

# CHAPTER VI

## *GLOSSARY, BIBLIOGRAPHY AND APPENDICES*





## GLOSSARY OF TERMS

*Abbreviations used in this document.*

ADC - Animal Damage Control Agency  
ASQ - Allowable Sale Quantity of Timber  
BE - Bitterroot Ecosystem  
BEA - Bitterroot Evaluation Area  
BLM - Bureau of Land Management  
CMC - Citizen Management Committee  
CYE - Cabinet-Yaak Grizzly Bear Ecosystem  
DEIS - Draft Environmental Impact Statement  
FEIS - Final Environmental Impact Statement  
ESA - Endangered Species Act  
EPA - Environmental Protection Agency  
IDFG - Idaho Department of Fish and Game  
IGBC - Interagency Grizzly Bear Committee  
MDFWP - Montana Department of Fish, Wildlife, and Parks  
MMBF - Million Board Feet of Timber  
NCDE - Northern Continental Divide Grizzly Bear Ecosystem  
PAA - Bitterroot Grizzly Bear Primary Analysis Area  
RVD - Recreation Visitor Day  
SE - Selkirk Grizzly Bear Ecosystem  
USDA - United States Department of Agriculture  
USFS - USDA Forest Service  
USFWS - United States Fish and Wildlife Service  
YE - Yellowstone Grizzly Bear Ecosystem

*Alternatives.* Different ways that grizzly bears could be reintroduced to, or managed in the Bitterroot Ecosystem. Four alternatives were developed and considered in depth in this final EIS.

*Allowable Sale Quantity.* A measure used in USFS Forest Plans. The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan. This quantity is usually expressed on an annual basis as the “average annual allowable sale quantity.”

*Biodiversity (biological diversity).* The variety of life and its processes at genetic, individual, population, and species scales.

*Bitterroot Ecosystem (BE).* A grizzly bear ecosystem (USFWS 1993) that is centered in the Selway-Bitterroot Wilderness Area. Historic grizzly bear range includes National Forest lands surrounding this wilderness and the Frank Church-River of No Return Wilderness Areas on both sides of the Salmon River. The BE is one of the largest blocks of Federal land remaining in the lower 48 United States, with the Selway-Bitterroot and Frank Church-River of No Return Wilderness Areas as its core.

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*Bitterroot Evaluation Area (BEA).* A 5,500 square mile area within the BE (see Figure 3-6) that was delineated as a result of the Grizzly Bear Recovery Plan (1982) direction to evaluate and ascertain the suitability of the Bitterroot Ecosystem as a grizzly bear recovery area. The BEA includes the Selway-Bitterroot Wilderness Area, the Frank Church-River of No Return Wilderness and roadless areas south of the Selway-Bitterroot and north of the Salmon River. The BEA extends north of the Selway-Bitterroot Wilderness and includes mainly roadless areas to the crest of the Mallard Larkins Mountains in the North Fork of the Clearwater River drainage. The eastern boundary is formed by the eastern edge of the Selway-Bitterroot Wilderness and the Fish Creek Road on the Lolo National Forest. The western boundary is drawn along the transition of roaded to roadless areas on the Clearwater and Nez Perce National Forests (Davis and Butterfield 1991). This area is the core of grizzly bear habitat in the BE.

*Bitterroot Valley Exclusion Area.* Includes private lands lying within the experimental population area in the Bitterroot Valley, Montana, and outside the Bitterroot Forest boundary south of U.S. Highway 12 to Lost Trail pass.

*Chronic Problem Grizzly Bears.* Grizzly bears that have been confirmed to have depredated on domestic animals at least once after an initial depredation and relocation because of depredations on domestic animals.

*Citizen Management Committee (CMC).* The proposed Special Rule for the preferred alternative (Alternative 1- Restoration of Grizzly Bears as a Nonessential Experimental Population With Citizen Management) would authorize a 15 member Citizen Management Committee to be appointed by the Secretary of Interior in consultation with the governors of Idaho and Montana, and the Nez Perce Tribe. This committee would be authorized management implementation responsibility by the Secretary of Interior, in consultation with the governors of Idaho and Montana for the Bitterroot grizzly bear experimental population. The Committee shall be composed of 15 members serving 6-year terms. Appointments may initially be of lesser terms to ensure staggered replacement. Membership shall consist of seven individuals appointed by the Secretary of the Interior based upon the recommendations of the Governor of Idaho, five members appointed by the Secretary of the Interior based upon the recommendations of the Governor of Montana, one member representing the U.S. Forest Service appointed by the Secretary of Agriculture or his/her designee, and one member representing the U.S. Fish and Wildlife Service (Service representative) appointed by the Secretary of the Interior or his/her designee, and one member representing the Nez Perce Tribe appointed by the Secretary based on the recommendation of the Nez Perce Tribe. Members recommended by the Governors of Idaho and Montana shall be based on the recommendations of the interested parties and shall include at least one representative each from the appropriate State fish and wildlife agencies. If either Governor fails to make recommendations, the Secretary (or his/her designee) shall accept recommendations from interested parties. The CMC would consist of a cross-section of interests reflecting a balance of viewpoints, be selected for their diversity of knowledge and experience in natural resource issues, and for their commitment to collaborative decision making. The CMC would be selected from communities within and adjacent to the recovery and experimental

population areas. The CMC would continue until the recovery objectives were met and the Secretary of Interior completed delisting. The specific duties and responsibilities of the CMC are listed in Appendix 13, the Special Rule.

*Compensation.* Payment to owners of livestock that had livestock killed or maimed by grizzly bears to compensate for the lost monetary value of the livestock. There would be no federal compensation program, but compensation from private funding sources could occur.

