APPENDIX 7. BUDGET ESTIMATES FOR FEIS ALTERNATIVES FOR REINTRODUCTION AND MONITORING OF GRIZZLY BEARS IN THE BITTERROOT ECOSYSTEM

Alternative 1. Restoration of Grizzly Bears as a Nonessential Experimental Population with Citizen Management

Summary. -- A nonessential experimental population rule would be established by regulation. A minimum of 25 grizzly bears would be captured and moved to the BE during the first 5 years of the program. The capture and transport portion of this budget estimates costs for work that would be accomplished by USFWS personnel, and assumes availability of bears in areas that are accessible for trapping. Bears would be transported to the BE by vehicle from the capture site and transported to the release site by helicopter. All animals would be fitted with radio transmitters and monitored. Population monitoring would be accomplished through recapture and radio monitoring of instrumented animals. Funding for the Citizen Management Committee travel costs is included.

Table 6-7. Estimated Annual Costs of Implementing Alternative 1.

	Annual Cost for First 5 Years
Capture and Transport - U.S. Fish and Wildlife Service	
Salaries and Benefits	$49,132
Vehicles and Travel	$7,000
Trapping and Miscellaneous Supplies	$20,000
Helicopter Release	$7,500
Helicopter Capture (Canada)	$7,000
Subtotal of Annual Costs for Capture and Transport - U. S. Fish and Wildlife Service	**$90,632**
Monitoring and Management - IDFG, Nez Perce Tribe, MDFWP [a]	
Salaries and Benefits	$100,000
Aircraft Costs for Monitoring	$20,000
Law Enforcement Assistance	$10,000
Equipment (Collars, Receivers, Culvert Trap, Vehicle)	$33,000
Operations (Travel, Supplies)	$10,000
Citizen Management Committee (Travel and Expenses for CMC and Science Advisors)	$20,000
Subtotal of Annual Costs for Monitoring and Management -IDFG, Nez Perce Tribe, MDFWP [a]	**$193,000**
Monitoring and Management - USDA Forest Service	
Annual Operating Cost for Sanitation, Information and Education, Law Enforcement, Etc.	**$150,000**
Annual Cost for the 5-Year Reintroduction Period - All Agencies	**$433,632**
Total Cost for the 5 - Year Reintroduction Period	**$2,168,160**
Annual Cost for Monitoring & Citizen Management After the First 5 Yrs.	**$193,000**

[a] Monitoring and management through cooperative agreements with IDFG, Nez Perce Tribe, and MDFWP.

Alternative 1A. Restoration of Grizzly Bears as a Nonessential Experimental Population with USFWS Management

Summary.-- A nonessential experimental population rule would be established by regulation. A minimum of 25 grizzly bears would be captured and moved to the BE during the first 5 years of the program. The capture and transport portion of this budget estimates costs for work that would be accomplished by USFWS personnel, and assumes availability of bears in areas that are accessible for trapping. Bears would be transported to the BE by vehicle from the capture site and transported to the release site by helicopter. All animals would be fitted with radio transmitters and monitored. Population monitoring would be accomplished through recapture and radio monitoring of instrumented animals.

Table 6-8. Estimated Annual Costs of Implementing Alternative 1A.

	Annual Cost for First 5 Years
Capture and Transport - U.S. Fish and Wildlife Service	
Salaries and Benefits	$49,132
Vehicles and Travel	$7,000
Trapping and Miscellaneous Supplies	$20,000
Helicopter Release	$7,500
Helicopter Capture (Canada)	$7,000
Subtotal of Annual Costs for Capture and Transport - U. S. Fish and Wildlife Service	**$90,632**
Monitoring and Management - IDFG, Nez Perce Tribe, MDFWP [a]	
Salaries and Benefits	$100,000
Aircraft Costs for Monitoring	$20,000
Law Enforcement Assistance	$10,000
Equipment (Collars, Receivers, Culvert Trap, Vehicle)	$33,000
Operations (Travel, Supplies)	$10,000
Subtotal of Annual Costs for Monitoring and Management -IDFG, Nez Perce Tribe, MDFWP	**$173,000**
Monitoring and Management - USDA Forest Service	
Annual Operating Cost for Sanitation, Information and Education, Law Enforcement, Etc.	**$150,000**
Annual Cost for the 5-Year Reintroduction Period - All Agencies	**$413,632**
Total Cost for the 5 - Year Reintroduction Period	**$2,068,160**
Annual Cost for Monitoring & Management After the First 5 Yrs.	**$173,000**

[a] Monitoring and management through cooperative agreements with IDFG, Nez Perce Tribe, and MDFWP.

Alternative 2. The No Action - Natural Recovery of a Grizzly Bear Population

Summary.-- This alternative relies on natural recovery of grizzly bear populations through immigration from other bear populations and habitat protection for any grizzly bears that might exist in the BE. Population establishment would be monitored through sighting reports from agencies and the public.

Table 6-9. Estimated Annual Costs of Implementing Alternative 2.

	Estimated Annual Cost
U.S. Fish and Wildlife Service	
Salaries and Benefits	$25,000
Operations (Travel, Supplies)	$15,000
USDA Forest Service	
Sanitation, I&E, Law Enforcement, Permit Issuance, Etc.	$100,000
TOTAL Annual Cost	**$140,000**

Alternative 3. No Grizzly Bear Recovery

Summary. -- Special legislation would be prepared for action by congress and the states of Colorado, Idaho, Montana, Washington, and Wyoming. Grizzly bears would be removed from the list of threatened and endangered species in that region of the United States. Costs associated with this alternative include staff time and travel to develop the required legislation. The total cost would be spread over several years.

Table 6-10. Estimated Total Cost Over Several Years of Implementing Alternative 3.

	Estimated Total Cost
U.S. Fish and Wildlife Service	
Salaries and Benefits	$400,000
Operations (Travel, Supplies)	$100,000
Legislative, lobbying, and public relations effort	$1,500,000
TOTAL Cost Over Several Years (minimum estimate)	**$2,000,000**

Alternative 4. Restoration of Grizzly Bears as a Threatened Population With Full Protection of the ESA and Habitat Restoration

Summary. -- The grizzly bear population in the BE would be managed as a threatened population similar to management in other ecosystems. A minimum of 25 grizzly bears would be captured and moved to the BE during the first 5 years of the program. The capture and transport portion of this budget estimates costs for work that would be accomplished by USFWS personnel, and assumes availability of bears in areas that are accessible for trapping. Bears would be transported to the BE by vehicle from the capture site and transported to the release site by helicopter. All animals would be fitted with radio transmitters and monitored. Further monitoring of population changes is anticipated and would be accomplished through recapture and radio monitoring of instrumented animals. Funding for the Scientific Management Committee travel costs is included.

Table 6-11. Estimated Annual Costs of Implementing Alternative 4.

	Annual Cost for First 5 Years
Capture and Transport - U.S. Fish and Wildlife Service	
Salaries and Benefits	$49,132
Vehicles and Travel	$7,000
Trapping and Miscellaneous Supplies	$20,000
Helicopter Release	$7,500
Helicopter Capture (Canada)	$7,000
Subtotal of Annual Costs for Capture and Transport - U. S. Fish and Wildlife Service	**$90,632**
Monitoring and Management - IDFG, Nez Perce Tribe, MDFWP [a]	
Salaries and Benefits	$100,000
Aircraft Costs for Monitoring	$20,000
Law Enforcement Assistance	$10,000
Equipment (Collars, Receivers, Culvert Trap, Vehicle)	$33,000
Operations (Travel, Supplies)	$10,000
Scientific Committee (Travel and Expenses for entire Committee)	$15,000
Subtotal of Annual Costs for Monitoring and Management -IDFG, Nez Perce Tribe, MDFWP	**$188,000**
Monitoring and Management - USDA Forest Service	
Annual Operating Cost for Sanitation, Information and Education, Law Enforcement, Etc.	**$150,000**
Annual Cost for the 5-Year Reintroduction Period - All Agencies	**$428,632**
Total Cost for the 5 - Year Reintroduction Period	**$2,143,160**
Annual Cost for Monitoring & Management After the First 5 Yrs.	**$188,000**

[a] Monitoring and management through cooperative agreements with IDFG, Nez Perce Tribe, and MDFWP.

Alternative 4A. Restoration of Grizzly Bears as a Threatened Population With Full Protection of the ESA and USFWS Management

Summary. -- The grizzly bear population in the BE would be managed as a threatened population similar to management in other ecosystems. A minimum of 25 grizzly bears would be captured and moved to the BE during the first 5 years of the program. The capture and transport portion of this budget estimates costs for work that would be accomplished by USFWS personnel, and assumes availability of bears in areas that are accessible for trapping. Bears would be transported to the BE by vehicle from the capture site and transported to the release site by helicopter. All animals would be fitted with radio transmitters and monitored. Further monitoring of population changes is anticipated and would be accomplished through recapture and radio monitoring of instrumented animals. Funding for a Scientific Advisory Committee is included to cover travel and per diem.

Table 6-12. Estimated Annual Costs of Implementing Alternative 4A.

	Annual Cost for First 5 Years
Capture and Transport - U.S. Fish and Wildlife Service	
Salaries and Benefits	$49,132
Vehicles and Travel	$7,000
Trapping and Miscellaneous Supplies	$20,000
Helicopter Release	$7,500
Helicopter Capture (Canada)	$7,000
Subtotal of Annual Costs for Capture and Transport - U. S. Fish and Wildlife Service	**$90,632**
Monitoring and Management - IDFG, Nez Perce Tribe, MDFWP [a]	
Salaries and Benefits	$100,000
Aircraft Costs for Monitoring	$20,000
Law Enforcement Assistance	$10,000
Equipment (Collars, Receivers, Culvert Trap, Vehicle)	$33,000
Operations (Travel, Supplies)	$10,000
Scientific Advisory Committee (Travel and Expenses for entire Committee)	$15,000
Subtotal of Annual Costs for Monitoring and Management -IDFG, Nez Perce Tribe, MDFWP [a]	**$188,000**
Monitoring and Management - USDA Forest Service	
Annual Operating Cost for Sanitation, Information and Education, Law Enforcement, Etc.	**$150,000**
Annual Cost for the 5-Year Reintroduction Period - All Agencies	**$428,632**
Total Cost for the 5 - Year Reintroduction Period	**$2,143,160**
Annual Cost for Monitoring & Management After the First 5 Yrs.	**$188,000**

[a] Monitoring and management through cooperative agreements with IDFG, Nez Perce Tribe, and MDFWP.

