation by---agencies---waste of tax dollars---extinction. Only an all-out concerted effort---state agencies. Again, extinction is the wrong word and it seems to us that budgetary constraints shoot down supervisory commitment to grizzlies and substitute supervisory commitment to budgetary constraints.

The goal expressed in our proposed strategic plan for grizzlies is "maintain population at current level" and we will do this with complete protection under law. We would like to contribute minor funding to Jonkel's Border Grizzly project, but we will not even give lip service to spending the funds you suggest in the Recovery Plan.

Sincerely yours,

THE DEPARTMENT OF GAME

L. D. Pac[illegible]
Big Game Management

LDP/rpb

cc: Don Brown, Montana Fish & Game

Page 71 - The possible consequences of instilling a fear of man into bears should be considered. If such a program were successful, it could limit the carrying capacity for bears since bears would tend to avoid areas with moderate-to-high recreational use.

Page 142 - In reference to "intensive monitoring for population parameters," Don Brown and I talked this over with the understanding that the IAGBST would do the actual monitoring since we were engaged in that type of activity already. I see that although all of the agencies participating in the study are listed, we are not listed as a cooperator. Is this an oversight? Also, when Don and I talked about budgets for this activity, I was talking about a total research budget rather than just monitoring. The $400,000 listed for this activity is very high, even for a research budget.

Generally, the costs listed for the Yellowstone Ecosystem appear to be on the high side.

Sincerely,

Richard R. Knight
Team Leader

3E

United States Department of the Interior
NATIONAL PARK SERVICE
INTERAGENCY GRIZZLY BEAR STUDY
FORESTRY SCIENCES LAB
P.O. BOX 1376
BOZEMAN, MONTANA 59715

IN REPLY REFER TO:

November 6, 1980

NOV 10 1980
DENVER, COLO.

Mr. James C. Gritman
Acting Regional Director
U. S. Fish and Wildlife Service
P. O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Gritman:

I have carefully reviewed the Grizzly Bear Recovery Plan and am impressed by its completeness.

Although I see no problem with using the 1959-67 data as a basis for recovery - in fact, I see no other alternative - I do think that the ecological equivalent should be stressed more. Given the lower reproductive rates characteristic of the present population and the changes in land use since 1967, the same number of bears will not produce as viable a population.

I have a few more specific comments, as follows:

Page 20 - Given 5.5 million acres in the Yellowstone Ecosystem and current estimates of 200-350 bears, the density would be between 1 bear/25 mi^2 and 1 bear/44 mi^2.

Page 25 - The average home range of 42 mi^2 for a grizzly bear in the Yellowstone Ecosystem is far too small. Our published data show averages of 94 mi^2 for 12 bears in 1976, 199 mi^2 for 20 bears in 1977, 110 mi^2 for bears in 1978, and 112 mi^2 for 19 bears in 1979.

Page 51 - I haven't computed it out, but an average annual mortality rate of 17-18 percent seems very high for a species with such low productivity.

Pages 52-53 - Those sources of man-caused mortality listed under private citizen control other than self-defense should be listed under illegal hunting.

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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
507 25th STREET
OGDEN, UTAH 84401

4200
November 10, 1980

Mr. James C. Gritman
Acting Regional Director
Fish and Wildlife Service
P. O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Dear Mr. Gritman:

Thank you for the opportunity to review the Agency review draft of the Grizzly Bear Recovery Plan. Our Station comments are summarized as follows:

1. We found the document difficult to critique. Mr. Brown has done a fine job of summarizing and organizing the information. However, much of the content is difficult to comprehend because there appears to be a substantial amount of duplication due to treating each ecosystem as a separate entity. We believe some kind of overall summary statements and summary tables would be very helpful in tracking recommendations and costs. In some cases we are not sure whether such items as the Law Enforcement Team Y2111, N2111, and C2111 is a single entity or three separate efforts. By totalling budgets into a single compilation we would have a better comprehension of the magnitude of the job.

2. Yellowstone distribution data, Figure 3. One of our scientists is currently completing maps for his summary manuscript of the Yellowstone Grizzly Bear ecosystem data. He notes that some minor revision of this map might be possible in the near future.

3. Recovery Statistics. One of the recovery statistics specifies that some number of females with cubs should be observed. For the three ecosystems this amounts to about 5 percent of the population in the Yelowstone, and about 10 percent in each of the other two areas. We believe the Yellowstone figure may be far more realistic, particularly when considered in relation to the amount of experience and flying time required to produce information unobserved by the bears. The present female-with-cub target may not be possible in the other ecosystems.

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4. Action items under 22, relating to population limiting factors, call for determining the accumulative effects of past actions impacting grizzlies. This is an extremely important concept, but difficult to track in terms of coordinated effort in the document. In particular, the document is split up in such a way that it is not possible to tell whether the job is considered research or management, or whether techniques exist for actually accomplishing the work.

5. Job Implementation and Budget. It might be helpful to add some further explanation under the item "Priority of Jobs." As it now stands, the document says that our number 1 priority, and thus theoretically the areas which should receive primary funding and attention, are in the Cabinet-Yaak and the North Cascades and Selway-Bitterroot Ecosystems, where current bear populations are minimal and current research is minimal. Yet, I suspect, the various agencies will continue to put a great deal of effort in the other ecosystems which are listed as lower priority.

6. Part III, Pages 139 and 140. Under items Y422 and Y432 the Interagency Grizzly Bear Study Team is given lead role responsibilities for helping resolve differences in agency stratification and management direction. Since the IAGBST is a research team without line management authority they should be listed as cooperators rather than under lead responsibility.

7. Estimated Costs. We assume the costs are estimated at the lowest organization level, the project level rather than Regional Office or Appropriation level. Even so, some appear to be quite low. Also, where possible, costs for an action should be estimated whether they are part of an ongoing program or not.

I hope the above comments will be helpful. If you decide to put together a summary table of costs, and particularly those associated with research needs as compared to management needs, we would appreciate the opportunity to review and discuss them with you in relation to our Experiment Station research program.

Sincerely,

Roger R. Bay

ROGER R. BAY
Station Director

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Rocky Mountain Forest and Range Experiment Station
222 South 22nd Street
Laramie, Wyoming 82070

4200
October 28, 1980

Mr. James C. Gritman
Acting Regional Director
USFWS
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Gritman:

I have reviewed the agency review draft of the Grizzly Bear Recovery Plan and found it very interesting. The information presented in Part I brings everyone up-to-date on the status of the Grizzly and points out the problems. The information on distribution and population is not encouraging, but it still shows there is a possibility to manage the grizzly bear habitat in a way that will keep them around for a while. The approach to show the bare bones of the situation should help to make the problems easy to understand and help support efforts to get the grizzly into a recovery situation.

The step-down plan and implementation schedule shows the cooperative efforts that generated the recovery plan. There is not time to lose in this fast moving society and already we are hearing the problems associated with energy exploration and grizzly bears. If all the human activity could be done while the bears are in their dens during the winter it might help. Getting people out of the bear's habitat during the rest of the year would be the next problem.

The work by Blanchard relative to grizzly use of timbered areas was interesting to us. The elk and mule deer exhibit the same use of timbered areas during the summer daylight hours in south central Wyoming. Their heart rates were higher during the warmer weather and since they have a poor system for staying cool, they need the thermal cover to adjust and conserve energy. The elk and deer don't use timber for resting during the day when it's cold in the winter. So this behavior has to be thermal requirement rather than security, although when people scare them they head for timber. Since bears have the same physical problems with staying cool during warm weather. They would stay near the thermal cover during the summer.

The priority of jobs and budgets appear to be in line with the present situation. The support of Federal agencies is contingent upon available funds and public concern. Certainly the U.S. Forest Service is concerned and obligated to support the program.

The Recovery Plan (page 130) for the Selkirk Mountains, North Cascade Mountains and Selway-Bitterroot Grizzly Bear Ecosystem show a subgoal to: "Secure, maintain or re-establish grizzly bear populations." This subgoal may be too strong a statement until present status of grizzlies within the three ecosystems are known. There should be some effort made to determine the feasibilities and conflicts related to having grizzlies in these areas along with the status of the bears. It may show the reasons why grizzlies are not doing well in the area and point out the limiting factors for future management.

Sincerely,

A. Lorin Ward

A. LORIN WARD
Research Wildlife Biologist

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Rocky Mountain Forest and Range Experiment Station
240 West Prospect
Fort Collins, Colorado 80526

November 3, 1980

Mr. James C. Gritman
Acting Regional Director
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Dear Mr. Gritman:

Enclosed are some comments on the review draft of the Grizzly Bear Recovery Plan by Lorin Ward, Project Leader at Laramie, WY.

We hope that these comments are helpful.

Sincerely,

Clyde A. Fasick

CLYDE A. FASICK
Assistant Director

Enclosure

U.S. FISH & WILDLIFE SERVICE RECEIVED NOV 4 1980 DENVER, COLO.

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ANSWERED BY LETTER

AFA/SE

STATE OF ALASKA

DEPARTMENT OF FISH & GAME

JAY S. HAMMOND, Governor

230 South Franklin
Juneau, Alaska 99801

PHONE: 465-4265

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December 31, 1980

FWD immediately to Don Brown w/cy to AL. 8 1/7

James C. Gritman
Acting Regional Director
U.S. Fish and Wildlife Service
Box 25486, Denver Federal Center
Denver, Colorado 80225

Dear Mr. Gritman:

John Beecham, president of the Bear Biology Association, has asked me to synthesize comments of Association officers and council members on the agency review draft of the Grizzly Bear Recovery Plan. The Bear Biology Association is composed mainly of North American agency and university people with a special interest in bear biology and management. We realize that our comments are being submitted after your November 17 deadline. However, we understand other reviewers have been granted an extension and we hope that our comments will therefore be considered.

I will first present general comments made by two or more reviewers and then more specific comments. Respondants provided more detail than is presented here, but many of the comments not included here should be in other reviews which you receive.

For the Yellowstone population, it appears that too much reliance is placed on Craighead data from bears utilizing an unnatural food source (garbage dumps). It is well documented that nutrition and food supply can influence reproductive parameters. A food source such as a garbage dump might also affect intraspecific strife and other behavior. The garbage dump situation no longer exists and it might therefore be preferable to use Knight's data as the basis for describing reproductive biology, home range size, population composition, and perhaps other parameters in relation to habitat available now and in the future, or at least integrate Knight's data with the Craigheads' data. Reference only to Craighead data occurs at several places throughout the plan.

With regard to the NCDGBE, GP data are extrapolated to provide a population estimate of 500-800 animals. The mean (650) is basic to the plan and more detail should be provided on how the 500-800 figures were obtained, especially since it was by personal communication and details are not available in the literature.

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Budget is detailed for the short term but no mention is made of long term monitoring and costs. This is especially important as human population

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and activities are increasing and placing more pressure on grizzly bear populations. Short term budget figures are high. It is quite possible that state and federal agencies will not be able to provide funds at these levels. The plan should propose alternative funding sources.

The plan treats all areas in a similar manner regardless of the quantity or quality of data for each area. A better approach might be to tailor a plan to each area by emphasizing habitat protection and research in areas where population data are lacking (NC,SW,SE, and C-Y). In areas with population data, such data should be used along with available knowledge about impacts of various land uses (logging, livestock grazing, summer home development, oil and gas exploration activities, etc.) to develop a comprehensive plan with specific recommendations.

More specific comments are as follows:

P.4, para. 2 - The Plan states that nonbiological aspects of grizzly bear management were not considered, and that these will be left to administrators.