*Conservation.* As defined by the Endangered Species Act: to use, and the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to (the Act) are no longer necessary.

*Consultation (interagency).* A process required by Section 7 of the Endangered Species Act whereby federal agencies proposing activities in a listed species habitat confer with the U. S. Fish and Wildlife Service (or National Marine Fisheries Service) about the impacts of the activity on the species. Consultation may be informal, and thus advisory, or formal, and thus binding.

*Critical Habitat.* As defined by the Endangered Species Act: the specific areas within or outside the geographical areas occupied by a species, at the time it is listed, on which are found the physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. Critical habitat can not be designated for nonessential experimental populations.

*Cumulative Effects / Impacts.* The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

*Delist.* To remove a species, subspecies, or population from the federal list of threatened species and endangered species and subsequent protection of the Endangered Species Act. This action, in effect, places the species, subspecies, or population under management authority of the states or tribes. Species can be delisted if they have gone extinct, recovered, or the original listing was in error.

*Depredation.* The confirmed killing or maiming of lawfully present domestic livestock on federal, state, tribal, or other public lands, or private lands by one or more grizzly bears, accompanied by the likelihood that additional livestock will be killed or maimed by grizzly bears. The USFWS, ADC, or USFWS-authorized state or tribal agencies will confirm killing or maiming of domestic livestock.

*Dispersal.* The act of leaving a birth area or home range and moving to a new area for an extended period of time.

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*Domestic Animals.* Any animal purposely raised (fed, cared for, and sheltered) by humans and usually dependent upon humans for its survival. This would include livestock, food/fiber animals, captive game animals, fowl, working animals, guarding animals, and pets.

*Ecosystem.* An interacting set of organisms and their environment that persist, sustain life, and are bounded (at various scales), naturally or for study and management purposes.

*Ecosystems (grizzly bear).* Large areas (several hundred square miles) that currently harbor a population of grizzly bears, or are thought to be suitable for reintroducing and recovery of grizzly bears.

*Effects / Impacts.* Effects (or impacts) may be direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

*Endangered Species.* Any species which is in danger of extinction throughout all or a significant portion of its range and which is formally listed as endangered under the Endangered Species Act.

*Endangered Species Act of 1973, as amended. 16 U.S. C. 1531 et. seq. (ESA)* Congressional Act which provides for the listing and protection of endangered and threatened fish, wildlife, and plants.

*Environmental Impact Statement (EIS).* A document prepared by a federal agency proposing a major action, as mandated by the National Environmental Policy Act, that describes the environmental impacts of the action, alternative actions, the preferred alternative, a listing (summary) of public comments, and a Record of Decision.

*Experimental Population.* A 1982 amendment to the Endangered Species Act established the experimental population designation [Section 10(j)] and defined an experimental population as: "... any population (including any offspring arising solely therefrom) authorized by the Secretary for release under paragraph (2), but only when, and at such times as, the population is wholly separate geographically from nonexperimental populations of the same species." The experimental population designation denotes more flexible management for introduced endangered species or threatened species.

*Experimental Population Area.* Designation of an experimental population must include a description of the area in which such population will be found and where it will be identified as experimental. This establishes, in effect, the experimental population area, in which the experimental population rules apply. Outside those boundaries the grizzly bear in the lower 48 states is protected as a threatened species. The experimental population area must be geographically separate from areas containing existing grizzly bear populations. The boundaries of the Bitterroot Grizzly Bear Experimental Population Area are described in Chapter 2 under Alternative 1.

*Experimental Population Rule (Special Rule, 10(j) Rule).* Designation of an experimental population includes the development of special rules to identify geographically the location of the experimental population and identify, where appropriate, procedures to be utilized in its management. The special rule for each experimental population is developed on a case by case basis. Development of the special rule includes publication of the proposed regulation in the *Federal Register*, public comment on the proposed regulations, and publication of the final regulations prior to reintroduction of an experimental population.

*Extirpate.* The local disappearance of a species, as opposed to extinction, which is global disappearance.

*Federal Lands.* Areas under the administration of a federal agency such as the USDA Forest Service, U. S. Fish and Wildlife Service, Bureau of Land Management, and National Park Service.

*Federal Register.* A United States government publication where all major federal actions, rules, and regulations are announced.

*Food-Conditioned (bear).* A bear that has learned to associate the presence of people and their activities or developments with food and may routinely seek food from these areas.

*Forest Plan.* A document prepared under the National Forest Management Act by each national forest that generally describes how the resources in the forest will be managed for a 10-15 year period. The plans are subject to the National Environmental Policy Act and are accompanied by Draft and Final Environmental Impact Statements and a Record of Decision.

*Fragmentation (of habitat).* The dividing of large continuous areas of habitat by disturbances (usually man-made) in such a manner that the disturbed areas dominate that landscape and remnants of undisturbed habitat are surrounded by modified habitat.

*Grizzly Bear Recovery Plan.* A document prepared by a team of individuals with expertise regarding the biological and habitat requirements of the grizzly bear, outlining the tasks and actions necessary to recover the species within parts of its former range in the lower 48 United States. The original plan was completed in 1982. The revised Recovery Plan was approved September 10, 1993.

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The Bitterroot Ecosystem Recovery Plan Chapter - Supplement to the Grizzly Bear Recovery Plan was finalized and signed on September 11, 1996.

*Habituated (bear).* A bear that has little fear of humans, their activities, or developments, and largely ignores people if they do not get too close.

*Harass.* According to the Endangered Species Act Regulations, harass is defined as "intentional or negligent act or omission which creates the likelihood of injury to the wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to breeding, feeding, or sheltering" (50 CFR 17.3).