APPENDIX 8. GRIZZLY BEAR REINTRODUCTION TO THE BITTERROOT ECOSYSTEM AND EXECUTIVE ORDER 12630 (GOVERNMENT ACTIONS AND INTERFERENCE WITH CONSTITUTIONALLY PROTECTED PROPERTY RIGHTS)

Under Executive Order 12630, executive departments and agencies should review their actions carefully to prevent unnecessary takings of private property. Governmental actions, including federal regulations or proposed federal regulations, that may have an impact on private property should be scrutinized to avoid undue or unplanned burdens.

The proposed action to reintroduce grizzly bears into the Bitterroot Ecosystem (BE) has been designed to avoid affecting private property. If grizzly bears are released in the BE of central Idaho, they will be released and managed so the recovery actions are compatible with existing private land uses (principally ranching) so that the lifestyle and income are not negatively affected. Other wild predators such as gray wolves, coyotes, mountain lions, black bears, foxes, and golden eagles presently utilize lands in public and private ownership and are an accepted part of the natural environment. Private landowners are concerned that grizzly bears will depredate on livestock and that grizzly bear recovery will place restraints on their land management practices or reduce their incomes. Grizzly bears just like other large predators may occasionally attack livestock. Under the proposed action, people could kill grizzly bears in self-defense or in defense of other human life. Following the issuance of a permit by the FWS, the public would be allowed to harass a grizzly bear attacking livestock (cattle, sheep, horses, and mules). A livestock owner may be issued a permit to kill a grizzly bear that is killing or pursuing livestock on private land, if it has not been possible to capture such a bear through agency efforts. Designation of the released population as a nonessential experimental population means the released grizzly bears would be treated as though they are a proposed species. Private property would not be affected by land-use restrictions because of grizzly bear recovery.

We anticipate that grizzly bears would initially be viewed as a novelty by the local community and attract considerable attention. Eventually, however, we believe grizzly bears would be viewed as a normal part of the local resident's natural environment and the bears would receive diminishing attention from the local populace.

The U.S. Fish and Wildlife Service foresees no need to purchase lands as part of this grizzly bear recovery effort. If such a need should arise, acquisition would be only from willing sellers. Land values in northwestern Montana and northern Idaho have not been noticeably affected by grizzly bears recently recolonizing those areas, and there is no reason to suspect that grizzly bear presence would negatively affect land values in other parts of Montana and Idaho.

The reintroduction would undoubtedly attract the interest of wildlife viewers throughout the United States as well as other areas. Tourism is becoming a major industry in central Idaho and western Montana and some tourists would likely include visits to these areas if grizzly bears were present. Federal public land on National Forests, Wildlife Refuges, Bureau of Land Management lands, and National Parks would provide the public with opportunities to visit areas where grizzly bears would be present. Visitors are unlikely to be a trespass nuisance on private lands.

APPENDIX 9A. INTRA-SERVICE SECTION 7 EVALUATION FOR THE RESTORATION OF GRIZZLY BEARS TO THE BITTERROOT ECOSYSTEM OF CENTRAL IDAHO AND WESTERN MONTANA

Description Of Proposed Action

The Revised Grizzly Bear Recovery Plan (U. S. Fish and Wildlife Service 1993) calls for evaluation of the Bitterroot Ecosystem as a potential recovery area. Section 10(j) of the Endangered Species Act grants authority to the U. S. Fish and Wildlife Service (Service) to release animals of a threatened or endangered species outside its current range, such as an area of former range that is currently unoccupied by the species. The area for the introduced population is to be designated along with details regarding the management of the population and its habitat.

The Bitterroot Ecosystem Grizzly Bear Recovery Chapter of the Revised Grizzly Bear Recovery Plan (U. S. Fish and Wildlife Service 1996) directed development of an Environmental Impact Statement (EIS) to consider a range of alternatives, including a Section 10(j) alternative to reintroduce grizzly bears.

The preferred alternative of the final EIS proposes to reintroduce a minimum of 25 grizzly bears, of both sexes, over a 5-year period into the Bitterroot Ecosystem of east central Idaho and a portion of western Montana. Grizzly bears would be reintroduced into the Selway-Bitterroot Wilderness portion of the recovery area. A Citizen Management Committee (CMC) would determine if reintroduction is appropriate for the Frank Church-River of No Return Wilderness. Grizzly bears would be captured in Canada and the United States from areas with healthy populations of grizzly bears and habitat similar to the Bitterroot Ecosystem. Three sources of grizzly bears for the Bitterroot Ecosystem have been identified: Southeastern British Columbia, the Northern Continental Divide Ecosystem population in northwestern Montana, and the Yellowstone Ecosystem population. Capture and reintroduction would occur during periods when optimal food supplies exist for the Bitterroot Ecosystem. Each grizzly bear would be radio-collared and monitored to determine individual movements, use of habitat, and to inform the public of grizzly bear locations and recovery efforts.

The USFWS has determined, based upon the best scientific evidence available, there are no grizzly bears in the Bitterroot Ecosystem at this time (U. S. Fish and Wildlife Service 1997, U. S. Fish and Wildlife Service 1996). Based on habitat analysis of the area, the Bitterroot Ecosystem should provide suitable habitat for more than 200 bears (Davis and Butterfield 1991, Servheen et al. 1991, U. S. Fish and Wildlife Service 1997).

Location

The project area is defined as the Bitterroot Ecosystem of central Idaho and western Montana in the Northern Rocky Mountains. The analysis area considered in the preferred alternative of the final EIS is referred to as the Bitterroot Grizzly Bear Experimental Population Area. The experimental population area includes Forest lands or portions thereof within the Bitterroot, Boise, Challis, Clearwater, Nez Perce, Payette, Sawtooth, Salmon, and Panhandle National Forests in Idaho and the Bitterroot and Lolo National Forests in Montana. A few scattered parcels of private and state land occur within the recovery area, but total acreage is minor.

The experimental population area is bounded by U.S. Highway 93 from Missoula, Montana to Challis, Idaho; Idaho Highway 75 from Challis to Stanley, Idaho; Idaho Highway 21 from Stanley to Lowman, Idaho; Idaho Highway 17 from Lowman to Banks, Idaho; Idaho Highway 55 from Banks to New Meadows, Idaho; U.S.

Highway 95 from New Meadows to Coeur d'Alene, Idaho; and Interstate 90 from Coeur d'Alene to Missoula, Montana.

The center of the experimental population area is characterized by 3 wilderness areas, the Frank Church-River of No Return, the Selway-Bitterroot, and the Gospel Hump Wilderness Areas. The Bitterroot Grizzly Bear Recovery Area was identified as the area of recovery emphasis, and includes the Selway-Bitterroot and Frank Church-River of No Return Wilderness Areas of east central Idaho and western Montana. Grizzly bears would likely be introduced into the Selway-Bitterroot Wilderness portion of the recovery area, north of Moose Creek Station.

Listed Species Or Critical Habitat Considered (see Species List in Project File)

Gray wolf (*Canis lupus*)	LE[1], XN[2]
Grizzly bear (*Ursus arctos horribilis*)	LT[3]
Bald eagle (*Haliaeetus leucocephalus*)	LT
Peregrine falcon *(Falco peregrinus*)	LE
Macfarlane's four-o'clock (*Mirabilis macfarlanei*)	LT
Water howellia (*Howellia aquatilis*)	LT
Ute's ladies tresses (*Spiranthes diluvialis*)	LT
Bull trout (*Salvelinus confluentus*)	LT
Lynx (*Felis lynx canadensis*)	PT[4]
Northern Idaho ground squirrel (*Spermophilus brunneus brunneus*)	PT

Candidate Species Considered (see Species List in Project File)

None

List Of Species Of Concern Considered (see Species List in Project File)

Mammals

Long-legged myotis (*Myotis volans*)	Long-eared myotis (*Myotis evotis*)
Fringed myotis (*Myotis thysanodes*)	Townsend's big eared bat (*Plecotus townsendii*)
Yuma myotis (*Myotis yumannensis*)	Pygmy rabbit (*Brachylagus idahoensis*)
Wolverine (*Gulo gulo luscus*)	

Birds

Northern goshawk (*Accipiter gentilis*)	Harlequin duck (*Histrionicus histrionicus*)
Ferruginous hawk (*Buteo regalis*)	Black tern (*Chlidonias niger*)

Columbia sharp-tailed grouse (*Tympanuchus phasianellus columbianus*)

[1] Listed as endangered.

[2] Experimental population designation.

[3] Listed as threatened.

[4] Proposed for listing as threatened.