Comment: Non biological aspects may be as important as biological aspects and we believe they should be considered in the Plan.

P. 19, para. 2 - Plan states that grizzly bears have "unpredictable home range size."

Comment: Grizzly bear home range sizes are influenced by the sex and age of the individual and by the quantity and quality of their food supply and its spatial and temporal distribution. Therefore, one would anticipate considerable variation in home range size, but generally one should expect smaller home ranges where food supply is good (coastal brown bears) and larger ranges where food supplies are marginal (Yellowstone, Yukon, etc.).

P. 24, para. 2 - Plan states that subadult female grizzlies do not disperse and that the mother accommodates them within her home range.

Comment: This behavioral strategy has been described for black bears, but can it be supported by the literature on grizzly bears.

P. 24, para. 2 - Plan suggests that female grizzlies are territorial.

Comment: This statement contradicts earlier statement on page 23, paragraph 3.

P. 25, para. 2 - Plan states that "in the Yellowstone Grizzly Bear Ecosystem the average home range size was 42 mi^2 (Craighead and Craighead 1972c)."

Comment: Knight may also have data on home range size, and if so, we suggest that it be included. Home ranges are dynamic and figures would have more value if data were included on sex, age, and length of time bears were monitored.

P. 32, para. 1 - Plan lists five categories of man-related mortality.

Comment: This could be more complete by citing findings on man-induced mortality from Russell's 4-year study.

P.38, Cover section - Plan makes no distinction between visual and thermal cover requirements of bears.

Comment: Plan should distinguish between the visual and thermal cover requirements of bears and thereby acknowledge that they are different and important.

P. 51, Sec. Y11 and Y111 - Plan uses reproductive parameters reported by Craigheads as basis for evaluating recovery status.

Comment: Knight may have data which are a more accurate reflection of the response of bears to their dependence on a natural food supply. If so, these data might be better to use than the Craighead data.

P. 51, Average estimated annual mortality rate - Plan suggests recovered status with 18.65 percent mortality (Craighead et al. 1974) or 17.10 percent (Shaffer 1978).

Comment: These seem like high mortality rates for the Yellowstone grizzly population to sustain if both sexes are included in the mortality (see Cowan 1972, p. 362). We suggest caution before placing such emphasis on population simulation models because so many variables that are used to estimate annual mortality rates are "best estimates or guesses" and are not based on hard data.

Pp. 51-52 and footnotes, pp. 74-75 - Plan states that Craigheads reported a census efficiency of 77.3 percent and Cowan recomputed a census efficiency of 58.8 percent. Craigheads were seeing 14.889 females with cubs per year and Knight reported 12.0 females with cubs.

Comment: Females with cubs reported by Craigheads should have been relatively easy to see because bears were concentrated at dumps. We suggest that Plan address the different censuring efficiencies of Craigheads and Cowan and relate these to censuring efficiency of Knight's study and the association between the 14.889 females with cubs reported by Craighead and the 12.0 females with cubs reported by Knight.

P. 54, Plan item Y21111 - Plan describes investigation procedures for illegal kills.

Comment: Kills could be learned of sooner and better information thereby obtained if a toll free number for reporting kills were established and publicized. This applies also to private citizen control (Y2115) and to other ecosystems.

P. 57, Plan item Y21134 - Plan states that only experienced personnel certified by a sponsoring unit will handle grizzlies.

Comment: Part of the Plan could be to prepare requirements for certification similar to guidelines in Y21135. This applies to other ecosystems also.

P. 85, Sec. N2111221 - Plan states that female mortality would be reduced by a hunting regulation which prohibits the shooting of bears in groups of two or more.

Comment: Another regulation to reduce female mortality would be to allow hunting only during periods when females are least vulnerable. There is some evidence that females are less vulnerable in the spring. (Incidentally, we do not understand why measures to reduce female mortality in the NCDGBE are not part of the Plan for the YGBE and other ecosystems).

P. 136, Plan items Y2211, Y2221, Y2231, Y2241, and Y2251 - Plan gives these items a Priority 3.

Comment: Should be given Priority 2. All Plan items for Yellowstone and also for other ecosystems pertaining to the stratification of habitat on public lands should be given Priority 2.

Sincerely,

Jack W. Lentfer

Jack W. Lentfer
Vice President
Bear Biology Association

THE WILDLIFE SOCIETY
MONTANA CHAPTER

September 30, 1980

Mr. James C. Gritman
USDI Fish and Wildlife Service
P. O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Dear Mr. Gritman:

Thank you for providing the Montana Chapter of The Wildlife Society with the opportunity to comment on the review draft of the Grizzly Bear Recovery Plan. I am responding to this document as a representative of the Montana Chapter, but I do not have expertise with grizzly bears. Several other Chapter members, including Richard Knight, Charles Jonkel, members of their respective study teams, and U.S. Forest Service, BLM, Park Service and Montana Department of Fish, Wildlife and Parks, also will, in their official capacities, review this document. The Montana Chapter supports their comments.

The introductory portion of the document did not adequately support the step-down plan and job implementation. Examples of specific weaknesses follow.

The terms "direct mortality" and "indirect mortality" are first used on p. 48. Those terms should have been defined and their function as population-limiting factors clarified in the introduction.

Frequent reference is made to the "Guidelines." Those guidelines should be included in this document. Are those guidelines sufficient or should others also be developed?

Frequent reference is made to a "Grizzly Bear Recovery Plan Coordinator." This document should include a job description and qualifications for that position. Similarly, the role of each cooperating agency in the selection of that individual should be defined.

It is apparent from this document that the grizzly bear became a threatened species because of human encroachment. Likewise, C2261, p. 116, indicated that "each new action (conflicting land uses) has the potential of being 'the last straw,' from the standpoint of the bear." Yet, in the implementation section, actions to apply guidelines to potential land use conflicts are only rated as Priority 3. Anything less than Priority 1 seems incongruous.

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AN ORGANIZATION FOR PROFESSIONAL WILDLIFE BIOLOGISTS

Mr. James C. Gritman
September 30, 1980
Page Two

It is necessary to include the job implementation in its present format because it defines specific actions to execute each item in the step-down plan. Yet, in that format, and with 28 cooperators, it also defines bureaucratic chaos. The job implementation should be abstracted to include a description of responsibilities for each cooperator, and clear direction for management and research.

Indeed, "to be healthy . . . means to be whole." Just as National Parks are not complete ecosystems, the six occupied grizzly bear areas are a mere vestige of the historical species distribution. Successful management to conserve grizzly bears and their habitats within those six ecosystems is a very narrow definition of recovery. True recovery never will occur and the health of the Biosphere thus is failing. The present status of the grizzly thus serves to demonstrate the magnitude of our responsibility to all of our wildlife resources, not just threatened and endangered species. Implementation of the Grizzly Bear Recovery Plan will be difficult and expensive. The cheapest and most effective recovery plan for non-endangered species is wise stewardship now, while those populations still are healthy.

Again, thank you for the opportunity to review this document.

Yours sincerely,

John G. Mundinger
Secretary-Treasurer
Montana Chapter - The Wildlife Society

JGM:ma

NATIONAL WILDLIFE FEDERATION
1412 Sixteenth Street, N.W., Washington, D.C. 20036 202—797-6800

November 4, 1980

James C. Gritman
Acting Regional Director
U.S. Department of the Interior
Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Re: Grizzly Bear Recovery Plan

Dear Mr. Gritman:

The National Wildlife Federation (NWF) welcomes the opportunity to comment on the Grizzly Bear Recovery Plan.

NWF, with more than 4.6 million members and supporters, is the largest private conservation organization in the world. NWF is dedicated to the restoration, wise use, and perpetuation of the natural resources of the North American Continent. Our members use and enjoy the wildlife resources of the United States, including the grizzly bears, for recreation, aesthetic enjoyment, photography, and scientific study. As such, NWF is vitally interested in the recovery and conservation of grizzly bear populations in the lower 48 states.

Part I

An understanding of the grizzly bear population status and trend, its habitat needs, and the basis for excessive mortality rates is essential to an analysis of the overall Recovery Plan. Part I of the Recovery Plan provides an excellent and comprehensive overview of the status of the grizzly and its habitat needs and sets the stage well for a review of the remainder of the plan.

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James C. Gritman
November 4, 1980
Page 2

Part II

Step-Down Outline

The stated objective of the step-down outline is to "describe methods and actions needed to bring grizzly bear populations to recovery status" (emphasis added). In two critical respects, the step-down outline falls short of this action-forcing objective. First, paragraph 3.34 of the outline calls for the designation of critical habitat. Merely designating such habitat is not an action in the sense of the stated objective, particularly if the habitat is not on federally-owned or managed lands. We suggest that beyond designation, that the outline call for acquisition of critical habitat, and designate funding sources for such acquisition. Second, and similarly, paragraph 3.35 requires the identification of travel corridors. As Part I of the Recovery Plan notes:

> The necessity of developing or maintaining corridors for inter-isolate dispersal between populations may prove to be very important. "... individuals dispersing from adjacent or contiguous habitat can shore up a faltering population." (Plan, pp. 19 & 20.)

Thus, as with critical habitat, the outline should also address various approaches for acquiring travel corridors.

Recovery Plan:
Yellowstone Grizzly Bear Ecosystem (YGBE)

Rather than comment on the recovery plan, job implementation schedule and budget for each of the six ecosystems, we have limited our comments to the YGBE. In general, our comments on the YGBE are representative and apply to the other systems.

While paragraph Y211 (p. 54) recommends a goal of "zero" for man-induced grizzly mortality, the plan settles for eleven. We question the selection of eleven, particularly where the Planning Group went on to recommend that the man-caused mortality rate not exceed five or six grizzlies. Further compounding our concerns over the selection of this apparently high figure is the Recovery Plan's admission that population figures are difficult to determine and thus uncertain. (Recovery Plan, p. 74, note 1.) Uncertainty of this sort would seem to call for a more conservative approach to grizzly mortality.

According to paragraph Y21123, areas open to black bear hunting will be restricted if the hunt conflicts with the grizzly. We suggest that the Recovery Plan recognize that implementation of these restrictions depends on both state and federal authority and the cooperation of these two entities. In turn, each of these authorities should be spelled out in the Plan and how they will be implemented. Absent these specifics, it is difficult to assess the likelihood of success of this suggestion.

We suggest that the Recovery Plan define the terms "nuisance bears" and "problem bears" (see, e.g., paragraphs Y212, Y611 and Y61111). A clear understanding of these terms is essential since they directly affect grizzly mortality rates.

Throughout the YGBE Recovery Plan, state and federal officials are assigned specialized tasks or responsibilities to protect grizzly bears. For example, under paragraph Y21132, all agencies must clean up carrion along highways. Under paragraph Y21122, warning signs must be placed along highways in high-use grizzly areas. Each of these requirements is important to the maintenance of grizzly bear populations. We suggest that the Recovery Plan identify the authority (statutory or regulatory) upon which these responsibilities are based, who will exercise this authority, and whether it is a discretionary or mandatory duty. By establishing the basis of these requirements, we would be in a better position to judge the likelihood of their eventual implementation and success.

Paragraph Y3 should contain a land acquisition provision much like that of paragraph Y2251. The mere designation of critical habitat is quite useless if the area is in the private domain and cannot be protected or managed.