*Harassment Permitted under the Special Rule 10(j) (See Appendix 13).* For the purposes of this FEIS, permitted harassment and pursuing will be limited to pursuing adult grizzly bears (>6 months old) on foot, horseback, or nonmotorized or motorized vehicle (without approaching closer than 20 feet); discharging firearms or other projectile launching devices in proximity to but not in the direction of grizzly bears; throwing objects in the general direction of but not at grizzly bears; or making any loud noise in proximity to grizzly bears. The basic intent is to allow grizzly bears to be scared or chased from the immediate area without causing any physical injuries. The experimental population rule for the preferred alternative in this FEIS indicates that any livestock owner may be issued a permit by the U.S. Fish and Wildlife Service, the Idaho Department of Fish and Game, or the Montana Department of Fish, Wildlife and Parks and appropriate Tribal authorities to harass grizzly bears found in the area defined as the Bitterroot Grizzly Bear Experimental Population Area that are actually harming or killing livestock, provided that all such harassment is by methods that are not lethal or physically injurious to the grizzly bear and such harassment is reported to proper authorities within 24 hours as to date, exact location, and circumstances.

*Home Range.* An area where an animal spends about 90% or more of its time during a specific time, such as winter, summer, or year-round.

*Incidental Take.* (see below for full definition of "take" for this FEIS). The taking (killing, wounding, maiming, injuring, or physically harming) of grizzly bears, that which results from an otherwise lawful action but was not the purpose of the action. Within an experimental population area all grizzly bears incidentally taken under the conditions permitted by the experimental population rule by agencies or the public will not be considered take under the Endangered Species Act. Any and all grizzly bears taken outside the provisions of the experimental population rule would be considered take under the Endangered Species Act.

*Interagency Grizzly Bear Committee (IGBC).* A group of high-level administrators that represent the federal and state agencies involved in grizzly bear recovery. The IGBC coordinates the agencies efforts in implementing the Grizzly Bear Recovery Plan.

*Land-Use Restrictions.* Restrictions on human activities on public lands. A wide variety of such restrictions are used for a wide variety of purposes. Relatively few such restrictions are required to successfully recover grizzly bear populations unless human-caused mortality of grizzly bears is unusually high. Examples of the types of restrictions that have been used by natural resource managers to assist in grizzly bear population management are seasonal road-trail closures to reduce human access to critical occupied grizzly bear habitat and prohibition on certain types of motorized access. Land-use restrictions also include restrictions on certain human activities in the habitat of an endangered or threatened species in order to comply with Section 7 of the Endangered Species Act of 1973.

*Linkage (habitat or ecosystem).* A land classification scheme in which large, core protected areas (such as wilderness or national parks) are connected to each other by areas with similar or slightly lower protection standards. Linkage zones are combinations of landscape structural factors that allow wildlife to move through, and live within, areas influenced by human actions.

*Listed species.* A species that has been classified as threatened or endangered by the USFWS under the Endangered Species Act.

*Livestock.* Cattle, sheep, horses, and mules.

*Metapopulation.* As originally developed, a population composed of smaller distinct local populations that occasionally went extinct but were re-established by members dispersing from the other local populations. Modern connotations embrace the more general idea of populations that are separated from one another with varying degrees of connectivity and chance of extinction. Wells and Richmond (1995) define it as, "a set of spatially disjunct populations, among which there is some immigration."

*Minimum Viable Population.* A MVP for any given species is the smallest isolated population having a given probability of survival for a given period of time despite the foreseeable effects of demographic, environmental, and genetic stochasticity, and natural catastrophes.

*National Environmental Policy Act (NEPA).* An Act passed by Congress in 1969 which is the basic national charter for protection of the environment. NEPA established a process that requires consideration of environmental consequences for federal actions. Procedures ensure that high quality environmental information is available to public officials and citizens before federal decisions are made and actions are taken. Specifically, the responsible federal official must submit a detailed report on "major federal actions significantly affecting the quality of the human environment" prior to taking major federal actions. The EIS is a primary means of meeting NEPA requirements.

*Nonessential.* Under the provisions of the 1982 amendment of the ESA [Section 10(j)] which authorizes reintroduction of experimental populations, experimental populations must be designated either "essential" or "nonessential." "Nonessential" refers to an experimental population whose loss

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would not be likely to appreciably reduce the likelihood of the survival of the species in the wild.

*Nonexperimental Grizzly Bears.* Grizzly bears receiving all protections of the Endangered Species Act, as amended, as distinguished from grizzly bears that are members of an experimental population.

*Nuisance Bear Guidelines.* Interagency Grizzly Bear Committee Nuisance Grizzly Bear Management Guidelines (IGBC 1986). Guidelines endorsed by the IGBC that address management options to deal with nuisance grizzly bears (see Appendix 15).

*Omnivorous.* Eating both animals and plants.

*Open Road.* A road with no motorized access restrictions.

*Open Road Density.* Length of two-wheel drive accessible roads with unrestricted public access per given amount of area (i.e., miles of open road/square mile).

*Primary Analysis Area (PAA).* The geographic area considered affected by a major federal action and thus receiving detailed evaluation of the potential effects of the action in this FEIS. The Bitterroot Grizzly Bear PAA is the area potentially affected by grizzly bear recovery in the BE, and the area in which a grizzly bear population is expected to have a measurable environmental impact. The approximately 16,686,596 acre (26,072 mi<sup>2</sup>) PAA is shown in Figure 3-1.

*Private Land.* Areas owned by entities other than local, county, state, and federal governments, including individual home sites, farms, ranches, and industrial timberlands.

*Preferred Alternative.* The “agency’s preferred alternative” is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors, and which meets the purpose and need of the NEPA document.