Fish
Interior redband trout (*Oncorhynchus mykiss gairdneri*)
Westslope cutthroat trout (*Oncorhynchus clarki lewisii*)

Plants
Clustered lady's slipper (*Cypripedium fasciculatum*)
Howell's gumweed (*Grindelia howellii*)
*[5] Lemhi penstemon (*Penstemon lemhiensis*)
Hazel's prickly phlox (*Leptodactylon pungens ssp. hazeliae*)
Jessica's aster (*Aster jessicae*)
Broad-fruit mariposa (*Calochortus nitidus*)
Palouse goldenweed (*Haplopappus liatriformis*)
Clearwater phlox (*Phlox idahonis*)
Crenulate moonwort (*Botrychium crenulatum)*
Salmon River fleabane (*Erigeron salmonensis*)
Spalding's silene (*Silene spaldingii*)
Hapeman's sullivantia (*Sullivantia hapemanii var. hapemanii*)
Tobias' saxifrage (*Saxifraga bryophora var. tobiasiae*)
* Salmon twin bladderpod (*Physaria didymocarpa var. lyrata*)
* Bartonberry (*Rubus bartonianus*)
* Aase's onion (*Allium aaseae*)
* Idaho douglasia (*Douglasia idahoensis*)
* Slickspot peppergrass (*Lepidium papilliferum*)
Payson's milkvetch (*Astragalus paysonii*)
White Cloud's milkvetch (*Astragalus vexillifexus var. nubilus*)
Douglas' wavewing (*Cymopterus douglassii*)
Guardian buckwheat (*Eriogonum meledonum*)
Stanley whitlow-grass (*Draba trichocarpa*)
* Wavy-leaf thelypody (*Thelypodium repandum*)
* Alkali primrose (*Primula alcalina*)

Invertebrates
Columbia pebblesnail (*Fluminicola columbianus*)
Idaho pointheaded grasshopper (*Acrolophitus pulchellus*)
Idaho banded mountainsnail (*Oreohelix idahoensis*)
Boulder pile mountainsnail (*Oreohelix jugalis)*
Whorled mountainsnail (*Oreohelix vortex*)
Mission Creek Oregonian (*Cryptomastix magnidentata*)
Lava rock mountainsnail (*Oreohelix waltoni*)
Carinated striate banded mountainsnail (*Oreohelix strigosa goniogyra*)

[5] The original list of plant species is located on the Species List in the FEIS Project File. Plant species with an asterisk (*) have subsequently been determined to be outside of the analysis area boundaries.

Explanation Of Impact Of Action On Listed Species Or Critical Habitat

Gray wolf - Not likely to adversely affect. Grizzly bears and wolves coexist throughout the northern Hemisphere and would be expected to coexist in the proposed experimental area. Research on wolf and grizzly bears in and near Glacier National Park indicates only minor interaction between bears and wolves, other than that both species kill ungulates (U. S. Fish and Wildlife Service 1994). Grizzly bears will occasionally usurp wolf-killed prey by driving the wolves away. Wolves and grizzly bears have been documented to kill each other in some areas where they coexist in North America, but such instances are uncommon even in areas with high densities of both grizzly bears and wolves (U. S. Fish and Wildlife Service 1994). Wolves and grizzly bears usually avoid direct contact with one another. Wolves may both provide and compete for ungulate carcasses with grizzly bears, but such competition should be insignificant in terms of effect on population levels (U. S. Fish and Wildlife Service 1994).

Grizzly bear - Beneficial effect. This action will lead to recovery of grizzly bear populations in the Bitterroot Ecosystem, enhancing recovery of the species (U. S. Fish and Wildlife Service 1997). Genetic diversity of grizzly bears will be increased as a result of reintroduction. Reintroducing grizzly bears may result in some individual bears being killed, relocated, or removed from the area because of conflicts with humans, livestock, ungulate populations, and listed salmonid populations. Such losses of individual bears have been considered as part of the bear recovery-reintroduction program and are not expected to significantly affect bear population growth to recovery. There have been occasional, but unverified, sightings of grizzly bears in the Bitterroot Ecosystem for decades, however the last verified evidence of grizzly bears was in 1946 (U. S. Fish and Wildlife Service 1997). The USFWS has determined, based upon the best scientific evidence available, there are no grizzly bears in the Bitterroot Ecosystem at this time (U. S. Fish and Wildlife Service 1997, U. S. Fish and Wildlife Service 1996). If native grizzly bears were subsequently identified in the recovery area, they may become more vulnerable to mortality under an experimental population rule than currently, because these bears would be subject to the same removal criteria as reintroduced animals. However, any increased vulnerability would be mitigated by reintroduction because of increased chances of finding mates and producing young.

Bald eagle - No effect. Grizzly bears are not known to prey on bald eagles or their nests, which are located primarily in trees in the potentially affected areas. Bald eagles could scavenge carrion killed by grizzly bears but are primarily a fish-eating species. Bald eagles and grizzly bears have coexisted in other parts of North America without apparent effect on one another.

Peregrine falcon - No effect. Grizzly bears are not known to prey on peregrine falcons or their nests which are typically located on cliffs. Grizzly bears do not usually prey on small birds or waterfowl and therefore will not compete for food with peregrine falcons (Mattson et al. 1991; Craighead et al. 1995). Peregrine and other falcons and grizzly bears have coexisted in other parts of North America without apparent effect on one another.

Macfarlane's four-o'clock (*Mirabilis macfarlanei*), **Water howellia** (*Howellia aquatilis*), and **Ute's ladies tresses** (*Spiranthes diluvialis*) - No effect. Although grizzly bears do eat plants, they primarily eat vegetation that is high in nutritional value such as fleshy fruits, nuts or bulbous roots (Craighead et al. 1995; Alberta Forestry, Lands and Wildlife 1990). Neither Macfarlane's four-o'clock, water howellii, nor Ute's ladies tresses are likely desirable food species for grizzly bears (Edna Vizgirdas, US Fish and Wildlife Service,

pers. comm. 1996). Both water howellia and Macfarlane's four-o'clock are located on the northern and western edges (respectively) of the experimental population area. Ute's ladies tresses is located on the southern edge of the experimental population area. Due to the large expanse of area and varied land uses between the experimental area and the locations of all three species, it is unlikely that grizzly bears will encounter any of the plant species. These plant species and grizzly bears have likely coexisted in the past without apparent effect on one another.

Lynx (*Felis lynx canadensis*) - Not likely to adversely effect. The experimental population area occurs in the southern limits of lynx distribution (Idaho Department of Fish and Game et al. 1995). Contrary to predator-prey fluctuations documented between lynx and snowshoe hare populations in northern reaches of lynx range, southern reaches do not appear to respond in this cyclic fashion (Ruggiero et al. 1994). This may be due to a greater diversity of predators and competitive species of snowshoe hare in the southern portion of lynx range, thus keeping snowshoe hare populations at a lower level that does not cycle (Idaho Department of Fish and Game et al. 1995). Due to low levels of snowshoe hare and diversity of prey in southern reaches of lynx range, it is unlikely that competition for prey with grizzly bears would adversely affect lynx populations. Natural predation of lynx has been documented to occur but appears to be in low numbers and has been determined to be a non-threat to the species (Idaho Department of Fish and Game et al. 1995).

Bull trout (*Salvelinus confluentus*) - Not likely to adversely affect. The USFWS is unaware of any literature documenting grizzly bears utilize bull trout as a food resource. Grizzly bears have been documented to feed on cutthroat trout (U. S. Fish and Wildlife Service 1997), but this source of food represents only a minor portion of the grizzly bear's main diet if other food sources are available (Mattson et al. 1991; Craighead et al. 1995). It is possible that reintroduced grizzly bears could feed on bull trout; however, the above finding would seem to indicate that effects to bull trout populations would be minimal. Bull trout could be used by grizzly bears during late summer-fall spawning migration, but due to low population numbers of grizzly bears in the early years of reintroduction and generally dispersed distribution of the bull trout in the recovery area, it is unlikely that grizzly bears will have an adverse effect on bull trout population levels (Steve Duke, U. S. Fish and Wildlife Service, pers. comm. 1996).

Northern Idaho Ground Squirrel (*Spermophilus brunneus brunneus*) - No effect. Most populations of the Northern Idaho ground squirrel lie outside the experimental population area boundary, with one possible extant population occurring just inside the western boundary of the experimental area (USDA Forest Service and U. S. Fish and Wildlife Service 1997). It is unlikely that given the distance and land use practices between the experimental area and the single colony site near the experimental population area, that grizzly bears would encounter this species.

Long-legged myotis (*Myotis volaris*), **Long-eared myotis** (*Myotis evotis*), **Fringed myotis** (*Myotis thysanodes*), **Townsend's big eared bat** (*Plecotus townsendii*), and **Yuma myotis** (*Myotis yumannensis*) - Not likely to adversely affect. All referenced bat species are insectivorous, especially on beetles and moths (Groves 1996). While feeding behaviors may overlap (Groves 1996) between time of day and insect species of choice, grizzly bears are not likely to adversely affect the prey base required for these species. There is no documentation available to indicate that bats or their roosting habitats have been affected by the presence of grizzly bears in the past.

Wolverine (*Gulo gulo*) - Not likely to adversely affect. Wolverines are scavengers, mainly dependent on large mammal carrion (Ruggiero et al. 1994). Due to this scavenging nature, wolverines are dependent on

the presence of other predators to provide carrion, but can also become prey of these predators (Ruggiero et al. 1994). However, current wolverine distribution (Idaho Department of Fish and Game et al. 1995) indicates that it is widely distributed and is unlikely that either competition for carrion during the spring or direct predation would adversely affect the population as a whole. Grizzly bears and wolverines likely have coexisted in the experimental area (Idaho Department of Fish and Game et al. 1995) prior to the loss of grizzly bears without known adverse effects.

Pygmy rabbit (*Brachylagus idahoensis*) - Not likely to adversely affect. Pygmy rabbits are found primarily in big sagebrush (*Artemisia tridentata*) habitats (Green and Flinders 1980a; White et al. 1982) distributed throughout most of the Great Basin and portions of the intermountain West (Green and Flinders 1980b). Although pygmy rabbits could be eaten by grizzly bears, predation events will likely be incidental and are not likely to adversely affect this species. Only the northeast corner of the range of the pygmy rabbit (as shown in Green and Flinders 1980b) occurs within the experimental population area for grizzly bears. This overlap comprises less than 20 percent of pygmy rabbit distribution. The primary food of pygmy rabbits is big sagebrush, although they may consume grasses (*Agropyron* spp. and *Poa* spp.) during mid to late summer (Green and Flinders 1980b). Although in some areas pygmy rabbits and grizzly bears could utilize the same forage species, such competition for food is not likely to adversely affect their continued survival.