Part III

While the job implementation schedule for the YGBE assigns estimated costs for a three-year period, it fails to establish a fixed, deadline-oriented schedule for implementation of the Recovery Plan for YGBE. We suggest a schedule which contains beginning dates, schedule milestones, and all reasonably foreseeable dates for the accomplishment of specified objectives. Absent such a fixed schedule, the plan may experience unnecessary delays. Moreover, public groups such as NWF are not adequately apprised of the Plan's schedule of operation. We consider speedy implementation of the plan to be essential, yet we have no idea as to when the plan will be commenced.

Pages 139 through 141 call for recommendations on the purchase of private property. Once again, we suggest that the purchase of land and the sources of land acquisition funds are essential ingredients of the Recovery Plan. In that regard, we suggest that land purchase be a budget item in Part III. Furthermore, we suggest that the plan analyze the various federal and state acquisition programs which can or will be used to acquire land under the plan.

The job schedule does not refer to the provisions of Y21123. Believing that this is an important provision, we suggest that it be incorporated in the schedule.

Finally, the job schedule also omits the garbage dump provisions of Y1325. Since garbage dumps in national parks have presented serious bear/human conflicts, we believe this problem should be addressed in the job schedule.

In closing, NWF commends the Recovery Plan for its comprehensive approach to maintaining the grizzly bear. However, attainment of the Recovery Plan goals is much more likely if the authority for implementing many of the Plan's suggestions and recommendations is thoroughly understood, if the program is more structured in a timing sense, and if adequate land acquisition objectives are established.

Respectfully submitted,

Thomas G. Tomasello

Thomas G. Tomasello
Counsel
Resources Defense Division

TGT:ks

AMERICAN WILDERNESS ALLIANCE
4260 East Evans Avenue • Denver, Colorado • 80222
(303) 758-3913

324 Fuller, Helena, Montana 59601
(406) 443-0323

December 22, 1980

Mr. Don Brown
Mont. Dept. of Fish, Wildlife, & Parks
1420 East Sixth Avenue
Helena, Montana 59601

Dear Don:

I realize that I'm not on your list of official reviewers for the draft grizzly bear recovery plan, nor do I claim any expertise in grizzly bear management. However, I'm writing to pass along one comment I had after reading over the draft plan.

As you know, the Forest Service is in the process of allocating land for various uses, primarily as wilderness or nonwilderness. Since designation under the 1964 Wilderness Act would obviously provide habitat protection for the grizzly bear in such areas as the Monument Peak region just west of Yellowstone National Park, it seems proper that the Forest Service's land allocation decisions should consider the impact on the grizzly bear. Presently, the Forest Service is reluctant to evaluate the impact of land allocation on the grizzly bear or other threatened or endangered species. Instead, the agency prefers to wait until specific land uses (i.e. logging) are recommended before carefully studying the impact on the grizzly. However, at this stage of the process, major land allocation decisions are already made.

I disagree with this approach. Land allocation can have a tremendous positive or negative impact on the grizzly bear. For instance, wilderness can provide habitat protection and nonwilderness can allow various conflicting land uses. I realize that conflicting land uses can be prevented in nonwilderness, but this has not been the rule in recent years.

Thus, I'm wondering if the final recovery plan can contain some language that would require the Forest Service to consider the impact of their land allocations on the grizzly bear and other threatened or endangered species.

Many thanks for sending a copy of the plan.

Best regards,

Bill Schneider

Bill Schneider, Editor
WILD AMERICA

cc: Dr. John Craighead
Dr. Charles Jonkel
Dr. Richard Knight

STATE OF MONTANA
DEPARTMENT OF AGRICULTURE
AGRICULTURE / LIVESTOCK BUILDING [redacted] CAPITOL STATION
HELENA, MONTANA 59620

TELEPHONE: AREA CODE 406 449-3144

THOMAS L. JUDGE
GOVERNOR

W. GORDON McCOMBER
DIRECTOR

Acting

October 23, 1980

Mr. James C. Gritman
Acting Regional Director
U. S. Department of Interior
Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Gritman,

Thank you for the opportunity to review the Grizzly Bear Recovery Plan. It appears that our role will be in line with the normal duties carried out by the Environmental Management (Pesticide) Division.

Although we have no substantive comments at this time, we would like to be kept informed of any suggested changes that occur during the review process.

Sincerely,

W. Gordon McCamber

W. Gordon McCamber, Director

WGM/kg

U.S. FISH & WILDLIFE SERVICE
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DENVER, COLO.

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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

THOMAS L. JUDGE, GOVERNOR — 32 SOUTH EWING

STATE OF MONTANA

(406)449-3712 — HELENA, MONTANA 59601

November 19, 1980

James C. Gritman
Acting Regional Director
USDI, Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Gritman:

Thank you for the opportunity to comment on the Grizzly Bear Recovery Plan. Department personnel reviewing the plan generally felt it presented a good summary of current knowledge about grizzly bears, providing a basis for state land managers to understand and attempt to minimize effects of management actions on the bears.

The Plan identifies six grizzly bear ecosystems, three of which may be affected by the management of state and private lands in Montana. These are the Cabinet/Yaak Grizzly Bear Ecosystem, the Northern Continental Divide Grizzly Bear Ecosystem, and the Yellowstone Grizzly Bear Ecosystem. Within the three mentioned ecosystems it appears that there are two main areas of responsibility that the Department's Division of Forestry is being asked to assist in. These are:

1. State lands need to be stratified with respect to their importance to grizzly bears and then management objectives formulated for the stratifications. This appears to be a process similar to designating "critical habitat", or in the terminology of the "Yellowstone Guidelines", designating "Management Situations".

2. Timber management and other activities on state and private lands within three ecosystems need to be planned and evaluated with consideration to grizzly bears, and coordinated with similar plans for adjacent federal lands.

The Department is committed to offering assistance in these responsibilities, as these are things that are already being done on a case by case basis and completion of the stratification job should streamline our land management process. For instance, the Swan River State Forest Management Plan recognizes the grizzly bear as a species requiring special management, but lack of specific information has hampered efforts towards implementing meaningful special management procedures. This situation will hopefully be remedied in the Swan River State Forest and in the similar planning effort currently taking place on the Stillwater State Forest. In addition, one area which may not have yet been tapped which is partially DNRC's responsibility under this plan is communicating the intent of grizzly management guidelines to affected private landowners assisted by the Division of Forestry.

The Department will attempt to keep current on guidelines as they are developed and refined through Border Grizzly Project studies and continuing consultation with the Department of Fish, Wildlife, and Parks, as well as through further development of the Grizzly Bear Recovery Plan.

Sincerely,

Wayne Wetzel

Wayne Wetzel
Environmental Coordinator

WW/bw
cc: Don Brown, Fish, Wildlife, and Parks
Jeff Jahnke, Division of Forestry

AN EQUAL OPPORTUNITY EMPLOYER

SE

BURLINGTON NORTHERN

RESOURCES DIVISION
TIMBER AND LAND DEPARTMENT

700 South Avenue West
Missoula, Montana 59801
Telephone (406) 543-6637

November 18, 1980

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Mr. James C. Gritman
Acting Regional Director
U.S. Fish & Wildlife Service
P. O. Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Gritman:

Enclosed are comments relative to the agency review draft of the Grizzly Bear Recovery Plan. Burlington Northern has extensive land holdings within occupied grizzly bear territory and it is imperative that private landowners have the opportunity to participate in the development of a realistic recovery plan.

Generally, the plan has attempted to identify all biological factors and activities which will require attention or management if the grizzly bear is to be removed from threatened status in the lower 48 states. When viewed from the private sector, the plan presents a confusing overlap of federal and state responsibilities involving as many as seven lead agencies to accomplish a single task. The role of the private landowner is not adequately defined. For instance, over 208,400 acres of private land in the Northern Continental Divide Grizzly Bear Ecosystem is identified as requiring "stratification and management direction." The Forest Service has been designated as the lead agency in most of these situations with the private landowner listed as a "cooperator." What role will the private landowner have in evaluating stratification and direction and how will this be accomplished?

Specifically, points raised by the plan are as follows:

1) Within the Yellowstone ecosystem, point Y442 (page 65) suggests a review of 20,000 acres in the Taylor-Hilgard Range of the Gallatin National Forest for "inclusion in occupied grizzly range in light of the comments regarding occupied habitat in the Buck Creek-Yellow Mules final environmental statement." This recommendation has been added since the earlier technical review draft of the recovery plan, and suggests a new "revelation" requiring a change in management direction for this area. In reality, the Buck Creek-Yellow Mules Final ES is over three years old. While stating that potential habitat exists in the headwaters of some drainages, the ES admits that the frequency of grizzly use is unknown, and between 1973 and 1977 six grizzlies were reportedly seen in or near Buck Creek, though none of the sightings were confirmed. We question the rationale for re-evaluating the status of this large area of intermingled ownership based on the data presented in the Buck Creek-Yellow Mules final ES.

2) The NCDGBE population recovery levels call for at least 10% of the total population to be composed of females with cubs of the year. However, the Yellowstone recovery levels specify a six-year average of only 5.4% of the total population consisting of females with cubs (14.889 females with cubs in a population of 275 animals). What is the biological justification for this lower level in the Yellowstone ecosystem?

3) Although population statistics are presented as goals for recovery, the basic question is how many more grizzlies are required for recovery in each population? This point was not adequately discussed, and should include some estimates to evaluate the feasibility of this plan.

4) Related to the previous point, the sizes of occupied territory in the Yellowstone ecosystem (8,496 square miles) and the NCDGBE (8,501 square miles) are nearly the same yet we see quite different recovery levels in terms of densities or perhaps total number of bears in each population. Recovery densities appear to be about one bear per 28 square miles in Yellowstone compared to one bear per 13 square miles in the NCDGBE. Presumably, the reason for this difference is because habitat in the Yellowstone ecosystem is not as productive for grizzlies as the NCDGBE. If this is the case, then why wouldn't the recovery densities used for Yellowstone be more than adequate for the NCDGBE where habitat potential is reportedly of higher quality? There seems to be confusion on what population goal is necessary for recovery and what total number would be desirable to fully utilize habitat potential. The latter figure appears to be much higher than required for population recovery in the NCDGBE.

5) Regarding the issue of continued sport hunting in the NCDGBE population (N2111221, page 85), a major concern is to reduce mortality of females. It appears that consideration for a reduced level of hunting on all bears is implied but should be explicitly stated.

One alternative listed proposes reducing female mortality by prohibiting the shooting of bears in groups of two or more. This alternative would be difficult to enforce and perhaps ineffective. It is doubtful that a hunter would verify that a grizzly is alone before he shoots, especially in dense vegetation where other bears could easily be undetected. The estimate that only 33% of the adult females would be vulnerable under this alternative should be clarified. Presumably this refers to the females that would be breeding earlier that year and thus would be without cubs or yearlings as the fall hunting season approached.

Please keep us informed on the status of this recovery plan. We would like to receive any additional drafts which may be generated as well as a copy of the final plan.

Sincerely,

Loria L. Hicks

Loria L. Hicks
Wildlife Biologist

LLH/mc

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ENDANGERED SPECIES

November 14, 1980

Mr. Don Minnich
Regional Director
U.S. Fish & Wildlife Service
USDI - Box 25486
Denver Federal Center
Denver, CO 80225

RE: FA--CE--Bear Grizzly
Recovery Plan

Dear Mr. Minnich:

We are replying to your request for comments on the Grizzly Bear Recovery Plan.

The National Wool Growers Association is highly critical of the entire plan. We feel far too much emphasis is given to the welfare of the grizzly over the impacts of human and livestock welfare. The loss of one human life is not worth the entire grizzly population!