*Proposed Action (Proposal).* The proposed action or proposal exists at that stage in the development of an action when an agency subject to the Act (NEPA) has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated.

*Public Land.* Lands under administration of federal agencies including but not limited to the National Park Service, USDI Fish and Wildlife Service, USDA Forest Service, USDI Bureau of Land Management, U.S. Department of Energy, and U.S. Armed Forces.

*Recovery Goals.* A specific set of targets identified in a recovery plan such that when a listed species reaches those targets they will be considered recovered. These targets include both

population variables and regulatory mechanisms to assure a sustained recovery. The recovery goals for the BE are outlined in the BE Recovery Plan Chapter (USFWS 1996).

*Recovery Plan.* A document prepared by the USFWS for listed species describing why they were listed, their present status, the need for recovery, steps to be taken to achieve recovery, monitoring methods to assess recovery, and the point at which the monitoring indicates the species has recovered.

*Recovery Zone.* The area in which recovery parameters are monitored. Alternatives 2 and 4 have recovery zones identified. For these two alternatives, this term carries a list of restrictions affiliated with fully threatened status.

*Recovery Area.* The Special Rule for reintroduction of an experimental population (Alternative 1) identifies the BE Recovery Area (instead of a recovery zone) as the area where recovery would be emphasized. This term carries a list of restrictions as defined in the special rule for the experimental population.

*Reintroduction.* The release of animals into an area that was part of their original geographic range, but from which they have declined or disappeared, for the purpose of establishing a new wild population.

*Restricted Road.* A road in which the use of motorized vehicles is restricted seasonally or yearlong.

*Roadless Areas.* Areas of western national forests greater than 5,000 acres that do not contain any roads and have been inventoried by the USFS in relation to their suitability as wilderness.

*Rule (proposed, final).* Regulations developed by a federal agency which are published in the *Federal Register* for public comment, or as adopted.

*Scientific Committee.* Under Alternative 4 (Reintroduction of a Threatened Population with Full Protection of the ESA) a ten member Scientific Committee would be appointed by the Secretary of the Interior in cooperation with the National Academy of Sciences to define needs for additional research, develop strategies for reintroduction of bears, implement reintroduction of bears, and monitor results of the program.

*Section 7(a)(2) of the ESA.* This ESA section requires that; "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (herein after in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action..." In nonessential experimental population areas, the

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Section 7(a)(2) requirements of ESA only apply inside National Parks and National Wildlife Refuges. Any potential land-use restrictions necessary for species recovery in other areas must be established as part of the experimental population rule.

*Take.* The ESA defines "take" as: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. See above definition of Harass. The experimental population rule (Special Rule) defines "take" as it would be applied under Alternative 1, the preferred alternative (see Appendix 13).

*Threatened Species.* A threatened species is defined in the ESA as one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

*Toxicants.* A poison or poisonous substance.

*Ungulate.* A hoofed animal such as deer and elk.

*Viable Population of Grizzly Bears.* The number, distribution, and persistence of grizzly bears considered necessary for a grizzly bear population to have a reasonable likelihood of survival for the foreseeable future. Grizzly bears in the BE will be viable when monitoring efforts indicate that recruitment and mortality are at levels supporting a stable or increasing number of bears, and reproducing females are distributed throughout the recovery area. See the BE Chapter of the Recovery Plan (USFWS 1996) for specific recovery goals (Appendix 14).

*Wilderness Areas.* Areas in the National Wilderness Preservation System that were established by the U. S. Congress and are managed under the provisions of the Wilderness Act.

## BIBLIOGRAPHY

- Aoki, H. 1973. Titwaatit (Nez Perce stories). National Bilingual Materials Development Center. University of Alaska, Anchorage, AK. 64pp.
- \_\_\_\_\_, and D. E. Walker, Jr. 1989. Nez Perce oral narratives. University of California Publications in Linguistics, Volume 104. University of California Press. University of California, Berkeley, Calif. 631pp.
- Banci, V. 1991. The status of the grizzly bear in Canada in 1990. Committee on the Status of Endangered Wildlife in Canada, Ottawa, ON, Canada. 171 pp.
- Beecham, J., ed. 1995. Idaho Department of Fish and Game statewide surveys and inventory: black bear. Project W-170-R-19, Study I, Job 9. Sept. 1995, IDFG, Boise. 104 pp.
- British Columbia Min. Environment, Lands, and Parks. 1995. Conservation of grizzly bears in British Columbia - Background Report. Min. Envir., Lands, and Parks, Victoria, B.C. 70pp.
- Brostrom, J. 1996. Anadromous and resident fisheries status in the Bitterroot grizzly bear ecosystem, Idaho. Idaho Department of Fish and Game unpubl. report. Lewiston, Ida. 5pp.
- Bureau, M. J. 1992. Mortality and seasonal distribution of elk in an area recently recolonized by wolves. M.S. Thesis, Univ. of Mont., Missoula. 109 pp.
- Burroughs, R. D. 1961. The natural history of the Lewis and Clark expedition. Michigan State University Press, East Lansing. 961pp.
- Butterfield, B. R. and J. Almack. 1985. Evaluation of grizzly bear habitat in the Selway-Bitterroot Wilderness Area. Idaho Department of Fish and Game Project No. 04-78-719. Cooperative Fish and Wildlife Research Unit, Univ. of Idaho, Moscow. 66pp.
- Christensen, A. G., L. J. Lyon, and J. W. Unsworth. 1993. Elk management in the Northern Region: considerations in forest plan updates or revisions. USDA Forest Service, Intermountain Res. Station, General Technical Report INT-303. Ogden, Utah. 10 pp.
- Clark, E. 1966. Indian legends from the northern Rockies. University of Oklahoma Press. University of Oklahoma. 350pp.
- Craighead, J. J., J. R. Varney, and F. C. Craighead. 1974. A population analysis of the Yellowstone grizzly bears. Mont. For. and Conserv. Exp. Sta. Bull. 40. Univ. of Mont., Missoula, Mont. 20 pp.
- Craighead, J. J., J. S. Sumner, and G. B. Scaggs. 1982. A definite system for analysis of grizzly bear habitat and other wilderness resources. Wildlife-Wildlands Institute Monograph No. 1. University of Montana Foundation. University of Montana, Missoula, Mont. 279pp.
- Davis, D. and B. Butterfield. 1991. The Bitterroot grizzly bear evaluation area: a report to the Bitterroot Technical Review Team. Interagency Grizzly Bear Committee, Denver, Colo. 56 pp.
- DiSilvestro, R. 1996. No longer top dog. National Wildl. Magazine (Oct-Nov). Vol. 34 (6): 14-22.
- Dood, A. R. and H. I. Pac. 1993. The grizzly bear in northwestern Montana, 1986-1990. Montana Department of Fish, Wildlife, and Parks, Helena. 228 pp.
- Duda, M. D. and K. C. Young. 1995. The public and grizzly bear reintroduction in the Bitterroot Mountains of Central Idaho. Responsive Management, Harrisonburg, Virginia. 141 pp.