Northern goshawk (*Accipiter gentilis*) - Not likely to adversely affect. Northern goshawks use a variety of forested habitats during the nesting period, which is generally from April to August (Braun et al. 1996). Northern goshawks prefer to nest in large trees 30 to 40 feet above ground, where clear access is afforded by a stream or other opening (DeGraaf et al. 1991). Goshawks may hunt prey (primarily birds and small mammals) in woodlands, clearings, and open fields (DeGraaf et al. 1991). Goshawks in central Idaho (Boise National Forest) have been known to consume grouse and snowshoe rabbits (Burleigh 1972). Because grizzly bears do not climb trees (Craighead and Mitchell 1982), it is unlikely that they will consume goshawk eggs or individuals. Although goshawks and grizzly bears may eat similar prey items, competition with grizzly bears for food is unlikely to affect populations of this widespread raptor species.

Ferruginous hawk (*Buteo regalis*) - Not likely to adversely affect. Ferruginous hawks feed primarily on birds and mammals including rabbits, ground squirrels, mice, rats, and gophers (DeGraaf et al. 1991). They prefer tall trees for nesting, but will use a variety of sites including low hills, buttes, small cliffs, powerlines, and riverbed mounds (DeGraaf et al. 1991). Tree nests are generally located in the upper canopy, ranging from 6 to 55 feet above ground (DeGraaf et al. 1991). Although grizzly bears do not climb trees (Craighead and Mitchell 1982), they may occasionally consume ferruginous hawk eggs or juveniles when nests are located at or near ground level. Ferruginous hawks and grizzly bears may eat similar prey items; however, competition with grizzly bears for food is unlikely to affect populations of this fairly common raptor species.

Harlequin duck (*Histrionicus histrionicus*) - Not likely to adversely affect. Breeding harlequin ducks are generally dependent on rough, turbulent streams, and feed mainly on crustaceans, molluscs, and insects (Ehrlich et al. 1988). Most known breeding sites in Northern Idaho occur in the Clearwater drainage and north (Cassirer and Groves 1990). The species is known to occur as far north as Alaska and includes British Columbia, Alberta, Idaho, Montana, Washington, and Oregon (Idaho Department of Fish and Game 1996). Given current distribution of the species in North America, and that breeding sites occur mainly in the northern most reaches of the grizzly bear experimental area, it is unlikely that grizzly bears would adversely affect harlequin duck populations. It is also unlikely that given the specific and unique habitat requirement for breeding harlequin ducks, that grizzly bears would utilize similar habitats for foraging.

Black tern (*Chlidonias niger*) - Not likely to adversely affect. Burleigh (1972) considers black terns to be a fairly common, local summer resident over much of Idaho. Black terns require aquatic habitats with extensive stands of emergent vegetation and large areas of open water (DeGraaf et al. 1991). Black terns usually nest on islands or over water two or more feet in depth on top of cattails, reeds, and other vegetation (Burleigh 1972). In migration, black terns can occur along marshes, rivers, lakes, and nearby cultivated fields (DeGraaf et al. 1991). Although it is possible that grizzly bears could disturb black tern nesting sites and consume eggs or juvenile birds, such impacts would tend to be localized and are not likely to affect survival of this wide-ranging species.

Columbia sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) - No effect. After closer review of the final recovery area delineation, it is determined that current known range of Columbia sharp-tailed grouse is outside of the experimental area (Ulliman et al. 1996).

Interior redband trout (*Oncorhynchus mykiss gairdneri*) and **Westslope cutthroat trout** (*Oncorhynchus clarki lewisii*) - Not likely to adversely effect. Grizzly bears have been documented to feed on resident spawning salmonids, but this source of food represents only a minor portion of the grizzly bears main diet if other food sources are available (Mattson et al. 1991; Craighead et al. 1995). Interior redband trout and westslope cutthroat trout both occur within the Bitterroot Ecosystem (Behnke 1992). Grizzly bears could feed on these fish during spawning runs. However, it is unlikely that grizzly bears would adversely affect local or regional populations of interior redband trout or westslope cutthroat trout as a whole.

Broad-fruit mariposa (*Calochortus nitidus*) - Not likely to adversely affect. Although grizzly bears may consume the bulbs of the broad-fruit mariposa, overall effect of consumption on the population by grizzly bears would likely be negligible. This species likely evolved with grizzly bear consumption and is more widespread than originally thought (Edna Vizgirdas, U. S. Fish and Wildlife Service, pers. comm. 1996). In addition, the Cottonwood Resource Area for the Bureau of Land Management has black bears within the proposed experimental population area where broad-fruit mariposa occurs, and there is no evidence that the species is declining due to black bear activity.

Other plant species of concern (see Species List in Project File) - No effect. Although grizzly bears are strongly herbaceous, incidental consumption of any of the remaining plant species of concern is unlikely to affect overall population levels. None of these plants has been documented to be overgrazed by grizzly or black bears to date (Jeri Wood, U. S. Fish and Wildlife Service, pers. comm. 1996). All of the plant species of concern have coexisted with bear species in the past with no apparent effect on plant populations.

Invertebrate species of concern (see Species List in Project File) - No effect. Available documentation indicates that grizzly bears may consume large quantities of ants and moths when available (Mattson et al. 1991; Craighead et al. 1995), however there is no evidence that grizzly bears consume molluscs or grasshoppers. None of the invertebrate species of concern has been documented to be overgrazed by bear species to date (Jeri Williams, U. S. Fish and Wildlife Service, pers. comm. 1996). Invertebrate species of concern and grizzly bears have likely coexisted in the past without adverse effects on invertebrate population levels.

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File: 1264 - Bitterroot Recovery Zone

March 29, 1999

Christopher Servheen, Grizzly Bear Recovery Coordinator
U.S. Fish and Wildlife Service
University Hall, Room 309
University of Montana
Missoula, Montana 59812

Dear Mr. Servheen:

This is in response to your February 11 letter requesting that the Fish and Wildlife Service (Service) review the biological assessment pertaining to Federally listed endangered and threatened species for the proposed grizzly bear reintroduction into the Bitterroot Ecosystem of Idaho and Montana. The Montana Field Office received your request on February 16.

The Service has reviewed the biological assessment and concurs with the determinations that the proposed action will benefit the threatened grizzly bear (*Ursus arctos horribilis*), is not likely to adversely affect non-essential experimental or endangered gray wolves (*Canis lupus*), threatened bull trout (*Salvelinus confluentus*), or proposed lynx (*Lynx canadensis*), and will have no effect on the threatened bald eagle (*Haliaeetus leucocephalus*), Macfarlane's four-o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*), Ute's ladies tresses (*Spiranthes diluvialis*), or the endangered peregrine falcon (*Falco peregrinus anatum*), or proposed northern Idaho ground squirrel (*Spermophilus brunneus brunneus*) . Therefore, pursuant to section 402.13(a) of the 50 CFR, formal consultation is not required.

If, after public review and comment, the final project design is changed so as to have effects on threatened or endangered species other that those described in your biological assessment, a revised biological evaluation will be necessary. The Service will then issue a letter of concurrence or nonconcurrence for the revised biological evaluation.

If you have questions regarding this letter, please contact Anne Vandehey of my staff at the addresses or phone provided above. Your cooperation and assistance in meeting our joint responsibilities under the Endangered Species Act are appreciated.

Sincerely,

Kemper M. McMaster
Field Supervisor

APPENDIX 9B. ESA SECTION 7 EVALUATION OF IMPACTS TO ANADROMOUS FISH FROM THE RECOVERY OF GRIZZLY BEARS IN THE BITTERROOT ECOSYSTEM OF CENTRAL IDAHO AND WESTERN MONTANA

Endangered Species Act - Section 7 Consultation

BIOLOGICAL OPINION

Grizzly Bear Recovery in the Bitterroot Ecosystem

Agency: U.S. Fish and Wildlife Service, Region 6

Consultation Conducted By: National Marine Fisheries Service, Northwest Region

Date Issued: May 12, 1998

TABLE OF CONTENTS

I. Background 6-92

II. Proposed Action 6-92

III. Biological Information and Critical Habitat 6-93
A. Snake River Steelhead 6-93
B. Snake River Salmon and Critical Habitat 6-94

IV. Evaluating Proposed Actions 6-96
A. Biological Requirements 6-96
B. Environmental Baseline 6-97

V. Analysis of Effects 6-98
A. Effects of Proposed Action 6-98
B. Cumulative Effects 6-105

VI. Conclusion 6-105

VIII. Conservation Recommendations 6-106

IX. Reinitiation of Consultation 6-106

X. References 6-107

XI. Incidental Take Statement 6-108
A. Amount or Extent of the Take 6-109
B. Reasonable and Prudent Measures 6-109
C. Terms and Conditions 6-109

I. Background

The U.S. Fish and Wildlife Service (USFWS) contacted National Marine Fisheries Service (NMFS) for initial review of the draft proposed action in November 1996. The USFWS anticipated needing Endangered Species Act (ESA) consultation with NMFS on the proposed grizzly bear reintroduction program, because reintroduced grizzly bears may eat ESA listed Snake River salmon. The agencies met January 27, 1997, and April 17, 1997, to discuss the potential effects of the proposed action and to determine what information would be needed in a biological assessment (BA). The BA was submitted for consultation July 21, 1997. The USFWS provided supplemental information for the BA on September 18, 1997. The NMFS was delayed in consulting on the proposed action due to the listing of steelhead (August 18, 1997, effective October 17, 1997) which necessitated a large scale programmatic consultation on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) land management plans. The NMFS and USFWS resumed discussions of the proposed action with a March 25, 1998, teleconference. This was followed by numerous communications (between Johnna Roy, USFWS, and Ken Troyer, NMFS) including an April 14, 1998, meeting in Orofino, Idaho. On May 1, 1998, NMFS provided a draft copy of this biological opinion (Opinion) to USFWS for comments. Comments were received from USFWS on May 7, 1997.