The "broadbrush" approach in designating critical habitat for the grizzly has extended the boundaries of all the six proposals far into areas where human and livestock conflicts are inevitable.

We feel that "occupied habitat" should not be considered as "critical habitat" for the survival of the grizzly population. If one were to adopt such a philosophy, as a grizzly population increase and naturally extended its species into adjoining areas, where does the concept of critical habitat stop and realism begin. Grizzly bears are not compatible to present day livestock and human activities now existing on former alleged grizzly habitat. One must recognize that if a grizzly population is to remain it must certainly be only small isolated populations in remote areas where human and livestock conflicts are minimal or nonexistent.

Certainly, the concept of "Corridors" between grizzly ecosystems is completely ridiculous, absurd, and unacceptable to any recovery effort.

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NOV 18 '80

NATIONAL WOOL GROWERS ASSOCIATION, INC.
600 Crandall Building / Salt Lake City, Utah 84101 / (801) 363-4483

Page 2
Don Minnich
November 14, 1980

The National Wool Growers Association is especially critical of statements throughout the plan such as: "Identify and reduce or eliminate activities which indirectly limit grizzly populations" . . ., "Develop and apply systematic management guidelines on federal lands to make timber and grazing operations compatible with grizzly bear special and seasonal habitat requirements". . ., "Restrict development in occupied ranges of grizzlies via county zoning, state regulations, and withholding permits on federal and state lands". . . We cannot support any of the above concepts.

The National Wool Growers Association is especially concerned over the inclusion of established livestock grazing areas, both cattle and sheep ranges, into critical habitat for grizzlies. This is totally unacceptable and will not be supported or tolerated by the livestock industry.

The whole concept of attempting to manipulate a remnant or reintroduced species now classified as "Endangered" back into the former habitat of the species is ludicrous. The ecosystem that once supported these species does not exist in the present land use patterns of our country. To attempt the recovery of the buffalo back into its original range would no doubt be recognized as unrealistic. The attempt to reintroduce such species as the Grizzly Bear and Northern Rocky Mountain Wolf into its former range is likewise absurd. The ecological niche for these species does not exist and recognition of this evolutionary process in our environment must be acknowledged and accepted.

We appreciate the opportunity to comment on the Draft Grizzly Bear Recovery Plan and would be willing to discuss the issue further should you desire.

Sincerely,

Joe T. Helle

Joe T. Helle, Chairman
Animal Damage Control Committee
NATIONAL WOOL GROWERS ASSOCIATION

JTH/fe

Graduate Program in Ecology
COLLEGE OF LIBERAL ARTS

Stephen F. Stringham
The University of Tennessee
Knoxville 37916
(615) 974-3065

15 November 1980

Don L. Brown, Leader
Grizzly Bear Recovery Plan
Montana Department of Fish, Wildlife & Parks
1420 East 6th
Helena, MT 59601

Dear Dr. Brown,

I recently had the opportunity to read part of the preliminary version of the GRIZZLY BEAR RECOVERY PLAN. To plan in such detail for so many populations under such diverse conditions clearly must have taken a great deal of time, thought, and effort. It is truely impressive, and as a fellow biologist long devoted to preserving the grizzly, I salute you.

Although I lack your breadth of understanding of the problems in grizzly management, there are two areas where I may be able to offer added insight: 1) impacts of hunting and effects of altered age-sex class ratios on population dynamics, and 2) bear-human conflicts. So I have critiqued the recovery plan up through the section on the Yellowstone Grizzly Bear Ecosystem; the comments and suggested revisions are enclosed. Please take them as they are intended, as an aid in refining your plan, not as a sign of disrespect for the fine job you have already done. It is unfortunate that you have not made use of my findings from the start. I sent copies of two papers (Stringham 1980, in press) to you via Dale Harms several months ago; did they not reach you? You will find the first published in the proceedings of the 1977 Kalispell NSA conference; if you do not have a copy, I will send one. The second is in press from the 1980 conference at Madison; a copy of the preliminary draft is enclosed, and I will send you a revised version as soon as possible. If I can be of any further service in helping you on the Recovery Plan, please let me know; and please do keep me informed of progress.

Incidently, there is a cooperative program between the USFWS and the Institute of Ecology for hiring Ecological Interns; THE pays the salary, so far as I know, and the Intern works with an existing project. I have applied for an Internship; so if you could arrange with USFWS to put me to use, please make the request for my services to the address below, as soon as possible.

Attention: Roland W. Usher, Project Manager
The Institute of Ecology
Holcomb Research Building, Butler University
Indianapolis, Indiana 46208

Sincerely,

Stephen F. Stringham

Stephen F. Stringham

GRIZZLY BEAR RECOVERY PLAN

Critique

I. INTRODUCTION

A. Perspective

p.2, paragraph 3: Suggested revisions:

To assume that this population has "recovered" seems to me unwarranted, considering the evidence -- or more precisely, the lack of evidence -- presented by Knopp at the ABS meeting in Madison this past February.

During the summer of 1966 I spent 6 weeks roaming the backcountry of Yellowstone looking for grizzlies in areas which prior to dump closure they typically frequented. This includes areas such as Mt. Holmes, far from the dump sites. Yet I neither saw a single bear nor found fresh sign. So all population estimates aside, I am skeptical that we really know yet what is happening with that population. Conversations with Dick Knight leave me with the feeling that he too is very reluctant to put much faith in current information. Its just one heck of a job to monitor these animals in that kind of habitat, now that they no longer frequent dumps. So I would hope that in the recovery plan, this uncertainty should be stated explicitly, and no unwarranted assumptions of "recovered" status be made. If, on the other hand, you have access to facts which I lack, which provide that warranty, please cite where they have been obtained.

B. Goals & Objectives:

Is it understood, for both legal and biological purposes, that these primary objectives require the subsidiary objectives of identifying how the endangered/threatened populations differ from ones that are able to sustain themselves even under highly adverse conditions? If not, shouldn't this be stated?

II. SOCIAL ORGANIZATION & BEHAVIOR: Suggested revisions & comments

A. Combine all information not directly related to bear-human interactions with that on home ranges; insert it where you now have "HOME RANGES" under the new title "SOCIAL ORGANIZATION AND BEHAVIOR".

1. Summarize the observations from Maso
2. Add information from other sources, such as Pearson (1975), Stringham (1980).

B. The information on p.24 about females being territorial and accomodating daughters applies to black bears on Lynn Rogers study area in Minnesota; but it does not seem to apply to black bears in some other areas, such as the Smoky Mountains. Nor do I know of any evidence that it applies to grizzly/brown bears in any habitat; if you have access to any data documenting such relationships, please cite them.

C. Present all information on bear-human interactions in a separate section, including the information presented here and that on mortality. You might want thus to include information not only on direct conflicts that cause damage to people or property, but aesthetic and other kinds of interaction.

1. Include more of the findings by Herrero on frequency and causation of attacks, based on his surveys of the literature. Fred Dean and Stringham have both written papers on this for the U.S. Park Service in Alaska, based on observations at Katmai National Monument. The findings of Stonorov & Stokes (1972) are of course particularly dogmat.

2. Include some of the information from the studies on attacks by black bears by Jane Yate and Bruce Hastings, respectively in the Great Smoky Mountains and Yosemite National Parks. Both are currently students of Mike Pelton at the University of Tennessee.

D. Statements on individual distance are seriously in need of revision.

III. CURRENT DISTRIBUTION & STATUS

A. As I recall from Hoop's presentation at the Madison bear meetings, this past February, there are estimates of the Yellowstone population far lower than that.

IIIV. AGE & SEX STRUCTURE

A. What is the source of the quote on p.25 at the beginning of this section? Of what possible value is it to average structures of populations living in such diverse conditions without at least providing standard deviations; a table of values would be even better, such as that given by Stringham (1980:338). As in that paper, tests of significance should be applied when comparing hunted vs. unhunted populations.

B. Sex Ratios

1. Data on captive grizzly/brown bears reveal a highly significant ($P < .005$) predominance of males at birth (Stringham, in press)

2. This is substantiated by field data from Yellowstone (Craighead et al 1974); altho the Craighead data base alone is too small in sample size for significance to be attained, the trend is clear up through ages 3&4 years old. Indeed, significance is attained when all subadults are considered (McCullough in press; Stringham in press).

C. Natality

Stringham (1980, in press) deals extensively with factors controlling natality rate. These findings should not be ignored, particularly since they relate natality to hunting pressure, and could thus be crucial for determining tolerable levels of harvest. Note that these analyses produce substantially different results than that of McCullough (in press).

1. In what populations do only 20 to 50% of cubs survive to breeding age? Under what conditions?

2. Stringham (1980) provides a means of comparing reproductive potentials between populations (Potential Natality Index)

3. On p. 29 you state that "Obviously, ... maximum protection for females is essential to recovery". In addition to shortening the sentence as indicated by the "[..]", you might wish to cite the following observations by Stringham (1980, in press): Neither comparison among 6 populations nor that among 12 years for the Yellowstone population, revealed a relationship between abundance of adult females versus their reproductive performance — although such a relationship might be found under other conditions or if the focal variables had been less uniform. Indeed, for white-tailed deer (McCullough 1979), reproductive performance is inversely related to abundance of adult females. So reproductive rate for that species is neither maximized nor optomized by providing maximum protection for adult females. That is consistent with findings by Bubenik (1971), Geist (1971), Stringham & Bubenik (1975) on other ungulates.

V. MAN-CAUSED MORTALITY

1. p.33: line 9, word 5, and line 13, word 5: Substitute "degradation" and "degrading" respectively for "erosion" and "eroding".

2. p. 35, paragraph 2: Suggested revision:
Conversely, in sanctuaries where bears do not typically fright and by people, other measures need to be taken to assure that the bears retain their respect towards humans. Whether a bear is so frightened by aggravated by humans that it attacks them "unprovoked", or so lacking respect that it comes dangerously close while seeking food (camp food, horse-feed pellets, garbage, etc.), both humans and bears can be endangered (see Jonkel & Servheen 1977; Stringham 1980). Both "bad" and "good" habits can be transmitted from mother to cubs, and perhaps among other associates (e.g., mating pairs), and over a period of years become increasingly common in a population. So it is imperative that we manage people-bear interactions in ways which elicit mutal respect without undue fear or animosity.

National parks provide settings where bear-human contacts tend to occur. Besides the number of visitors to the parks increasing, but invasion of backcountry bear habitat. Particularly when the hikers are alone or in parties of two or three persons, the number of confrontations with bears can be expected to increase proportionately. How this pattern can be reversed is at present not clear. Some biologists advocate a retraining program for problem bears to instill a respect for man and an aversion to his food and other property; but to date there has been little research in this direction. (e.g., see Stringham 1980)

3. The following paragraph is good in general; but its ending also could use revision, shifting emphasis from bears fearing people, to respecting them. This difference can be critical for bear-human co-existence. To be sure, under some circumstances, fear does augment respect; but under other conditions, it promotes aggression by the bear. So the last sentences might be revised as follows:

People who impair the respect of bears for man, for instance by providing unnatural food sources — either accidently, foolishly, or intentionally — share in the responsibility for any future acts of damage or violence committed by grizzlies.

a "Respect" might be considered the fear to transgress, as opposed to fear of being transgressed upon. Consider how often it has been seen defending their young from apparent danger which has led to human injuries.