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- Duffield, J. and D. Patterson. 1991. Inference and optimal design for a welfare measure in dichotomous choice contingent valuation. *Land Econ.* 67:225-239.
- Duffield, J. 1992. An economic analysis of wolf recovery in Yellowstone: Park visitor attitudes and values. Pages 2-35 to 2-87 in J.D. Varley and W. G. Brewster, eds. *Wolves for Yellowstone? A Report To The United States Congress, Volume 4, Research and Analysis.* NPS, Yellowstone National Park, Wyo.
- Duffield, J. and D. Patterson. 1992. Field testing existence values: an instream flow trust fund for Montana rivers . Paper presented at annual meeting, Association of Environmental and Resource Economists, New Orleans, January 4, 1992.
- Duffield, J., C. Neher, and D. Patterson. 1993. Wolves and people in Yellowstone: a case study in the new resource economics. Report to the Liz Claiborn and Art Ortenberg Foundation.
- Eberhardt, L. L., B. M. Blanchard, and R. R. Knight. 1994. Population trend of the Yellowstone grizzly bear as estimated from reproductive and survival rates. *Can. J. Zool.* 72:360-363.
- Eberhardt, L. L. and R. R. Knight. 1996. How many grizzlies in Yellowstone? *J. Wildl. Manage.* 60(2): 417-421.
- French, S. P. and M. G. French. 1990. Predatory behavior of grizzly bears feeding on elk calves in Yellowstone National Park 1986-1988. *Proc. Eighth Int. Conf. on Bear Res. and Manage., Victoria, B. C..* 8: 335-341.
- Garrity, M. 1996. Economic analysis of the conservation biology alternative for grizzly bear restoration in the greater Salmon-Selway region. Pages 19-26 in Bader, M., and T. Bechtold. *The conservation biology alternative for grizzly bear population restoration in the greater Salmon-Selway region of central Idaho and western Montana.* Alliance for the Wild Rockies Special Report #8, Missoula, Mont. 32pp.
- Gratson, M. W. and P. Zager. 1999. Elk ecology. Idaho Department of Fish and Game, Job Progress Report. Project W-160-R-25. Subproject 31. Study IV, Job 1-3. Boise, Idaho. 78pp.
- Green, G. I. and D. J. Mattson. 1988. Dynamics of ungulate carcass availability and use by bears on the Northern Range and Firehole and Gibbon drainages: 1987 progress report. Pages 32-50 in *Yellowstone grizzly bear investigations: annual report of the Interagency Study Team, 1987.* U.S.D.I. Natl. Park Serv.
- Groves, C. 1987. A compilation of grizzly bear reports for central and northern Idaho. Endangered Species Projects E-III, E-IV. Idaho Dept. of Fish and Game, Boise, Ida. 85pp.
- Gunther, K. A. and R. A. Renkin. 1990. Grizzly bear predation on elk calves and other fauna of Yellowstone National Park. Pages 329-334 in L. M. Darling and W. R. Archibald, eds. *Bears: their biology and management: a selection of papers from the eighth international confederation on bear research and management, Victoria, B.C., February 1989.* International Association for Bear Research and Management, Madison, WI.
- Gunther, K. A., M. Bruscano, S. Cain, T. Chu, K. Frey, R. R. Knight. 1995. Grizzly bear - human conflicts, confrontations, and management actions in the Yellowstone Ecosystem 1994. Interagency Grizzly Bear Committee, Yellowstone Ecosystem Subcommittee Report. Yellowstone National Park, Wyoming. 37pp.