The objective of this Opinion is to determine whether the grizzly bear recovery program is likely to jeopardize the continued existence of ESA listed steelhead and salmon species or result in the destruction or adverse modification of their designated critical habitat.

II. Proposed Action

The USFWS proposes to release four to six grizzly bears[6] per year over five years in the Selway-Bitterroot Wilderness. Additional bears may be reintroduced if needed to replace bears lost to human-induced mortality. The Selway-Bitterroot Wilderness is part of a broad historic range of grizzly bears in Idaho, and was identified as a potential recovery area for the species in USFWS' grizzly bear recovery plan (USFWS 1993). The bears will likely be released within an 8-mile radius of the confluence of Moose Creek and the Selway River. In the short term, the USFWS expects the bears to occupy the Selway-Bitterroot Wilderness. A large proportion of the streams in this area provide habitat for ESA listed steelhead, whereas a small proportion (those accessible streams that flow into the Salmon River) provide habitat for listed salmon. If the bear recovery plan is successful, the population might eventually expand into other areas, including the Salmon River basin, which contains designated critical habitat for Snake River sockeye, spring/summer chinook, and fall chinook salmon, as well as habitat for Snake River steelhead.

The USFWS proposes to radio-collar each released bear and determine locations of the bears approximately each week, depending on weather conditions for aerial tracking. Progeny of the released bears would not necessarily be radio-collared. The USFWS would locate non-collared progeny through a combination of means including monitoring radio-collared adults with their progeny, aerial and ground-based reconnaissance surveys, and through information provided by other agencies and the public.

[6]The words "bears" and "bear" throughout this Opinion are used to mean grizzly bears; black bears will be referred to by full common name.

The USFWS proposes to avoid conflicts (such as with some human activities, and with the survival and recovery of listed fish species) by keeping bears away from certain areas using hazing methods and, if necessary, relocation. Hazing methods may include the use of noise and other devices. Electric fencing may also be used to exclude bears from certain areas, as this method has proven effective in some cases (Chuck Schwartz, Alaska Department of Fish and Game (ADFG), July 21, 1997, electronic mail to Wayne Kasworm, USFWS).

III. Biological Information and Critical Habitat

The NMFS has listed four anadromous fishes in the Snake River basin under the ESA. These include: Snake River steelhead, sockeye salmon, spring/summer chinook salmon, and fall chinook salmon. These species occur in watersheds where grizzly bears were found historically and where they may become re-established because of the proposed action. The action also may affect designated critical habitat for Snake River spring/summer and fall chinook salmon, and Snake River sockeye salmon (December 28, 1993, 58 FR 68543).

An action area is defined (50 CFR § 402.02) as: "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The reintroduced grizzly bears may harass and kill listed anadromous fish, and thus will tend to have direct, rather than indirect effects on the survival of listed fish in the action area. In the short term, the action area containing both grizzly bears and listed anadromous fish will likely include several watersheds of the upper Clearwater River subbasin and a few watersheds on the north side of the middle Salmon River subbasin. In the long term, the action area may include other parts of the Snake River basin accessible to anadromous fish.

A. Snake River Steelhead

The NMFS' status review of west coast steelhead (Busby et al. 1996), summarizes biological information on several Evolutionarily Significant Units (ESUs) of steelhead, including Snake River steelhead. Snake River steelhead are listed as threatened under ESA (August 18, 1997, 62 FR 43974). Critical habitat for this species has not yet been proposed. Snake River steelhead are an anadromous form of redband trout (*Oncorhynchus mykiss*) (Behnke 1992). Part of their life history is spent in the ocean, and spawning occurs in freshwater streams. Snake River steelhead are primarily summer-run fish which enter freshwater nine or ten months prior to spawning. They are described as either "A" or "B" run fish, depending on when they pass over Bonneville Dam on the mainstem Columbia River.

Snake River steelhead spawn from March to July, and enter streams several months before spawning. Juvenile steelhead have a variety of migration patterns that vary with local conditions; control mechanisms range from mostly genetic to mostly environmental (Behnke 1992). In some populations, steelhead may remain in natal streams before migrating to the ocean, but in others they migrate upstream or downstream soon after emergence to enter other rearing areas. In some watersheds, perhaps depending upon water temperatures and subsequent growth rates, parr remain in freshwater for up to seven years (Mullen et al. 1992).

Wild and naturally-reproducing stocks of steelhead have declined dramatically in the interior Columbia River Basin (Lee et al. 1997). Their decline is due to a variety of factors, but construction of dams along the Snake

and Columbia Rivers is a primary cause (Meehan and Bjornn 1991). Loss and degradation of spawning and rearing habitats as well as the introduction of non-native fishes have also contributed to declines. Smolt-to-adult survival has declined from more than 4% in 1968 to approximately 1.5% during the early 1970s and to less than 1% in recent years (Raymond 1979; and Lee et al. 1997). The current known distribution of steelhead in the interior Columbia River basin includes approximately 41% of their historical range and they are classified as "strong" within only 1.3% of the remaining range (Lee et al. 1997).

As noted in section III. above, the distribution of Snake River steelhead overlaps that of ESA listed Snake River spring/summer and fall chinook salmon, and Snake River sockeye salmon. The area unique to steelhead is the Clearwater River subbasin upriver from Lolo Creek.

Only three subbasins within the range of the Snake River basin ESU have wild steelhead that are unaffected by hatchery production (Idaho Department of Fish and Game (IDFG) 1996). These sub-basins are the Selway River (HUCs 17060301 and 17060302), a Clearwater River tributary; the South Fork Salmon River (HUC 17060208), and the Middle Fork Salmon River (HUC 17060205 and those portions with the Middle Fork watershed of 17060206), both tributaries to the Salmon River. These subbasins are of a large enough size (about 750,000 acres or larger) to sustain genetically diverse subpopulations of wild steelhead. Thurow (1985 and 1987) documented genetic divergence among subpopulations in various tributaries to the Middle Fork Salmon River and South Fork Salmon River. Lee et al. (1997) identified smaller watersheds with strongholds of steelhead that would form the nucleus of a more widespread distribution of steelhead with little or no influence of non-indigenous stocks.

Low run sizes over the last 10 years are most pronounced for naturally-produced steelhead, and average parr densities recently have dropped for both A and B run steelhead. Declines in abundance have been particularly serious for B-run steelhead, increasing the risk that some of the life history diversity may be lost. Recently obtained information indicates low smolt survival and poor ocean production for Snake River steelhead in 1992-1994.

Although steelhead populations have declined greatly and are at risk of further declines from a variety of factors, their life history makes them less vulnerable than salmon species to predation by grizzly bears. The spring timing of steelhead spawning overlaps partly with the period of hibernation for grizzly bears, and also typically coincides with high flows and increased instream turbidity, reducing the likelihood that grizzly bears would capture spawning steelhead. Although steelhead spawning sites can overlap with those used by salmon, steelhead are often more widely dispersed and select steeper, more turbulent sites.

B. Snake River Salmon and Critical Habitat

Three Snake River salmon populations listed as threatened or endangered under the ESA occur in the recovery area which may be re-inhabited by grizzly bears over the long term. Snake River sockeye salmon (*Oncorhynchus nerka*) are listed as endangered (November 20, 1991, 56 FR 58619). Snake River spring/summer chinook salmon (*O. tshawytscha*) and Snake River fall chinook salmon (*O. tshawytscha*) are listed as threatened species (April 22, 1992 57 FR 14653). The NMFS designated critical habitat for Snake River sockeye salmon, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon on December 28, 1993 (58 FR 68543), effective on January 27, 1994.

A brief description of the life history and status of each salmon species is provided below. For more detailed information on the Snake River salmon species, refer to Attachment 1 of this Opinion, Waples et al. (1991), Matthews and Waples (1991), NMFS (1991), and *U.S. v Oregon* Technical Advisory Committee (1998).

Snake River sockeye salmon use the mainstem Snake River and mainstem Salmon River as a migration corridor to and from Redfish Lake, Idaho. Redfish Lake supports the only remaining run of sockeye salmon in the Snake River basin. Arrival of adult fish at Redfish Lake peaks in August, and spawning occurs primarily in October (Bjornn et al. 1968). Eggs hatch in the spring between 80 and 140 days after spawning. Fry remain in the gravel for three to five weeks, emerge in April through May and move immediately into the lake; there, juveniles feed on plankton for one to three years before they migrate to the Pacific Ocean (Bell 1986). Migrants leave Redfish Lake from late April through May (Bjornn et al. 1968), and smolts migrate almost 900 miles to the ocean.

Very few adult sockeye salmon have returned to Redfish Lake in recent years, with counts of 0-10 fish each year since 1988. A program to enhance the Snake River sockeye salmon using captive broodstock has been underway since the early 1990s. Adult sockeye salmon produced under this program are expected to begin returning to Redfish Lake in 2000 at a rate of several hundred fish per year (Tom Flagg, NMFS Northwest Fisheries Science Center, July 7, 1997, personal communication). Adult sockeye salmon would be vulnerable to capture by grizzly bears in Redfish Lake Creek and other shallow streams in the area. This area is, however, approximately 150 miles south of where the bears will be reintroduced, and USFWS does not anticipate that grizzly bears would occupy this area during the next 50 years (the prediction of bear distribution is described in more detail in section V, below).

The present range of spawning and rearing habitat for naturally-spawned Snake River spring/summer chinook salmon is primarily limited to Asotin Creek and the Salmon, Grande Ronde, Imnaha, and Tucannon River subbasins. Most Snake River spring/summer chinook salmon enter individual subbasins from May through September. Juvenile Snake River spring/summer chinook salmon emerge from spawning gravels from February through June (Perry and Bjornn 1991). Typically, after rearing in their nursery streams for about one year, smolts begin migrating seaward in April and May (Bugert et al. 1990; and Cannamela 1992). After reaching the mouth of the Columbia River, spring/summer chinook salmon probably inhabit nearshore areas before beginning their northeast Pacific Ocean migration, which lasts two to three years.