VI. HABITAT CONDITION

A. Food: suggested revisions of paragraph 1.

The broad historic distribution of grizzly bears suggests adaptive flexability that is reflected in the food habitats of the different populations. Bears are carnivorous, and capable of adjusting to a wide diversity of foods. Morphological adaptations include crushing molars and the greatest ratio of intestinal length relative to body length of any carnivore (Mealey 1975). Although grizzlies in some areas are almost entirely herbivorous, neither the stomach nor the caecum can host the ruminelike microbes that would be necessary for digestion of cellulose. Consequently, bears feed primarily on animal or vegetable matter ..."

Omit last sentence in paragraph 4 of page 35, which now reads "Grizzlies are omnivorous feeders capable of adjusting to a wide diversity of food sources", since it becomes redundant if the above revisions are made.

VII. DENNING

A. p.40, paragraph 3: suggested revisions:
The unavailability of food, deep snow, and low ambient air temperatures appear to make winter sleep essential to bears' survival (...). When rodents and bats hibernate, they become periodically poikilothermic. Hock (1960) described that type of hibernation as follows: "... a periodic phenomenon in which body temperature falls to a low level approximating ambient; heart rate, metabolic rate, and physiologic functions fall to a corresponding minimum level". By contrast, bears are homeo-hypothermic hibernators whose body temperature drops no more than 5°C below normal, and is maintained there indefinitely. This is accompanied by a reduction in rates of respiration and heart beat, (Craighead & Craighead 1972; Folk et al. 1976).

Day length and inclement weather .... (Kayser 1965, in McArthur 1979). With normal fat reserves, bears are capable of fasting for 6 months with only slight reductions in body weight.

VIII. ABBREVIATED STRUCTURE OUTLINE

A. p. 46: Items 131 and 132: suggested revisions
131. Identify factors directly impairing reproduction or survival.
132. .. .. indirectly .. ..

VIII. B. p. 48, Items 21 & 22.

21: Identify and reduce direct impairment of reproduction & survival.
22: .. .. .. indirect .. ..

IX. RECOVERY PLAN

A. YELLOWSTONE GRIZZLY BEAR ECOSYSTEM

1. Although the statistics used, from Craighead et al.(1974) and Knight et al. (1979) may be adequate for the purposes of this recovery plan, at least in conjunction with the population model derived by Shaffer (1978), I think the plan would be much sounder if it encompassed the findings by Stringham (1979, 1980) concerning how rates of reproduction and survival vary as functions of adult male abundance. If that is indeed a major controlling variable, ignoring it would be very risky — unjustifiably so. This is particularly relevant with relation to hunting impacts, for instance as discussed under point Y211 on page 54, and Y212 on page 59 (e.g., Could hunting facilitate recovery; if so, should very selective hunting be permited before recovery is achieved?)

2. Mortality of female grizzly bears: pg89, Y212: See my comments on p. 3, Item IV-C-3.

3. p.61, Item Y2241: Since we do not have a copy of the "Guidelines", we cannot critique their adequacy or applicability. Hence, the "Guidelines" should be reviewed by IBA members before IGA approval is given to the Recovery Plan.

4. p. 61, Item 42251, line 3: Did you plan to have a colon ":" after the word "approval"?

5. p. 61, Item 42251, line 6, word 8: substitute "grizzly" in place of "their".

6. p. 62, Item 42261: Particularly is well written.

7. p. 63, Item Y4, line 1, word 8: substitute "versus" in place of "and".

8. p. 69, Item Y511. The "benchmark" statistical parameters listed in Y111 are by no means adequate to monitor condition of the population, although they are certainly critical for a view of current status. To understand the significance of current status in terms of past and future, and predict changes, one needs information on a variety of other parameters too, including those listed below:

IX. A. 8. a. Indices of Reproduction and Recruitment

1) Abundance & proportion of adult females with vs. without litters of cubs vs. yearlings vs. two-year-olds, etc.
2) Litter sizes (prenatally and at various ages postnatally)
3) Intervals between births of successive litters and cub age at weaning.
4) Age of mothers related to litter size, survival of cubs, sex ratio of cubs, inter-litter intervals, etc.
5) Ages at puberty and first reproduction (e.g., first litter for a ♀).
6) Litter size, cub survival, etc. relative to parity of mother.
7) Abundance, during each year, in each population, of cubs vs. yearlings, vs. 2-year-olds vs. older immatures vs. adults.
8) Recruitment of each year-class cohort to successive ages from conception through adulthood.
9) Mortalities, emigrations, adoptions.

b. Possible Controlling Variables to be Monitored

1) Abundance of adult males and adult females
2) Total size/density of the population
3) Age-sex class structure of the population (including prenatal and postnatal sex ratios)
4) Indices of per capita nutritional needs, as this varies with age, sex, reproductive status, etc. so that the relationships of "density" to "carrying capacity" relative to various resources can be established more precisely and reliably.
5) Indices of nutritional status, including but not limited to:
   a) body size & weight
   b) skull size
   c) fat deposits (e.g., around kidneys & abdominal mesenteries, and subcutaneously)
   d) specific gravity of hide-free carcasses or of specific organs
   e) femur marrow
   f) blood components (free fatty acids, ketone bodies, etc.)
6) Indices of food abundance and quality and availability
7) Indices of social strife
   a) frequency and intensity of combat; presence of wounds & scars (related to season and testosterone levels, among other factors)
   b) frequency of non-combative aggressive encounters
   c) territoriality, exclusive home ranges (spatially or temporally), or privileged access to limited resources (e.g., by adult males to garbage or fish)
7) Indices of dispersion (e.g., do they crowd to feed at dumps?)
8) Indices of pathogen infestation (e.g., ectoparasites)
9) Indices of legal and illegal killing by humans and of indirect human factors which lower viability of individual bears or populations (e.g., pollution or disturbance)

IX. A. 9. p.71, Item Y6111. Revisions of this paragraph should be made in accordance with my comments on p. 4. Furthermore, the goals of the program should not be so tightly focused on avoiding "second encounters". While no more than two may be deemed "tolerable" if they cause human injury, we must recognize that more than two "training sessions" may be necessary to appropriately modify a bear's behavior. This is not the time to outline a plan for relating training to severity of encounters, etc. But I would be glad to participate in devising such a plan.

10. p.71, Item 46112: I understand why you specify "using nuisance bears for (transplantation) should be discouraged unless rehabilitation training is proven to be unsuccessful." However, who wants a problem bear in his "back yard"? So I suggest that this be rephrased to indicate that transplanting is encouraged/allowed only where the bear is unlikely to cause futher problems, either by virtue to rehabilitation or geographic isolation, etc. It is quite likely that a degree of retraining can be achieved which will be adequate for transplantation to areas like the Bitterroot-Selway Wilderness even when not adequate for relocation within Yellowstone or Glacier.

11. p.71, Item 71: Does "control" include only death or transplantation?

Might this not be better restated something like:

Concerning all grizzly bears that have a documented history of nuisance activities, and which cannot be adequately rehabilitated/retrained to minimize these activities to within an acceptable level: Control or remove them on all lands, within recommended mortality levels (...)."

12. p.72, Item Y65: What is an example of an "unusual disturbance"; what would a "usual disturbance" be?

13. p. 73, Item Y81: Sounds good.

IX. A. 14. p.74, Items b & c: Considering how heavily the Yellowstone grizzly population may have depended on garbage as food, it is questionable whether the ecosystem can now support as high a density or yield such high rates of reproduction, if nutrient needs per capita are no lower than they were from 1959-1967. Conversely, now that the dumps have been closed and the bears dispersed, social strife induced physiological stress may have diminished enough to lower nutritional needs enough or to otherwise lower physiological stress enough from these factors to counteract any increased nutritional stress/deficit. (see Stringham 1980)

15. p. 74, Item d: As you may have already considered, a "stable" population may not be either possible or desirable, even on a six-year average. Re-analysis of the Craighead (1974) data (Stringham in press) reveals a 12-year cycle in reproduction. So stability, if desirable, might have to be averaged on a 12-year basis. Fortunately, your 6-year interval coincides nicely.

16. p. 75, Item 2b: Granted, "all other factors being equal, the population with the lower 'R' value is less resilient to perturbations."

As for cases where survival rate varies as a function of R, is that also true? Re-analysis of the Craighead (1974) data and comparison between populations (Stringham 1980, in press) indicate that recruitment is positively correlated with reproductive rate.

School of Forestry

University of Montana
Missoula, Montana 59812

April 15, 1981

Mr. Don Brown, Leader
Grizzly Bear Recovery Plan
Mont. Dept. of Fish, Wildlife, and Parks
Helena, MT 59601

Dear Don:

In general, I thought that you did a great job in preparing the agency draft of the Grizzly Bear Recovery Plan. I've itemized small errors for you in the past, and xerox copies of several pages which you may have already corrected are attached.

My final comments are in fact words of caution for all reading or implementing the Plan. We have not reached even the minimum threshold in data compilation for grizzlies--our sample sizes are far too small to make population estimates, our data on reproduction is far too influenced by artifically-influenced population segments. Any long-term or final decisions are premature. In particular, I wish to comment on the following:

1. Male bears are far more vulnerable to mortality of many types throughout their lives (from the time they leave their mothers until death). This means that the real sex ratio of any population (even the unhunted North Slope population at 27:50) is predominant to females. All of our data (hunting, trapping) are biased and indicate more males in the population because the males that are present travel more and are thereby more vulnerable. None of the current population calculations account adequately for this anomally.

2. Until a proper aerial survey of numbers is done with at least a 25 percent coverage of spring range, we are only making wild guesses at population numbers. Grown people should know better--the agencies should quit playing grizzly games and fund the necessary research.

3. The ability of brown bears to survive and reproduce when below currently-accepted population levels for the grizzly indicate strongly that bears have an unknown ability to cope with the problem of low numbers in terms of reproduction and population maintenance (it is probably behaviorally based).

4. People tend to over-react to numbers, and therein lies a real danger for bears, because they always occur in relatively low

densities, and in small total populations. As the dominant carnivore, that simply is the way their reproduction/survival rates have evolved. People more familiar with other species suffer a real problem in grasping this principle. Conversely, bears live for many years, and a non-reproducing population can exist in an area long after that population is "reproductively dead."

5. The habitat "is the species;" a killed animal will be replaced, but a dead habitat cannot support any grizzly bears. The over-attention to grizzly population numbers not only is invalid because our data base is inadequate, but it also allows land management agencies to ignore grizzly habitat needs. Since habitat occupied or frequented by too many people either leads to the death of the resident grizzlies, or encourages habituation to people, grizzly habitat needs are becoming an extremely critical issue (e.g., the Cabinet Mountains, etc.).

6. Overall, grizzly management should center on wild, back country grizzlies which fear and flee from people and their activities--only extensive areas of inaccessible habitat can allow management for this type of bear over the habituated, secretive bears that live near to people. Hunting is an essential element in keeping bears wary, but it must be carefully established and managed under the quota system. Road management is of paramount importance!

7. Bear condition and the productivity of certain, key bear foods should be monitored annually in order to predict the bear/people and bear/livestock conflict potential.

8. Regional cumulative impacts on grizzlies and grizzly habitats must be measured and documented beginning immediately. Until impacts are documented, quantified, and projected, the application of grizzly biological data is impossible. Land managers must initiate such studies now; all ownerships must be studied/evaluated. Mitigation for impacts must be borne by the dominant, federal land management agency regardless of where or whose ownership the impact occurs. Land-owner, county, state, Indian, and federal co-operation is imperative, or the efforts of one agency are negated by the neglect of the other.

9. Management directives under the Plan must be kept open-ended to allow annual adjustments as new data are obtained. A federal/state/Indian/county monitoring committee should meet annually to consider and implement new data.