- Gunther, K. A., M. Brusino, S. Cain, T. Chu, K. Frey, R. R. Knight. 1996. Grizzly bear - human conflicts, confrontations, and management actions in the Yellowstone Ecosystem 1995. Interagency Grizzly Bear Committee, Yellowstone Ecosystem Subcommittee Report. Yellowstone National Park, Wyoming. 39pp.
- Gunther, K. A., M. Brusino, S. Cain, T. Chu, K. Frey, R. R. Knight. 1997. Grizzly bear - human conflicts, confrontations, and management actions in the Yellowstone Ecosystem 1996. Interagency Grizzly Bear Committee, Yellowstone Ecosystem Subcommittee Report. Yellowstone National Park, Wyoming. 42pp.
- Gunther, K. A., M. Brusino, S. Cain, T. Chu, K. Frey, R. R. Knight. 1998. Grizzly bear - human conflicts, confrontations, and management actions in the Yellowstone Ecosystem 1997. Interagency Grizzly Bear Committee, Yellowstone Ecosystem Subcommittee Report. Yellowstone National Park, Wyoming. 45pp.
- Gunther, K. A. and M. A. Haroldson. In Press. Influence of ungulate abundance on grizzly bear population trends in the Yellowstone Ecosystem. *Ursus*. 11:000-000.
- Hanneman, W. M. 1984. Welfare evaluation in contingent valuation experiments with discrete responses. *American Journal of Agricultural Economics*. 66: 332-341.
- Hanneman, W. M. 1989. Welfare evaluation in contingent valuation experiments with discrete responses. *American Journal of Agricultural Economics*. 70: 1057-1061.
- Hilderbrand, G. V., S. D. Farley, C. T. Robbins, T. A. Hanley, K. Titus, and C. Servheen. 1996. Use of stable isotopes to determine diets of living and extinct bears. *Can. J. Zool.* 74:2080-2088.
- Hogg, J., N. Weaver, J. Craighead, M. Mahr, M. Pokorny, B. Steele, and R. Redmond. 1999. Abundance and spatial distribution of grizzly bear plant-food groups in the Salmon-Selway Ecosystem: a preliminary analysis and report. Craighead Institute, Missoula, Mont.
- Holm, G. W., F. G. Lindzey, and D. S. Moody. In Press. Habitat use, spatial distribution, and activity patterns of sympatric black and grizzly bears in northwest Wyoming. *Ursus*. 11:000-000.
- Hovey, F.W., and B.N. McLellan. 1996. Estimating population growth of grizzly bears from the Flathead River drainage using computer simulations of reproductive and survival rates. *Can. J. Zool.* 74:1409-1416.
- Idaho Department of Fish and Game. 1991. Unpublished data: Number of big game tags provided by outfitters and guides within the Primary Analysis Area for 1991 license year. Idaho Dep. Fish and Game, Boise.
- Idaho Department of Parks and Recreation. 1997. Idaho statewide comprehensive outdoor recreation and tourism planning: assessment and policy plan. Boise, ID. 215pp.
- Idaho Department of Parks and Recreation. 1989. 1990 Centennial edition, Idaho Outdoor Recreation Plan. Boise, ID. 88pp.
- Interagency Grizzly Bear Committee. 1986. Interagency grizzly bear guidelines. U.S. For. Serv., Washington, D.C. 100pp.
- \_\_\_\_\_. 1987. Grizzly bear compendium. USFWS, Missoula, Mont. 540pp.
- \_\_\_\_\_. 1994. Interagency Grizzly Bear Committee task force report. Grizzly bear/motorized access management, Final draft. IGBC, Denver, Colo. 6pp.

## Chapter 6 - Bibliography

- Jonkel, C. 1984. Grizzlies and black bear interrelationships. Border Grizzly Project. Univ. of Mont, Missoula. Spec. Rep. No. 70. 6pp.
- Kasworm, W. F. and T. Manley. 1988. Grizzly bear and black bear ecology in the Cabinet Mountains of northwest Montana. Mont. Dep. of Fish, Wildlife, and Parks, Helena. 122pp.
- Kasworm, W. F., T. J. Thier, and C. Servheen. 1993. Cabinet Mountains grizzly bear population augmentation 1992 progress report. U. S. Fish and Wildl. Serv., Missoula, Mont. 18pp.
- Kasworm, W. F. and C. Servheen. 1995. Cabinet-Yaak ecosystem grizzly bear and black bear research 1994 progress report. U. S. Fish and Wildl. Serv., Missoula, Mont. 57pp.
- \_\_\_\_\_, T. J. Their, and C. Servheen. In Press. Grizzly bear recovery efforts in the Cabinet/Yaak ecosystem. Int. Conf. Bear Res. And Manage. 10:000-000.
- Keane, E. R., and S. F. Arno. 1996. Whitebark Pine (*Pinus albicaulis*) in the Selway-Bitterroot Wilderness Complex: ecology, distribution and health. USDA Forest Service unpubl. report. Intermountain Research Station, Missoula, MT. 7pp.
- Knight, R.R. and B.M. Blanchard. 1995. Yellowstone grizzly bear investigations, 1994. U.S. Dep. Int., Nat. Biol. Surv., Bozeman, Mont. 27pp.
- Knight, R. R., D. Mattson, and B. Blanchard. 1984. Movements and habitat use of the Yellowstone grizzly bear. U. S. Dep. Int. Interagency Grizzly Bear Study Team. Bozeman, Mont. 177pp.
- Krutilla, J. 1967. Conservation reconsidered. American Economic Review. 57(4):77-86.
- Kuck, L., ed. 1995. Idaho Department of Fish and Game statewide surveys and inventory: elk. Project W-170-R-19. Prog. Rep. Study I, Job 1. Boise, Idaho. 318pp.
- Kunkel, K., W. Clark, and G. Servheen. 1991. A remote camera survey for grizzly bears in low human use areas of the Bitterroot grizzly bear evaluation area. Idaho Department of Fish and Game unpubl. report. Boise, ID. 12pp.
- Kunkel, K. E. and D. H. Pletscher. 1994. Cervid-wolf relationships in the North Fork of the Flathead River. Progress Report. School of Forestry. Univ. of Mont., Missoula. 41 pp.
- Madel, M. 1996. Rocky Mountain front grizzly bear management program, 4 year progress report 1991-1994. Montana Department of Fish, Wildlife, and Parks. Helena, Mont. 80pp.
- Maguire, L. A. and C. Servheen. 1992. Integrating biological and sociological concerns in endangered species management: augmentation of grizzly bear populations. Conservation Biology 6(3): 426-434.
- Martinka, C. J. 1974. Population characteristics of grizzly bears in Glacier National Park, Montana. J. Mamm. 55(1): 21-29.
- Mattson, D. J., B. M. Blanchard, and R. R. Knight. 1991. Food habitats of Yellowstone grizzly bears, 1977-1987. Can. J. Zool. 69: 1619-1629.
- Mattson, D. J., R. R. Knight, and B. M. Blanchard. 1992. Cannibalism and predation on black bears by grizzly bears in the Yellowstone ecosystem, 1975-1990. J. Mamm. 73(2): 422-425.
- Mattson, D. J., and D. P. Reinhart. 1994. Bear use of whitebark pine seeds in North America. Pages 212-220 in Proceedings - International workshop on subalpine stone pines and their environment: status of our knowledge. USDA Forest Service Tech. Rep. INT-GTR-309.
- Mattson, D. J. 1997. Use of ungulates by Yellowstone grizzly bears *Ursus arctos*. Biological Conservation 81: 161-177.