Snake River spring/summer chinook salmon populations have continued to decline since the ESA listing of the species. Escapement counts of natural spring/summer chinook salmon at Lower Granite Dam averaged approximately 8000 fish in the 5-year period ending in 1992, and approximately 4800 fish in the subsequent 5 years. Returns of 1000 or fewer fish are predicted for 1999 and 2000, whereas escapement levels averaging approximately 30,000 fish would be needed to recover the species.

Adult Snake River fall chinook salmon enter the Columbia River in July and migrate into the Snake River from August through October. Fall chinook salmon spawning is primarily limited to the Snake River below Hells Canyon Dam and the lower reaches of the Clearwater, Grand Ronde, Imnaha, Salmon, and Tucannon Rivers. Fall chinook salmon generally spawn from October through November and fry emerge from March through April. Downstream migration generally begins within several weeks of emergence (Becker 1970; and Allen and Meekin 1973), and juveniles rear in backwaters and shallow water areas through mid-summer prior to smolting and migration to the ocean.
Fall chinook salmon populations have remained at very low levels for many years, with estimates of natural-

origin fish at Lower Granite Dam ranging from 78 to 797 fish per year over the last 20 years. Because fall chinook salmon spawn in mainstem reaches of large rivers, where the water is relatively deep and fast, they would not likely be susceptible to predation by grizzly bears. Effects on fall chinook salmon therefore will not be further considered in this Opinion.

Of the listed species considered in this Opinion, Snake River spring/summer chinook salmon are the most vulnerable to predation by grizzly bears. These salmon are vulnerable to capture because they spawn during August and September (typically low water periods) in primarily shallow, low gradient stream reaches. When populations are healthy, spawning fish are often found concentrated in relatively short stream reaches. The nearest listed spring/summer chinook salmon are approximately 25 miles south of the area where bears would be reintroduced, and USFWS does not expect the bears to occupy this area during the next 20 years (the prediction of bear distribution is described in more detail in section V, below).

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 C.F.R., Part 402 (the consultation regulations). NMFS discusses the analysis necessary for application of these standards in the particular contexts of the listed species of Pacific salmon in Attachment 2. This analysis involves the following steps: (1) Define the biological requirements of the listed species; (2) evaluate the relevance of the environmental baseline to the species' current status; (3) determine the effects of the proposed or continuing action on listed species; (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and (5) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the listed species.

A. Biological Requirements

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stocks, enhance their capacity to adapt to variable environmental conditions, and allow them to become self-sustaining in the natural environment.

When considering the status of the listed species in all its life stages, biological requirements are expressed in terms of cohort replacement ratios and numerical escapement goals. Refer to Attachment 2 of this Opinion for a discussion of these requirements for Snake River salmon. A similar document for Snake River steelhead is not yet available; however, the general guidance and information for chinook salmon concerning critical habitat, life cycle and historical population trends, biological requirements, species status under the environmental baseline, and the effects on the environmental baseline, are expected to be similar for steelhead. It is not possible, based upon currently available scientific data and analysis, to prescribe life-stage specific numerical survival rates necessary to achieve the combined life-stage requirements described above. However, NMFS' Proposed Recovery Plan for Snake River Salmon (NMFS 1995) notes that survival must improve in all life stages, given current critically low population levels.

For actions that influence spawning and rearing habitat quantity and quality, biological requirements include increasing spawning success and survival of early life history stages (egg-to-smolt stages), as well as protecting or improving those habitat characteristics that function to support successful spawning and survival of early life history stages. The relevant habitat characteristics are well-known and are documented in the scientific literature (e.g., Raleigh et al. 1986; and Bjornn and Reiser 1991). For example, fine sediment levels should not be so high that incubation and overwintering survival are affected significantly.

The precise number of adults needed to maintain adequate subpopulation levels is also not known with absolute certainty, but best available evidence suggests that subpopulation production should range between 200-250 and 1,100-1,375 based on escapement levels from 1962-1967, which are considered relatively healthy (NMFS 1995). The Biological Requirements Working Group (BRWG 1994) suggested that the figure of 50% of the 1962-1967 index area redd counts for subpopulations be used as a target. A similar target may be reasonable for steelhead; however, recovery estimates have not yet been developed.

B. Environmental Baseline

The current rangewide status of the listed species under the environmental baseline is described in Attachment 1. The biological requirements of the listed species are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the current conditions of the critical habitat. Any further degradation of these conditions would have a significant impact due to the amount of risk the listed salmon presently face under the environmental baseline.

Declines in salmon production in the action area have resulted from a variety of activities including hydropower, harvest, artificial propagation, and land management activities. Land management activities that contributed to degraded habitat and egg-to-smolt mortality included water withdrawals, unscreened water diversions, small hydropower development, road construction, timber harvest, mining, livestock grazing, outdoor recreation, and associated activities. In general, land management actions that disturb ground and remove vegetation have: (1) Reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) significantly elevated watershed sediment yields, leading to pool filling and elimination of spawning and rearing habitat; (3) reduced or eliminated instream replenishment of large woody debris that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced or eliminated vegetative canopy that minimizes temperature fluctuations; (5) caused streams to become straighter, wider, and shallower, which has the tendency to reduce spawning and rearing habitat and increase temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; (7) altered water tables and base flows, resulting in riparian wetland and stream dewatering; and (8) contributed to degraded water quality by adding toxicants through mining and pest control (Eastside Forests Scientific Society Panel 1994; McIntosh et al. 1994; Rhodes et al. 1994; Wissmar et al. 1994; and Quigley and Arbelbide 1997).

Since the listing of the Snake River salmon species, broad-scale efforts have been initiated to improve the environmental baseline conditions which contributed to the decline of those species. For example, the adoption of an interim salmonid conservation strategy (PACFISH) by the U.S. Forest Service and Bureau of Land Management has helped reduce impacts of Federal land management activities and reduced hindrances to natural recovery processes. PACFISH and related guidance have resulted in widely applied protections of riparian areas, decreased rates of construction of new roads, and increased rates of road

obliteration on Federal lands in the Snake River basin. Also, Bonneville Power Administration (BPA) and the Army Corps of Engineers have developed or are developing interim measures to improve survival of listed salmon and steelhead through the migration corridor, specifically hydropower facilities and impoundments. These efforts do correlate with significant increases in survival in several cases; however, data are not yet available to fully evaluate the effectiveness of these interim measures. Longer- term strategies for conservation and recovery of listed species (e.g. HCPs with non-Federal entities, Interior Columbia River Basin Ecosystem Management Project (ICBEMP), Federal Columbia River Power System Power System 1999 Decision, etc.) are being developed for implementation within the next few years.

The environmental baseline includes some level of predation on adult salmon and steelhead in the Snake River basin by black bears, otters, eagles, and other animals. Information was not available to quantify this existing level of predation; however, because of the presently low numbers of anadromous fish, salmon and steelhead are likely uncommon in the diets of these species and are not target food items on which the species depend. These inland predators are not noted among the factors for the decline of the anadromous fish species (NMFS 1991b; NMFS 1996).

V. Analysis of Effects

A. Effects of Proposed Action

The effects of the grizzly bear recovery project on listed anadromous fishes are likely to be different in the short term versus the long term. The BA noted that there is very little risk to listed anadromous fish species in the short term, due to the location of bear release sites, slow expansion expected of the bear population, lack of fishing experience among the bears to be released, low numbers of the listed fish species, and timing and location of spawning which minimizes availability of certain species (steelhead and fall chinook salmon) to bears. Those factors are described in more detail below. The "likely to adversely affect" determination in the BA was based on assumptions that, in the longer term, bear populations would expand into areas with listed salmon, that salmon population sizes would have increased, and some individual salmon would eventually be killed or harassed by the bears. The NMFS discusses short- and long-term effects of the action below.

Short Term

The USFWS estimated that the grizzly bears would not occupy areas with listed salmon within 20 years following the bear reintroduction (Wayne Kasworm, USFWS, May 7, 1998, personal communication). The USFWS estimated bear population growth assuming a 4% growth rate, which USFWS considered optimistic, and predicted that over 20 years the population may grow from 25 to approximately 60 bears (Draft Environmental Impact Statement, p. II-11). The USFWS further predicted that if bear densities were sparse (one bear per 22 square miles), within 20 years the population may occupy a 20-mile radius area around the release sites (USFWS Biological Assessment, page 35). The nearest area with listed salmon is the upper reaches of Bargamin Creek, approximately 25 miles away from the proposed release sites. If the geographic expansion of the bear population is in less of a circular pattern and more linear, bears may be farther from the release sites in that timeframe. Also, according to the BA, male bears tend to wander more than the females, and it is possible one or more of these males could wander outside of the area the USFWS expects the bears to occupy during the first 20 years. The NMFS considers the 20-year period in this analysis of the

action's short-term effects, and assumes (given the possibilities of a more linear geographical expansion and straying of some bears) that bears could establish ranges within a 30-mile radius of the release sites in the 20-year period.

The USFWS compiled information on both the possible locations of salmon concentrations, and factors influencing bear fishing success, to allow NMFS to better understand where listed salmon may be most vulnerable to predation by bears in the short and long terms. The USFWS submitted a list of maps of recent and historic concentrations of Snake River spring/summer chinook salmon. These areas include spawning areas and partial barriers to migration where salmon may congregate, such as at waterfalls and other steep gradient stream reaches, diversion dams, and weirs operated for fisheries research or propagation. The USFWS also provided information (from bear biologists experienced with bear fishing behavior) on the physical dimensions of streams associated with successful fishing by bears.