10. Research to obtain adequate population, reproduction, habitat use, biological, etc., data for several geographically distinct areas, and each distinct ecosystem is necessary. Present extrapolations of data are dangerous to grizzly survival, and are open to public criticism. Budgets listed are too low.

11. The population goals as re-drafted are still very tentative; their only real value lies in the fact that they cannot be achieved with the present research/management effort, and therefore the grizzly will remain listed as threatened. This topic deserves a major research focus in terms of sample sizes, better sampling methods, etc. The budgets listed are inadequate.

12. An "umbrella" research approach as offered by BGP, and which provides long-term continuity in the studies, a sharing of funds and equipment, etc., should be encouraged over one-shot, short-term studies.

I could list far more detailed comments and research needs, but until agencies indicate a real willingness to invest in grizzly recovery, the points are moot. Personally, I have had to spend so much time trying to obtain research funding the past 6 months, that I have had little time for data analysis, report preparation, and field planning. This is a really poor way to carry out research necessary to grizzly recovery. When I see vast amounts of money being spent at the same time on needless travel, unneeded bridges, harmful roads, and a multitude of administrative mire by the funding agencies, I really question whether there is an intent for grizzly recovery.

Respectfully,

Chas. Jonkel, Director
BGP

Chairman, Border Grizzly
Technical Committee

APPENDIX C

Response to comments received on Agency Review Draft of the Grizzly Bear Recovery Plan.

U.S. Forest Service

1. Comments noted and clarification made in final plan. Refinement of population objectives can only follow a determination of what constitutes a viable, self-sustaining population in each ecosystem.

A clear definition of what would constitute a recovered population in terms of total numbers of bears for each ecosystem was a major topic of discussion at each of the workshops. Agreement was never reached. What researchers did agree upon was to use monitorable population parameters to indicate population status.

"The parameters may not be the best, but they are what researchers could agree to. This agreement on and the use of population parameters as recovery goals is the major contribution of this plan. They provide the first, if crude, basis for population goals that have ever been formalized for grizzly bears. Research is now focused on these parameters; it is a place of beginning and one from which to improve parameters and goals. Researchers are asked to develop a system to monitor parameters for the simple reason that they are documentable, total numbers are not (Mealey, pers. comm. 1981)".

From the YGBE data, we identified population parameters for a population that was stable to increasing during the 1959-67 period. Numbers of bears in the ecosystem during that period are a reflection of the parameters. Likewise, population parameters from the data collected over a ten year period by Martinka in Glacier National Park were used to determine population goals for the NCDGBE simply because they are the best available. The reason for dividing the Recovery Plan into different sections is to recognize different population characteristics for the different grizzly bear ecosystems.

"Each grizzly bear ecosystem has its own unique set of population parameters reflecting different habitat conditions. The whole principle of our derivation of population goals was that such goals reflect the documentable characteristics of the population in that area. No ecologist should assert that a population with YGBE parameters would constitute recovery in the NCDGBE simply because there is no factual relationship between NCDGBE habitat and the YGBE population parameters (Mealey pers. comm. 1981)".

Discussions at various workshops led to an agreement that at least three populations were necessary to assure survival of the species in the conterminous 48 states. Although there are no reliable population data for the Cabinet-Yaak Grizzly Bear Ecosystem, it was chosen by the group to be the third area needed for the species survival in addition to the YGBE and the NCDGBE. Without area specific data, we decided to use a hypothesis developed by Shaffer (1978) concerning minimum viable populations (see C1 for explanation) to determine the preliminary goal.

The highest estimate of Shaffer's minimum viable population of 30 to 70 bears was chosen simply because a lesser or minimum number would assume the very best of habitat conditions, minimization of man-caused perturbations, and no man-cause mortality -- a bear refuge. Under the circumstances, we believe it is justified.

2. Estimating population numbers based on land ownership is taking liberty with bear densities that are only estimated — not known. Assigning numbers by acres or square miles of ownership from these estimates ignores home range size and seasonal use patterns; e.g. grizzlies on the Front, in any numbers, may not survive if private lands did not provide an early spring food supply that is not available at higher elevations on Forest Service lands. Conversely, they cannot survive outside the Forest for the entire season -- both seasonal habitats are important to their survival.

One ecosystem, with component parts on a variety of ownerships that are all necessary at least seasonally to the survival of the bears, precludes assigning any carrying capacities until more specific data are available; e.g. in early spring most of the bears along the Front may be entirely dependent on lowland riparian habitats, many of them are not on public lands.

3. Your preferred management direction for the Selkirk grizzly population is based on an extrapolation of the density of bears used as a goal for the Cabinet-Yaak ecosystem. An extrapolation of densities from one ecosystem to another should not be made without the benefit of first conducting a habitat evaluation to determine the similarities and dissimilarities. The Selkirks may have the potential to support a greater density of grizzly bears than the Cabinets.

4. Public hearings at the time of placing grizzly bears on the threatened list indicated a public concern to save the species and halt any further decline in their numbers -- development of a recovery plan is a step in that direction. Hopefully, your "necessary public input to comply with NEPA" will be representative of the entire nation. It is our belief that an EIS is not called for in this situation. The purpose of any recovery plan is simply to provide guidance to cooperating agencies on actions they are already mandated to carry out under the Endangered Species Act (ESA) (i.e. conserve threatened and endangered species). In this case, the policy/plan which would be impacting or affecting the human environment is the ESA itself. The Grizzly Bear Recovery Plan does not require the Forest Service to do anything, but simply presents them with what plan preparers believe is the best way to achieve conservation of the species, as mandated by the ESA. It is possible however, that in the future an EIS will be required on implementation of specific tasks outlined in the plan.

5. Mapping criteria was most recent sightings of grizzly bears or indication of their presence or use of the area. We believe they are less confusing than the wide variety of interpretations used in designating "Essential Habitat" by your agency. Questions at every workshop indicated each Forest interpreted the "Criteria for Designating Essential Habitat" in a different manner. Specifics were discussed at workshops but not resolved.

6. Noted and used.

7. Instructions in Recovery Guidelines are specific. I am certain socio-economic considerations will be dealth with adequately in the implementation process.

8. Little, if any, scientific data on aversive conditioning of grizzly bears is available. Several bear biologists believe the theory should be researched.

9 and 10. Corrected. 11. Noted and added.

12. Entire section was rewritten. 13. Noted.

14. The "specific consequences of timber harvesting, positive and negative" are implied in the "Guidelines". Hopefully, the Forest Service, Region 1 will address them in their planning process.

15. Unaware it existed -- time constraints precluded an in-depth review of all bear literature.

16. 2nd paragraph: Noted and checked.
3rd paragraph; Changed per request. What is the stratification of the excluded area? Do we add it back to occupied territory if bears pass through the area?

17. Qualification of the 1959-1969 population parameters was made. We believe the Interagency Grizzly Bear Study Team, if adequately funded, will determine population characteristics that will describe the current condition of the population.

2nd Paragraph: See pages 1-11, Y111, Y121, and footnotes at end of chapter.

18. Correction made. Limiting mortality to six may expedite recovery, but 11 is the average documented mortality. You are assuming a man-caused mortality of six is necessary for recovery -- can you support this assumption?

19. Corrected. 20. Deleted as recommended.

21. A species manager manages species, and the battle still rages on who manages which species. The species are implied to be animal -- specifically bears.

22. Noted and words added that Region 1 will address habitat management for grizzly bears in their planning effort (See Y4).

23. A review is recommended as there is a difference of opinion among bear biologists.

24. These acreages will be under constant change as data becomes available to warrant a change.

25. Noted and corrected. Hopefully, any MS1 and MS2 acreage designation changes will reflect the needs of grizzly bears.

26. Noted and may do so if time permits 27. Added.

28. Comment noted and modification made. We believe site specific data are needed for decision making in most cases; if data are available disregard.

29,30,31,32, and 33. Changed.

34. Everyone has limited authority on private lands. We believe the Forest Service will be more successful than any other agency in making recommendations to private landowners within Forest Service boundaries (good neighbor concept).

35. The Forest Service has been cooperating in the IGBST effort -- a continuation of this effort is intended in Y511, Y521, and Y531, at levels recommended by the IGBST Steering Committee (both management and research).

36. The Plan identifies what must be done -- research will indicate how it can be done. e.g. a wildfire, access road to a clearcut, and the clearcut may all be negative values to bears in 1985; ten years later they may have some positive values to grizzly bears. The evaluation must indicate whether grizzly bear habitat is shrinking in quantity or quality, remaining stable, or being enhanced.

37. If not appropriate, delete it -- the general idea was to have individuals and corporations that will benefit from the invasion of grizzly bear habitat fund the data gathering and monitoring needed to assess the effect of their exploitation.

38. Deleted.

U.S. National Park Service

We certainly agree with the two points you identified that the Plan needs to stress and believe that both have been stressed repeatedly in the final Plan.

Page 22: Noted and changed.

Page 23: King (1938) said it; not I.

Page 33: See Y61111. Several biologists attending the workshops believed the theory is worth some research effort.

Page 34: Both sides of the issue are theoretical arguments. There is no hard data available on either side.

Page 51: a. Data presented for the 1959-67 period was not a declining population but increasing at an estimated six bears per year.

b. They are the only population parameters available for a healthy recovered population in this ecosystem.

c. Total annual mortality was 17-19%; man-caused mortality was 6-8% for that period. Knight's 5% mortality (man-caused) could be 10% to 20%, depending on which of his estimated total population figures are used. Knight estimated 300-350 bears in January, 1979; 200-400 in November, 1980, and 200 plus in December, 1980. The IGBST is now refining these figures.

Page 52: There is no reason to assume that the man-caused mortality of 11 bears reported by Knight (probably less than 5% of population) is any less reliable than the 18.889 reported by Craighead et. al. (1974).

Page 53: See Y61111.

Page 59: The term "nuisance bear" is carefully defined in the "Yellowstone Guidelines".

Page 79: Noted and changed. There is a range of 0.524 to 0.676.

U.S. Fish and Wildlife Service

1. Corrected.

2. The words "recovered population" are used because a viable self-sustaining population may not be at a level that is considered safe for de-listing, i.e. a population of 30 bears may be a viable and self-sustaining population (no one knows) but unacceptable from the standpoint of being recovered and eligible for de-listing.

3. a. Corrected b. Mark L. Shaffer is correct.

4. a. Noted and clarified.
b. Noted and deleted reference to "non-biological aspects".

5. Noted and changed.

6. We do not believe any work to clarify the taxonomy of grizzly bears or brown bears will help recovery.

7. Comment noted. 8. Noted and changed.

9. a. See Current Distribution/Status. Our discussion was limited by the lack of information available. The Plan recognizes that all grizzlies, wherever found, are protected. The Colorado grizzlies were not considered necessary for the survival and recovery of the species.

b. Noted and changed.

10. No difference; just a nostalgic thought.

11. Noted and changed (see N-9 - CY-9).

12. Not directly, but interchange may be possible in Canada.

13. Land managers are notified in the Plan that maintaining the integrity of corridors is an important planning component. Research will have to identify how it can be achieved. Maintaining gene flow between the Yellowstone ecosystem with other ecosystems did not surface at the workshops as necessary for this population's survival. If research deems it critical -- translocation is one solution.

14. See C211122 Part II and III.

15. Noted and changed. Careful planning will be necessary to avoid compounding the effects of each area cut over.

16 and 17. Noted and changed.