- McLellan, B. N. 1989. Dynamics of a grizzly bear population during a period of industrial resource development, II. Mortality rates and causes. *Can. J. Zool.* 67:1861-1864.
- Melquist, W. 1985. A preliminary survey to determine the status of grizzly bears (*Ursus arctos horribilis*) in the Clearwater National Forest of Idaho. Idaho Coop. Fish and Wildlife Research Unit. University of Idaho, Moscow, ID. 54pp.
- Merriam, C. H. 1922. Distribution of grizzly bear. *U. S. Outdoor Life* (December): 405-406.
- Merrill, T., D. J. Mattson, R. G. Wright, and H. B. Quigley. 1999. Defining landscapes suitable for restoration of grizzly bears *Ursus arctos* in Idaho. *Biological Conservation* 86: 231-248.
- Moore, W. R. 1984. Last of the Bitterroot grizzly. *Montana Magazine* (November-December) : 8-12.
- Moore, W. R. 1996. The Lochsa story. Mountain Publishing Co., Missoula, Mont. 461pp.
- Power, Thomas M. 1991. Ecosystem preservation and the economy in the greater Yellowstone area. *Conservation Biology.* 5 (3): 395-404.
- Power, T. M. 1992. The timber employment impact of the Northern Rockies Ecosystem Protection Act in Idaho. Univ. of Mont., Missoula.
- Rachael, J. S. 1992. Mortality and seasonal distribution of white-tailed deer in an area recently recolonized by wolves. M. S. Thesis, Univ. of Mont., Missoula. 115 pp.
- Scaggs, G. B. 1979. Vegetation description of potential grizzly bear habitat in the Selway-Bitterroot Wilderness Area, Montana and Idaho. M.S. Thesis. Univ. of Montana, Missoula. 148pp.
- Schlegal, M. 1976. Factors affecting calf elk survival in northcentral Idaho - a progress report. Pages 342-355 in *Proc. 56th Ann. Conf. West. Assoc. State Game Fish Comm.*
- Schleyer, B. O. 1983. Activity patterns of grizzly bears in the Yellowstone ecosystem and their reproductive behavior, predation, and the use of carrion. M.S. Thesis, Mont. State Univ., Bozeman. 130pp.
- Schoen, J. W., J. Lentfer, and L. Beier. 1986. Differential distribution of brown bears on Admiralty Island, southeast Alaska: a preliminary assessment. *In Int. Conf. Bear Res. and Manage.* 6:1-5.
- Servheen, C., A. Hamilton, R. Knight, B. McLellan. 1991. Report of the technical review team: Evaluation of the Bitterroot and North Cascades to sustain viable grizzly bear populations. Rep. to the Interagency Grizzly Bear Committee. U. S. Fish and Wildl. Serv., Boise, Ida. 9pp.
- \_\_\_\_\_, W. Kasworm, and T. Their. 1995. Transplanting grizzly bears *Ursus arctos horribilis* as a management tool - results from the Cabinet Mountains, USA. *Biol. Conserv.* 71:261-268.
- Servheen, G., M. S. Nadeau, and C. Queen. 1990. A survey for grizzly bears in the Bitterroot Grizzly Bear Evaluation Area. Idaho Department of Fish and Game unpubl. report. Boise, Ida. 11pp.
- Simpson, K., J. Regnier, and L. Andrusiak. 1995. A grizzly bear management strategy for the Kootenay Region. Keystone Wildlife Research, Inc. Unpubl. rpt. submitted to British Columbia Ministry of Environment, Lands, and Parks. 60 pp.