Wildlife biologists with USFWS and ADFG noted that bears fish successfully at waterfalls and in shallow, low gradient stream reaches where salmon are concentrated (electronic mails to Wayne Kasworm, USFWS, from: Chuck Schwartz, ADFG, July 22, 1997; Sterling Miller, ADFG, July 21, 1997; and Vic Barnes, USFWS, July 22, 1997; and Dick Sellers, ADFG, May 2, 1997, personal communication with Ken Troyer, NMFS). These biologists noted that bears were either substantially less successful or did not fish where stream dimensions allowed escape routes for fish due to depths (pool depths of 3 feet or greater), high flows, undercut banks, or other structures. Anecdotal information from the Clearwater River basin in the early 1900s indicates that grizzly bears caught salmon at a few cascade areas where fish were numerous (Herb Pollard[7], NMFS, April 22, 1997, personal communication relating information from the bear hunting journals of William Wright). Wildlife biologists with ADFG indicated that black bear fishing behavior in Idaho will give some indication of where grizzly bears may fish. Little information was available to NMFS on black bear fishing; however, black bears were observed fishing successfully in Big Creek (Middle Fork Salmon River tributary) and in the Poverty Flats section of the South Fork Salmon River in the 1970s (Dave Burns, USFS, April 28, 1998, personal communication). In fish surveys of Bear Valley Creek in the 1960s, nearby black bears were observed feeding on a small percentage of available salmon carcasses, as the bears apparently were utilizing mainly other foods (Herb Pollard, NMFS, April 22, 1998, personal communication).

Based on this information on bear feeding behavior and areas of salmon concentrations in the Salmon River basin, NMFS asked fishery biologists familiar with these sites to assess where salmon may be most vulnerable to predation. The fisheries biologists provided a list of sites included in Tables 1 and 2 below. Table 1 includes areas within 30 miles of the release sites; that is, where salmon and steelhead[8] could be vulnerable to capture by bears in the short term. Table 2 includes areas outside the 30-mile radius, where salmon and steelhead may be vulnerable over the long term (see discussion of Long Term, below).

Table 1. Areas within 30 miles of the grizzly bear release sites where listed salmon or steelhead may be

[7]Herb Pollard, currently with NMFS, is the former director of the IDFG Lewiston, Idaho Office and in that position was involved in the interagency coordination on the proposed action.

[8]Because of the timing of their spawning in the spring, steelhead would be less available to bears; however, fisheries biologists noted that at certain partial barriers, steelhead may be vulnerable to capture by bears.

vulnerable to predation by bears (information from fishery biologists with USFS, IDFG, and Tribes).

Subbasin/Watershed	Location	Comments
Selway River/ Moose Creek	diversion dam in North Fork	Steelhead move through in April, may be concentrated here
Lochsa River/Fish Creek	weir	Steelhead concentrated here (approx 25 miles from bear release area); human presence may deter bears
Lochsa River/Squaw Creek	culvert in West Fork partial barrier	Steelhead move through in April; not clear if densities would be sufficient to attract bears
Lochsa River/Papoose Creek	cascade in West Fork 1/4 mile above mouth	Steelhead move through in April; not clear if densities would be sufficient to attract bears
Lochsa River/Boulder Creek	weir	Steelhead move through in April; not clear if densities would be sufficient to attract bears
Salmon River/ Bargamin Creek	upper meadows	Salmon spawning area, potential densities of fish not known; physical dimensions of stream (small, shallow) could enable fish capture

Information on locations of bears will enable USFWS to determine if bears may be taking listed salmon, and thus allow USFWS to implement measures to minimize the take. The USFWS will likely have information on the locations of individual bears during the first several years of the project, because released bears will be radio-collared and any non-collared progeny will likely accompany the collared adults for approximately three years. According to USFWS, non-collared female progeny are expected to eventually establish their own territories adjacent to, or not far from their mother's territory. Male bears would also tend to stay in these areas; however, in a small percentage of the cases males may wander away from the rest of the population. If non-collared bears have not been located, the USFWS will attempt to locate the bears with aerial and ground-based reconnaissance. Information on bear locations will also likely be available from public users of the wilderness, and from personnel with other agencies working in the area.

The risk to listed salmon in the short term appears to be very low. According to the USFWS estimates of population growth, it is highly unlikely that grizzly bears would occupy sockeye salmon spawning areas (150 miles south of the bear release sites) in the next 20 years. Spring/summer chinook salmon in Bargamin Creek are within 25 miles of the bear release sites; however, as with other spring/summer chinook salmon populations in the basin, there have been few if any salmon found in Bargamin Creek in recent years. While the physical dimensions of Bargamin Creek may allow bears to catch some salmon, it appears unlikely that salmon would be available in sufficient concentrations to attract bears. Wildlife biologists with ADFG and USFWS have noted that bears eat primarily other foods in areas where salmon are either unavailable or available in low densities (electronic mails to Wayne Kasworm, USFWS, from: Chuck Schwartz, ADFG, July 22, 1997; Sterling Miller, ADFG, July 21, 1997; and Vic Barnes, USFWS, July 22, 1997; and Dick Sellers, ADFG, May 2, 1997, personal communication with Ken Troyer, NMFS). In the short term, bears will depend on foods other than fish (e.g., vegetation, insects, rodents, and wild ungulates), but may encounter salmon in the course of foraging for other foods.

It is not clear that bears would fish successfully during the short term, even if they have an opportunity to catch salmon. The USFWS noted that fishing behavior appears to be learned through maternal training and

that the released bears would not have that training. It is not known how quickly bears may learn to catch fish. Bears without maternal training in fishing have been observed to take many years to begin fishing, even with concentrations of fish nearby (Wayne Kasworm, USFWS, April 17, 1997, personal communication). The bears' persistence at trying to catch fish might be increased if they have eaten carcasses nearby; however, availability of carcasses alone would not necessarily initiate fishing (Herb Pollard, NMFS, April 22, 1998, personal communication).

Along with the factors of fishing experience and stream dimensions, salmon abundance will influence bears' success in catching salmon. As noted in section III, above, numbers of Snake River spring/summer chinook salmon are currently very low and have been for several years. Annual adult spring/summer chinook salmon returns averaged approximately 125,000 fish in the 1950s, and 59,000 fish in the 1960s. In spite of increased production from hatcheries beginning in 1966, the abundance of natural[9] fish continued to decline by about 50-70% per decade. Annual abundance estimates of spawners within the last few years have been approximately 1000-5000 fish, well below the average of approximately 30,000 fish which NMFS has identified as a recovery goal (see attachment 1 to this Opinion). Given the very low numbers of the species currently and considering the species' life cycle averages 5 years, the NMFS anticipates recovery will be slow and the recovery goal will not be met within the next 20 years. In this short term period, while numbers of spring/summer chinook salmon remain relatively low, reintroduced bears would not likely encounter concentrations of salmon which would trigger attempts at, and success with fishing.

In summary, it is not likely that bears will occur in areas with concentrations of listed salmon in the next 20 years, and even less likely that the bears will harm or kill listed salmon, given the low densities of salmon, the bears' focus on other foods, and the bears' lack of fishing experience. There is, however, a possibility that the proposed action could result in taking of salmon during this period. The USFWS will monitor movements of many bears, but will not know precise locations of all bears. The USFWS does propose to avoid conflicts (such as with some human activities, and with the survival and recovery of listed fish species) by fencing or hazing bears away from streams if bears are taking salmon and discussions with NMFS indicate management action is necessary. Relocation of bears could occur if other actions prove ineffective and relocation is logistically possible.

Listed steelhead are in the area where bears would be released, but the risk to steelhead is low primarily because of the timing of their spawning. Steelhead spawn in the spring, when bears are either still in, or just out of winter dens. Also, water levels are typically high and turbid at this time, reducing the bears' abilities to locate and capture steelhead. Further, steelhead will tend to move downstream into bigger rivers after spawning, so few carcasses would be available to attract bears. Still, fisheries biologists felt that at some sites (see Table 1) steelhead may be vulnerable to capture by bears. Capture of steelhead by reintroduced bears, while possible, does not appear to be probable in the short term, due to the timing of steelhead spawning, lack of fishing experience among the bears, and the tendency for bears just out of the dens to feed in upland areas away from streams (Wayne Kasworm, USFWS, April 17, 1997, personal communication).

[9]Natural fish are those produced in stream gravels; some of these fish have hatchery ancestors.

Long Term

In the long term (>20 years from the proposed reintroduction of grizzly bears), bears may become established in areas with listed salmon as well as steelhead. The NMFS' analysis of effects of the action must consider the longer term period because the introduction of bears itself will tend to foreclose some long term options, such as completely excluding bears from all areas where they may kill salmon.

It is difficult to estimate the degree of adverse effects reintroduced grizzly bears may have on listed anadromous fish in the long term. This will depend on future distributions and abundances of both bears and fish, as well as other factors. Table 2 contains a list of sites in the Salmon River basin where concentrations of listed fish may occur and dimensions of the sites could enable bears to catch fish. For reasons noted above, Snake River spring/summer chinook salmon are the listed fish most likely to be caught by bears. It is possible that grizzly bears could catch sockeye salmon in the Stanley Basin area. The sockeye salmon spawning grounds are also heavily used areas of tourism, however, so USFWS would likely haze bears away from this area anyway to avoid conflicts with humans.

Table 2. Areas more than 30 miles from the grizzly bear release sites (but within the grizzly bear recovery experimental area) where listed salmon or steelhead may be vulnerable to predation by bears (information from fishery biologists with USFS, IDFG, and Tribes).