18. A minimum viable self-sustaining population was not considered adequate for recovery in the YGBE and the NCDGBE.

19. Noted and changed.

20. a. Item 35 was deleted as the subject is addressed in habitat scratification and management direction.

b. Added under N9 and C9.

21. Noted and changed.

22. Monitoring and management must be preceded by some initial status determination.

23. a and b. and 24. Noted and changed.

25. A recovered population is the goal -- a viable and self-sustaining population may be one at minimum levels that from the standpoint of being recovered and eligible for delisting is unacceptable. See new working in Y111, N111, and C111.

26. a. Noted and changed.

b. We assume this will be done when jobs 511 and 521 are initiated.

27. a. Noted and changed.

b. Population modeling indicates that the cub-sex ratio is important.

28. At this point it is only a theory, based on "aversive conditioning".

29. Noted and changed (partially). See Part III. It will be another determinant of habitat quantity and quality.

30 and 31. Noted and changed. Criteria for determining grizzly bear nuisance status and disposition of nuisance bears are found in the "Yellowstone Guidelines" and are recommended for other areas.

32. Most rodent control programs will be limited to private lands -- not heavily used by grizzlies. The toxicant chosen depends on the species to be controlled. The disturbance is to keep bears from frequenting the area for three days -- research states most carcasses of poisoned animals will be unavailable to bears after that time period.

33 and 34. Noted and changed (34); item 33 added Part II and Part III.

35. Noted. We must assume that the Coordinator and/or the research and management personnel interested in bears will be constantly reviewing all methods.

36. Noted. We believe this will be under constant review and could be very argumentative.

37. Noted and changed.

38. 201 bears = 20 females with cubs @ 1.78 cubs per female = 35.6 cubs is an assumed stable population; therefore, mortality and emigration = 35.6 bears; 35.6 - 201 = 17.8%.

39. See footnote after N121 and footnote 1/ at end of chapter.

40. a. EPA is only recourse on private lands (most control involves primarily private lands).

b. As acknowledged by your office, it has not been policy of the FWS to reimburse livestock owners for livestock losses. The FWS is not authorized to pay such compensation. To operate such a program, funding would have to be authorized/approved by Congress.

41. We are agency specific --- comments may or may not be of value.

42. S, NC and SB populations not included in areas necessary to recovery of the species, thus we believe the states and land management agencies will protect and manage grizzly bears in these areas until data becomes available to set the direction for further actions.

43. The literature citation section was reviewed for accuracy and appropriate changes made. Summary: The response of the species to recovery efforts as manifested through the population parameters, will be the best indicator that all other factors and regulatory mechanisms are being implemented.

Fish and Wildlife Service Assistant Regional Director, Federal Assistance, Region 1

Page 54. Comment noted

Page 57-58. We assumed that for the few times that rodenticides are applied in areas that may be frequented by grizzly bears, a little extra effort to prod the applicator into compliance may be most expeditiously and least expensively handled by the closest ADC employee - if he is too busy, I am certain State wardens and biologists would assist him in order to save a few bears.

Fish and Wildlife Service, Region 2

Comments noted. The ecosystems have been prioritized in the final plan.

Fish and Wildlife Service, Acting Regional Director, Region 6

1. Corrected 2. Noted 3 and 4. Corrected

5. Noted and changed. 6,7,8,9,10, and 11. Corrected

12. See N 1 13 and 14. Corrected. 15. Noted

16 and 17. Corrected 18. Noted 19. Corrected.

20. Noted and changed. 21. Noted

22 and 23. Noted and discussed. 24 and 25. Noted

26, 27, and 28. Changed. 29. Noted and discussed 30. Many do not

31. Estimates range from 200 to 400 but no one is willing to be quoted.

32. They are not necessary for recovery in the lower 48 States.

33. Changed 34. Noted and discussed 35. Corrected

36. Noted and discussed.

Bureau of Indian affairs (Commissioner of Indian Affairs; Assistant Area Director, Resources; Superintendent, Flathead Agency

The Recovery Plan is a recommendation of those actions necessary to recover the grizzly bear and the estimated cost of those actions. It is not a funding commitment. It may be an area covered under the Fish and Wildlife Assistance to Indians Policy when the Recovery Plan is approved by the Director. However, future resource commitments made under the above policy to achieve those goals would be determined by future funding levels, appropriations, and resource availability. Close cooperation with the Tribes and BIA will be maintained.

Environmental Protection Agency

Rodenticides may be used for pocket gopher control in reforestation programs and for the control of several species of ground squirrels (usually on private lands) found along the foothill areas where grizzly bears may be found in spring and early summer. Very little data are available on the susceptability of grizzly bears to rodenticides. We believe that the recommendations made are valid precautionary measures. We have no knowledge of the types of pesticides or herbicides being used in occupied grizzly range and their potential hazard to grizzly bears. It is the responsibility of the Federal agency using the material or authorizing its use to assure that it won't jeopardize the grizzly.

A slight knowledge of grizzly bears would have made the plan easier for you to understand.

Pages 2, 15, and 28. Changed.

Page 31: Noted. The dispersal of sub-adults must be studied extensively.

Page 41: Changed. We agree an editorialization of the agency review draft plan would have been desirable -- funding limited this addition. EPA's review appears to be from a journalistic viewpoint. Comments on content for purposes of improving the plan for recovery of the species would seem to be more appropriate.

Your final statement leads me to believe you may have missed a basic reference on bears, Southey (1847).

Montana Department Fish, Wildlife, and Parks

The grizzly bear population in the Yellowstone Grizzly Bear Ecosystem was assumed to have declined during the period of the late 1960's and early 1970's, during the period of closing the garbage areas. There has not been adequate information to determine if the present population is viable and self-sustaining or not; therefore, for recovery we imposed the following: (1) actions necessary to bring the population back to its last known level of viability, and (2) determine if this population level is in fact a viable and self-sustaining population under present conditions.

Data on the Northern Continental Divide Grizzly Bear Ecosystem are limited to a few small study areas in the peripheral zone of the ecosystem and data from Glacier National Park. If the population was viable and self-sustaining in 1974 when placed on threatened status and/or is viable and self-sustaining now, all we need is enough data to be reasonably certain that we are monitoring the trend of the population correctly in the future. If the population was declining at the time of listing, there have been additional perturbations and habitat deterioration that would reasonably reject any assumption of a reversal of that trend.

On all other ecosystems, although data are lacking, it seems reasonable to assume that they may well be in danger of surviving because of low numbers and increasing pressures.

Paragraph 4. Recovery of the population in the conterminous 48 states seems to get confused with recovery of each ecosystem. The goal is to have at least three populations, two at levels known or assumed to be stable or increasing during the last two decades, and a third population at least at the minimum population level described by Shaffer (1978).

Paragraph 6-10. We agree with your analysis of real numbers versus rates and have passed the information on to the BGP and IGBST.

Paragraph 11. We agree with your concerns of logging, roads, and wilderness fires and believe you will find those concerns well documented in the plan.

We appreciate the level of support the Montana Department of Fish, Wildlife, and Parks is making to grizzly bear research, and sincerely hope the land management agencies increase their commitment.

Idaho Department of Fish and Game

Changes were made in accordance with suggestions made by you and your staff at meetings in Boise (January 15, 1981) and in Denver (March 13, 1981).

Wyoming Department of Game and Fish

Paragraph 1. The abbreviated outline is broken down into subsequent sections.

Paragraph 2. A clear definition of what would constitute a recovered population in terms of total numbers of bears for each ecosystem was a major topic of discussion at each of the workshops and agreement was never reached. What researchers did agree upon was to use monitorable population parameters to indicate population status.

"The parameters may not be the best, but they are what researchers could agree to. This agreement on and use of population parameters as recovery goals is the major contribution of this plan. They provide the first, if crude, basis for population goals that have ever been formalized for grizzly bears. Research is now focused on these parameters; it is a place of beginning and one from which to improve parameters and goals. Researchers are asked to develop a system to monitor parameters for the simple reason that they are documentable, total numbers are not (Mealey, pers. comm. 1981)".

From the YGBE data we gathered population parameters for a population that was stable to increasing during the 1959-67 period. Numbers of bears in the ecosystem during that period are a reflection of the parameters. Likewise, population parameters from the data collected over a ten year period by Martinka in Glacier National Park were used to determine population goals for the NCDGBE simply because they were the best available. The whole reason for dividing the Recovery Plan into different sections is to recognize different population characteristics for different ecosystems.

Each grizzly bear ecosystem has its own unique set of population parameters reflecting different habitat conditions. The whole principle of our derivation of population goals was that such goals reflect the documentable characteristics of the population in that area. No ecologist should assert that a population with YGBE parameters would constitute recovery in the NCDGBE simply because there is no factual relationship between NCDGBE habitat and the YGBE population parameters (Mealey pers. comm. 1981)".

Discussions at various workshops led to an agreement that at least three populations were necessary to assure survival of the species in the conterminous 48 states. Although there are no reliable population data for the Cabinet-Yaak Grizzly Bear Ecosystem, it was chosen by the group to be the third area, in addition to the YGBE and the NCDGBE. Without area specific data, we decided to use a hypothesis developed by Shaffer (1978), concerning minimum viable populations (see C 1 for explanation), to determine the preliminary goal.

The highest estimate (30 to 70 bears) was chosen simply because a lesser or minimum number would assume the very best of habitat conditions, minimization of man-caused perturbations and no man-caused mortality -- a bear refuge.

Paragraph 3. We agree.

Paragraph 4. Y2113-Y21133. We believe your actions will suffice.

Y21134. Wyoming Game and Fish would be expected to authorize only personnel they had confidence in, and that person would be using the safest proven techniques.

Paragraph 5. Y2114. We agree. The method must be carefully designed and appropriate Federal and State regulations aligned.

Paragraph 6. Costs -- We estimated costs to Wyoming to continue at present levels.

Wyoming Cooperative Fish and Wildlife Unit

1. Protected public use sites designed to assure that bears could readily be seen by the public would probably involve an artificial food source -- not presently acceptable to most agencies.

2. Your three questions are the major thrust of present research. Management will attempt to respond when your questions have answers.

3. We certainly agree.

4. Changes in the plan now recommend emphasis on the larger populations of bears.

State of Washington, Department of Game

Paragraph 1. There is no intent on my part to separate the Canadian and U.S. populations.

Paragraph 2. The primary goal is to remove the grizzly bear from threatened status in the 48 conterminous states. By general agreement at the workshops attended by persons most knowledgeable on grizzly bears, it was decided that at least three populations must be viable and self-sustaining to assure recovery of the grizzly bear. The three areas chosen were YGBE, NCDGBE, and the CYGBE; the other three or four ecosystems with documented or suspected grizzly populations are without basic data on which to establish any recovery goals. We hope for the continued protection and survival of these relict populations. If success is achieved in recovering the bear in the three major areas, we can look to a plan for the other areas.

Paragraph 3. This is a recommendation only and made on best authority available. We commend you on the work you are doing.

Page 2.

(1) I hope you are right

(2) I'm sure the available habitat greatly exceeds the 405 mi^2.

(3) This was a citation from one source for which the study was a short time period.

(4) Noted and changed

(5) Comment noted (6) None Known

(7) Comment noted

(8) The other 44 (46) states will have a voice in the matter

(9) Comment noted (10) Comment noted

(11) The minimum home range of bears in Washington is not documented to the best of my knowledge

(12) Grizzlies are programmed for extinction by whom -- man? Society is apparently interested in a reprogramming and disagrees with you.

(13) This implies that Washingtonians support protecting grizzlies--good!