## *Chapter 6 - Bibliography*

- Soule, M.E., editor 1987. *Viable populations for conservation*. Cambridge University Press, New York.
- Space, R. S. 1979. *The Clearwater story: A history of the Clearwater National Forest*. USDA Forest Service unpubl. report. Northern Region 79-03, Missoula, Mont. 234pp.
- Thwaites, G. R., L.L.D. 1959. *Original journals of the Lewis and Clark expedition 1804-1806*. Antiquarian Press Ltd. NY.
- United States Department of Agriculture, Forest Service. 1976. *Selway-Bitterroot Wilderness management plan. Nez Perce, Clearwater, Bitterroot, and Lolo National Forests*. USDA For. Serv., Missoula, Mont.
- \_\_\_\_\_. 1983a. *Forest Plan for the Payette National Forest*. USDA For. Serv., Intermountain Region, Payette National Forest, McCall, Ida.
- \_\_\_\_\_. 1983b. *Forest Plan for the Salmon National Forest*. USDA For. Serv., Intermountain Region, Salmon National Forest, Salmon, Ida.
- \_\_\_\_\_. 1984. *Forest Plan for the Challis National Forest*. USDA For. Serv., Intermountain Region, Salmon/ Challis National Forest, Salmon, Ida.
- \_\_\_\_\_. 1986. *Forest Plan for the Sawtooth National Forest*. USDA For. Serv., Intermountain Region, Sawtooth National Forest, Twin Falls, Ida.
- \_\_\_\_\_. 1986b. *Forest Plan for the Lolo National Forest*. USDA For. Serv., Northern Region, Lolo National Forest, Missoula, Mont.
- \_\_\_\_\_. 1987a. *Forest Plan for the Clearwater National Forest*. USDA For. Serv., Northern Region, Clearwater National Forest, Orofino, Ida.
- \_\_\_\_\_. 1987b. *Forest Plan for the Nez Perce National Forest*. USDA For. Serv., Northern Region, Nez Perce National Forest, Grangeville, Ida.
- \_\_\_\_\_. 1987c. *Forest Plan for the Idaho Panhandle National Forests*. USDA For. Serv., Northern Region, Idaho Panhandle National Forests, Coeur d'Alene, Ida.
- \_\_\_\_\_. 1987d. *Forest Plan for the Bitterroot National Forest*. USDA For. Serv., Northern Region, Bitterroot National Forest, Hamilton, Mont.
- \_\_\_\_\_. 1990. *Forest Plan for the Boise National Forest*. USDA For. Serv., Intermountain Region, Boise National Forest, Boise, Ida.
- \_\_\_\_\_. 1992. *Selway-Bitterroot Wilderness general management direction: 1992 update*. Bitterroot, Clearwater, Lolo, and Nez Perce National Forests. USDA For. Serv., Missoula, Mont.
- \_\_\_\_\_. 1995. *Unpublished data: U.S. Forest Service road, trail, recreation visitor days, and livestock grazing data for 10 national forests in the primary analysis area*. U.S. Forest Service Regions 1 and 4. Missoula, Mont. and Ogden, Utah.
- \_\_\_\_\_. 1999. *Unpublished data: U.S. Forest Service timber harvest data for 10 national forests in the primary analysis area*. U.S. Forest Service Regions 1 and 4. Missoula, Mont. and Ogden, Utah.
- United States Department of Agriculture, National Agricultural Statistics Service. 1997. *Montana and Idaho state census of agriculture data*. U.S.D.A., Wash. D.C., Annual.

*Chapter 6 - Bibliography*

- United States Department of Commerce, Bureau of the Census. 1984. Projections of the population of the United States, by age, sex, and race: 1983 to 2080. Current Population Reports. Series p. 25, 952. Washington, D.C.
- \_\_\_\_\_. 1991. National survey of fishing, hunting, and wildlife associated recreation. U.S. Gov. Printing Office. Wash. D.C.
- \_\_\_\_\_. 1998. USA counties statistics for 1992, 1994, 1995, 1998. Washington, D. C., Annual.
- United States Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System. 1998. Population estimates for Idaho, Montana, and 14-county analysis area. Washington, D.C.
- United States Department of Interior, Fish and Wildlife Service. 1982. Grizzly bear recovery plan. U.S. Fish and Wildl. Serv., Denver, Colo. 195pp.
- \_\_\_\_\_. 1987. Northern Rocky Mountain wolf recovery plan. U.S. Fish and Wildl. Serv., Denver, Colo. 199pp.
- \_\_\_\_\_. 1993. Grizzly bear recovery plan (revised). U.S. Fish and Wildl. Serv., Missoula, Mont. 181pp.
- \_\_\_\_\_. 1993a. Unpublished survey data on economic and visitation impacts of wolf reintroduction to the Yellowstone and central Idaho areas. U. S. Fish and Wildl. Serv., Helena, Mont.
- \_\_\_\_\_. 1994. Final environmental impact statement on the reintroduction of gray wolves to Yellowstone National Park and central Idaho. U. S. Fish and Wildl. Serv., Helena, Mont.
- \_\_\_\_\_. 1995. Summary of public comments on the scoping of issues and alternatives for grizzly bear recovery in the Bitterroot Ecosystem. U. S. Fish and Wildl. Serv., Missoula, Mont.
- \_\_\_\_\_. 1996. Bitterroot ecosystem recovery plan chapter - supplement to the Grizzly Bear Recovery Plan. U.S. Fish and Wildl. Serv., Missoula, Mont. 27pp.
- \_\_\_\_\_. 1997. Draft environmental impact statement for grizzly bear recovery in the Bitterroot Ecosystem. U. S. Fish and Wildl. Serv., Missoula, Mont. 464pp.
- \_\_\_\_\_. 1997a. Endangered species act, proposed rule 10(j), establishment of a nonessential experimental population of grizzly bears in the Bitterroot area of Idaho and Montana. Federal Register . U. S. Fish and Wildl. Serv., Missoula, Mont.
- \_\_\_\_\_. 1998. Summary of public comments on the draft environmental impact statement for grizzly bear recovery in the Bitterroot Ecosystem. U. S. Fish and Wildl. Serv., Missoula, Mont.
- Walsh, R., D. Johnson, and J. Mckean. 1988. Review of outdoor recreation economic demand studies with nonmarket benefit estimates. Colorado Water Resources Research Institute Technical Report No. 54. Colorado State Univ., Fort Collins.
- Wells, J. V. and M. E. Richmond. 1995. Populations, metapopulations, and species populations: what are they and who should care? Wildl. Soc. Bull. 23:458-462.
- Wright, W. H. 1909. The grizzly bear. Charles Scribner's Sons, N.Y. 274pp.

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