(14) Granted -- two dozen people die each year from bee and wasp stings and we accept it.

(15) Maybe the plains grizzlies had to program their actions to fit their needs. Lewis and Clark found the plains grizzly in cover too.

(16) Comment noted

(17) Comment noted and some wording changed per your suggestions.

Interagency Grizzly Bear Study Team, Dick Knight, Leader

Paragraph 1. We need to know the number of bears necessary for a viable self-sustaining population, and look to the IGBST to document that number or the population parameters that indicate viability. The degree of difference or similarity between the above and the 1959-67 population will be history.

Paragraph 2. Craighead et al. 1974 used five million acres and 229 -- your comment added.

Paragraph 3. Comment noted and corrected; your data added.

Paragraph 4. Total mortality should not be confused with man-caused mortality.

Paragraph 5. Noted and changed.

Paragraph 6. Noted. You have presented evidence that some "leave the country" when approached by humans and others are apparently comfortable and not moving out with roads, activity, and people within a few hundred yards.

Paragraph 7. See last page of the Forest Service review comments. Several others commented that the IGBST and BGP are funded by the agencies and guided by a steering committee. Therefore, responsibilities should be delegated to the agencies. We certainly intended that if the IGBST is funded, they should be doing a lot of the research -- especially those duties outlined in Y511, Y521, and Y531.

USDA Intermountain Forest and Range Experiment Station, Ogden, Utah
Roger Hay, Station Director

1. Noted and clarification made. 2. Noted

3. The percentage of females with cubs in the Yellowstone population is 8.4% when using an estimated population of 178, making it comparable with the 10% used in the NCDGBE.

4. Techniques are not in use but we are certain they can be developed.

5. The priority system was changed to reflect the importance of data on YGBE, NCDGBE, and CYGBE.

6. Corrected.

7. Time constraints and accounting procedures precluded estimating some costs. None of the estimates include costs of inflation for years 1979, 80, and 81.

USDA, Rocky Mountain Forest and Range Experiment Station

Your comments are appreciated and we fully agree. The Selkirk Mountains, North Cascade Mountains, and Selway-Bitterroot Grizzly Bear Ecosystems have been removed from recovery requirements for the species in the conterminous 48 states. We believe a lot of preliminary work on present status of the populations, limits of their habitats, as well as the socio-economic limitations need further review before a recovery plan for these areas is prepared.

Bear Biology Association

Paragraph 3. Comments noted and changes made. We have presented all of the data that was made available to us at workshops and through the literature that has been made available to us.

Paragraph 4. See footnote 1/ NCDGBE.

Paragraph 5. Budgeting for the short term is in accordance with the Fish and Wildlife Service's guidelines for recovery plan formulation. What alternative funding sources do you recommend?

Paragraph 6. We have tailored a plan for each area within the limits of available data.

Page 4, Paragraph 2. Noted and changed.

Page 19, Paragraph 2. Noted and changed. Page 24, Paragraph 2. Noted and so cited.

Page 25, Paragraph 2. Noted (error) and changed.

Page 32, Paragraph 1. I was unable to obtain Russell's paper.

Page 38. Noted and paper mentioned --- citation for discussion on subject not found.

Page 51. According to Knight, he does not have data which are a more accurate reflection of the response of bears to their dependence on a natural food supply. The Craighead data, which indicate a stable or increasing population from 1959-1967, are the only data available for a viable self-sustaining population (recovered) in this ecosystem.

Page 51. The viable self-sustaining population during the 1959-1967 period was sustaining an estimated total mortality of 18.65% (Craighead et al. 1974) (corrected by Shaffer to 17.10% using data corrected by Cowan). Knight recommends no more than 5% annual man-caused mortality and makes no estimate for total annual mortality.

Pages 51-52. I suggest that the Bear Biology Association carefully consider and evaluate the number of females with cubs observed under the two conditions and then draw some conclusions that could be applied in estimating densities so as to arrive at a total population estimate. Everyone seems to agree that seeing an average of 12 females with cubs/year under present dispersed conditions represents more bears than occurred when an average of 14.889 females with cubs were observed at the dumps. However, no one will say it for the record. My opinion is irrelevant.

Page 54. Noted and included.

Page 57. There appears to be various opinions on the subject -- all equally authoritative. Perhaps certification requirements would best be set up by the Bear Biology Association.

Page 85. Noted and recommended to Montana Department of Fish, Wildlife, and Parks.

Page 136. All priorities have been re-evaluated in accordance with your suggestion.

Montana Wildlife Society

Paragraph 2. The terms are self-explanatory in context of the entire plan.

Paragraph 3. The guidelines prepared for YGBE are available from the Forest Service. Guidelines for NCDGBE and other ecosystems are not prepared and we believe interim guidelines (prior to being addressed in Forest planning 1983 or 1984) should be prepared and used. Very few changes from the Yellowstone Guidelines would be required.

Paragraph 4. The job description for the Grizzly Bear Recovery Coordinator is available from FWS.

Paragraph 5. The priorities are being re-evaluated under a new set of guidelines.

Page 2, Paragraph 1. Comment noted. Paragraph 2. Comment noted and we agree.

National Wildlife Federation

Part II. Acquisition is discussed and recommended when other alternatives do not stop habitat deterioration.

Mortality:

The recommended goal for man-induced mortality in the YGBE is zero. The current average man-induced loss of bears is 11. The population appears to have increased since the loss of the early 70's while sustaining this known average annual loss. Research will determine what the population can sustain when population parameters indicate the trend of the population. We cannot be more conservative than to recommend zero.

Page 3, Paragraph 1. State and Federal cooperation are mentioned repeatedly and their authority is by law and regulations.

Paragraph 2. See page 59-61 "Guidelines".

Paragraph 3. The actions mentioned are more dependent on cooperation and will be more successful through this method than by making it statutory.

Paragraph 4. The cooperation of private landowners has been reliable in many areas where grizzly bears still roam --- acquisition may be necessary as trouble spots appear on a case-by-case basis.

Paragraph 5. The recovery plan can only make recommendations. Nowhere do we have the authority to include the stringent fixed schedule you desire. Congress, via appropriations to agencies, will determine when the plan will commence.

Page 4, Paragraph 1. We cannot recommend land acquisition funds until we can determine where they are needed. Research or management have not identified all of the areas necessary for grizzly bear survival.

Paragraph 2. Areas of significant conflict are not yet identified. States have agreed to address the problem when areas of conflict can be identified.

Paragraph 3. The plan recommends elimination of food sources that may habituate bears.

American Wilderness Alliance

The Recovery Plan recommends consideration of the impact of land use allocations on grizzly bears. The Endangered Species Act also requires Federal agencies to review their activities and programs to determine if they will affect the grizzly and if so, consult with the Fish and Wildlife Service.

State of Montana - Department of Agriculture

Your comments are noted and we will keep you informed.

State of Montana Department of Natural Resources and Conservation

Comments noted and they will be passed on to the Grizzly Bear Recovery Coordinator.

Burlington Northern Resources Division, Lorin Hicks, Wildlife Biologist

Paragraph 1. Your attendance at workshops was solicited.

Paragraph 2. Only through good will and private landowners cooperation.

Paragarph 3 (1). We request that basic data be gathered in this area as the EIS indicates that grizzlies may need to be a consideration in this area.

(2) 14.889 was the number of females with cubs at a population census efficiency of 77.3%. In a population of 229 as indicated by Craighead et al. (1974), the number of females with cubs would have totalled 19 or 20. If we assume Cowan (1975) is correct in his analysis there would have been over 25 females/cubs in the population. We do not know why it is over 8.4% in the YGBE and 1.5% higher in Glacier National Park.

(30. Noted and changes made.

(4). If we knew how many bears are required for a viable self-sustaining population we could have used it in either or both ecosystems. However, a viable self-sustaining population may not be at a level that is considered safe for delisting, i.e. a population of 30 bears may be a viable and self-sustaining population (no one knows) but unacceptable from the standpoint of being recovered and eligible for delisting. A MVP requires that all actions favor the bear and total refuge is in order. Recovery in our definition brings the bear back to some level prior to listing in each ecosystem. When research develops a method to monitor a viable population we will assume it was developed on self-sustaining population that is stable or increasing but not declining. Subsequently, research may want to test the viability of a smaller population in each ecosystem if that is the will of the people. No real confusion; those who want less bear opt for minimum viable population. Others want optimum or maximum viable populations.

(5) Your opinion, not mine. Limited shooting of males may benefit the population. We presently assume that in areas where grizzly bear hunting is allowed most sportsmen do not shoot females with cubs which, if they did, would be in violation of state law. Sub-adults are more likely to be in groups than adult males. Thus, the best chance to harvest males and minimize the hunting mortality to females is to shoot bears that are traveling alone.

National Woolgrowers Association Animal Damage Control Committee,
Joe T. Helle, Chairman

Paragraph 1. The plan is to benefit grizzly bears. Humans, with livestock under their control, can be educated to minimize losses of human life, livestock, and bears. Two dozen people die each year from bee and wasp stings.

Paragraph 2. Designation of critical habitat is recommended to follow research, not precede it.

Paragraph 3 & 4. Your philosophy is recognized, but it is not shared by all persons interested in grizzly bears.

Paragraphs 5 & 6. Comments noted.

Paragraph 7. Some recognize your viewpoint and some do not.

Paragraph 8. We are available for discussion anytime.

S. F. Stringham, Graduate Program in Ecology, University of Tennessee

I. A. Page 2, Paragraph 3. Craighead et al. (1974) were working with a stable, viable, and self-sustaining population from 1959 through 1967. It is generally agreed that it declined. We do not know at this time if it is viable or not below densities recorded during 1959-67. If the population comes back to 1959-67 levels, why could we not assume a recovered, viable self-sustaining population.

B. Agree

II. A. Noted; disagree
B. Noted and changed
C. 1. Stringent time constraints precluded me from researching all available data.
2. Same
D. Noted and revised.

III. A. A multitude of population estimates have been made. Knight's estimate should be the most valid.

IV. A. The source is stated.
B. Noted. I doubt that an adequate population sample will ever be available if the one by the Craighead's is too small.
C. The citation is not available.
1. A range acquired from all biologists who would comment.
2 & 3. Noted

V. 1. Noted and changed
2. Good point
3. Noted and changed
4. Noted

VI. A. Noted and changed.

VII. Comments noted.

IX. 1. Noted. Hunting presently is not possible.
2. Noted.
3. Copies of the "Yellowstone Guidelines" are available from the Forest Service.
4. Noted and changed.
5. Noted and changed.
6. Noted
7. Noted and changed.
8. Noted and many points covered in rewrite.
9, 10, & 11. Noted
12. Noted and changed.
13. Noted.
14. Hopefully, further research may furnish the answer.
15 & 16. Noted

Chairman, Border Grizzly Technical Committee

We agree that population data are insufficient. We have set goals that are based on current data as interpreted by the best expertise available. Final decisions will rely on future research.

1. We agree; but data to identify sex ratios necessary for a viable population were not available.

2. We assume that you believe a 25 percent coverage of spring range would be adequate to determine a population trend.

3. This was noted in the plan.

4,5,6,7,8. We agree and believe they are included in the plan; your comments add emphasis to what has already been said.

9. The plan is open-ended and does allow for any adjustments that research can justify.

10. Noted.

11. The plan recommends that research develop an intensive monitoring system for determining population estimates and trends in the population over time. Budget estimates were made from estimates of bear experts without any inflation factors added.

12. Your recommendation is included in the plan for NCDGBE.