Subbasin/Watershed	**Location**	**Comments**
Lochsa River/Crooked Fork	weir	Steelhead move through in April; human presence may deter bears from this area
Lochsa River/Crooked Fork	cataracts above mouth of Boulder Creek	Steelhead move through in April; not clear if densities would be sufficient to attract bears
Lochsa River/Colt-Killed Creek	cataracts in Storm Creek	Steelhead move through in April; not clear if densities would be sufficient to attract bears
South Fork Clearwater River/ Meadow Creek	lower 1/2 mile, steep area where steelhead jump	Steelhead move through in March and April; human activity nearby, and probably little overlap with bear presence (out of dens in April)
Clearwater River/Lolo Creek	weir	Steelhead move through in April, may be vulnerable to capture
Clearwater River/Lolo Creek	Eldorado Creek weir	Steelhead move through in April, may be vulnerable to capture
Little Salmon River/ Rapid River	hatchery weir	Chinook salmon and steelhead congregate below this and may be vulnerable to capture; however, human activity in the vicinity would tend to deter bears
South Fork Salmon River/Secesh River	In Lake Creek and below mouth of Lake Creek	Chinook salmon spawning, shallow, limited escape routes for fish, but redds may be scattered throughout
South Fork Salmon River	Poverty Flats, Reed Ranch area	Chinook salmon spawning; black bears caught salmon here in the 1970s

Subbasin/Watershed	Location	Comments
South Fork Salmon River	Reaches where Roaring, Nickel, and Dime Creeks enter	Chinook salmon spawning, shallow, limited escape routes for fish
South Fork Salmon River/Cabin Creek	approximately 2 miles upstream	Chinook salmon spawning, small creek, shallow, limited escape routes for fish
South Fork Salmon River	IDFG fish trap	Migrating chinook salmon and steelhead confined at this site could be caught by bears
South Fork Salmon River	Stolle Meadows	Chinook salmon spawning, shallow, limited escape routes for fish
South Fork Salmon River/East Fork	Johnson Creek: Deadhorse Rapids, Ice Hole area	Chinook salmon migration and spawning, partial barrier or shallow, fish vulnerable to capture
Salmon River/ Chamberlain Creek	West Fork	Chinook salmon spawning, shallow, limited escape routes for fish
Middle Fork Salmon River/ Big Creek	primarily Coxey Hole; Monumental Bar; Lick Creek confluence; Taylor Ranch area	Chinook salmon spawning; black bears caught salmon in at least some of these areas in the 1970s
Middle Fork Salmon River/ Big Creek	Monumental Creek: Mud Creek to Roosevelt Lake; Roosevelt Lake to Annie Creek	Chinook salmon spawning, shallow, limited escape routes for fish
Middle Fork Salmon River/ Camas Creek	West Fork; above and below West Fork confluence	Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
Middle Fork Salmon River/ Loon Creek	between Cold Springs and Mayfield Creeks	Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
Middle Fork Salmon River/ Marsh Creek	weir	Chinook salmon and steelhead may mill at weir and be vulnerable to capture
Middle Fork Salmon River/ Cape Horn Creek		Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
Middle Fork Salmon River/ Bear Valley Creek		Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
Middle Fork Salmon River/ Elk Creek		Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
Salmon River/Lemhi River	weir; section downstream from Leadore	Chinook salmon spawning, large concentrations of fish historically; current irrigation activities and concentration of human activity limit potential for fish and bears
East Fork Salmon River	weir; upper mainstem (below Bowery Creek)	Chinook salmon migration and spawning, limited escape routes for fish at weir and in some spawning areas

Subbasin/Watershed	Location	Comments
upper Salmon River	Indian Riffles; Torrey's Hole	Chinook spawning, shallow, limited escape routes for fish in some spawning areas
upper Salmon River/ Valley Creek		Chinook salmon spawning, shallow, limited escape routes for fish in some spawning areas
upper Salmon River/Redfish Lake Creek	weir; low gradient reaches below weir	Shallow, sockeye salmon need to traverse to reach spawning areas; black bears present in the area; sockeye salmon numbers extremely low in recent years; concentrated human activity in this area

As noted in Table 2, there are several areas in the Salmon River basin where bears may be able to catch spring/summer chinook salmon, and a few areas where they may be able to catch sockeye salmon or steelhead, if the fish are available in sufficient numbers. Information from fishery biologists who assisted NMFS in compiling table 2 included observations of black bears catching fish at two of these sites in the 1970s, when spawning fish were approximately 5-10 fold more numerous than they are now. Salmon are currently absent from, or present in very low numbers in most of the areas listed in table 2. There are a few weir sites where spring/summer chinook salmon, at current population levels, could be available in great enough densities to attract bears; however, human activity around these sites combined with bear inexperience in fishing reduce the probability of bear predation on salmon.

Assuming that salmon would be substantially more abundant but not de-listed under ESA (abundances approximating those in the 1970s) in the long term, fishing areas for grizzly bears may still be few, as evidenced by the few areas where black bears[10] were known to catch salmon in the 1970s. Further, the BA notes that grizzly bears may be relatively sparsely distributed south of the Salmon River, where the generally drier climate and associated vegetation provides less forage than in the Selway-Bitterroot Wilderness. The NMFS also considered that if grizzly bears do find a concentration of salmon and catch fish, they may displace black bears which would have fished the area, possibly merely maintaining a level of take which would occur without the proposed action.

As noted above, locations of bears would initially be determined with radio-collaring and other methods. Over the long term, as the bear population increases and expands its range, uncertainty about the location of individual bears will likely increase. Public concerns about locations of the bears will, however, tend to place continued emphasis on monitoring the bears through various means. Many sites where listed salmon are potentially vulnerable to capture by bears will also be monitored (typically for counting adult fish or redds), and thus it may be determined if a grizzly bear is using the area.

The USFWS has also stated that it will use hazing and relocations as necessary to minimize take of listed fish (Wayne Kasworm, USFWS, April 17, 1997, personal communication). Given the speculative nature of envisioning the likelihood of, and allowable levels of take so many years in the future, this commitment by USFWS (along with mitigating factors mentioned above which reduce the scope of potential take) decreases

[10]Black bear fishing areas provide an indication of where grizzly bears would fish (Sterling Miller, ADFG, July 21, 1997, electronic mail to Wayne Kasworm, USFWS); however, information was not available to NMFS to determine if grizzly bears would fish in other areas not used by black bears.

NMFS' concern about conflicts between the recovery of grizzly bears and anadromous fish over the long term.

B. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state and private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation."

Information on specific activities planned or foreseeable on non-Federal land was not provided in the BA. The NMFS assumes, conservatively, that management impacts from non-Federal activities which have adversely affected listed anadromous fish or degraded or hindered recovery of elements of their habitat will continue in the short-term. This assumption may be conservative in the long-term, as the listed species may benefit from habitat improvements on non-Federal land, such as those gained through the Idaho bull trout plan and Habitat Conservation Plans (HCP) developed with non-Federal entities to fulfill the requirements of ESA section 10.

VI. Conclusion

The NMFS has determined that, based on the available information, the grizzly bear recovery project is not likely to jeopardize the continued existence of Snake River steelhead, sockeye salmon, and spring/summer chinook salmon species or result in the destruction or adverse modification of critical habitat. This conclusion was based on the following factors which create a very low risk of adverse effects in the short term:

1) Even with liberal estimates of bear population expansion, reintroduced bears will not likely encounter, and even less likely learn to catch spring/summer chinook salmon in the short term;

2) Bears will occupy areas with listed steelhead; however, the timing and other characteristics of steelhead spawning combined with bear denning and early season feeding habits make the likelihood of predation on steelhead very low; and

3) Sockeye salmon are essentially unavailable to bears in the short term.

Further, NMFS conclusion of "not likely to jeopardize or adversely modify" was based on the following considerations over the longer term:

1) The potential scope of grizzly bear impacts on spring/summer chinook salmon populations over the longer term is limited by a combination of low abundance of listed salmon (below de-listing levels), low densities of grizzly bears which can be sustained by vegetation south of the Salmon River, inexperience of bears with fishing, limited sites where fishing would be successful, and USFWS' commitment to haze/relocate bears if necessary to reduce conflicts between their project and the recovery of listed salmon;

2) Grizzly bears could take at most a very small percentage of steelhead in the future, due to timing and other aspects of steelhead spawning, as well as early season feeding habits of bears which will minimize

contact with listed steelhead; and

3) Sockeye salmon may be vulnerable to predation, particularly in Redfish Lake Creek; however, USFWS will relocate or haze bears away from this area of concentrated human activity if conflicts[11] occur.

VIII. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS believes the following conservation recommendation is consistent with these obligations, and therefore should be implemented by the USFWS:

The USFWS should maintain and regularly update lists of bear locations and salmon concentrations within 10 miles of the bears, so that USFWS will be prepared to determine, and apprise NMFS of situations where take of listed anadromous fish could occur.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or their habitat, NMFS requests notification of the implementation of any conservation recommendations.

IX. Reinitiation of Consultation

Consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals that the action may affect listed species in a manner or to an extent not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

Consultation must also be reinitiated within 20 years after the USFWS begins implementing the proposed action. This will enable USFWS and NMFS to re-assess the effects of the action with up-to- date information on the populations of bears and their potential to affect anadromous fish. If, in the meantime, circumstances occur which limit USFWS' ability to meet the terms and conditions in this Opinion (section XI.c.), the USFWS must reinitiate consultation to identify where measures to minimize take should be focused.

X. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion.

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[11]There would be a high probability of conflicts with humans if grizzly bears were in this area.

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XI. Incidental Take Statement

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patters such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary; they must be implemented by the USFWS so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The USFWS has a continuing duty to regulate the activity covered in this incidental take statement. If the USFWS (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS finds that the proposed action has a very low risk of causing take of listed salmon or steelhead over approximately the next 20 years. The action has a greater likelihood of resulting in take of listed salmon beyond the 20-year period, if the action is successful in re-establishing grizzly bears throughout the experimental population area and if salmon become substantially more abundant than they are currently but are still listed under ESA. The potential for take in the long term will be addressed in the reinitiation of consultation which is required 20 years into the project (see section IX., above). In the interim, it is possible that the grizzly bears may take listed salmon if the bears range substantially beyond the area predicted, and prey on salmon in areas such as those identified in tables 1 and 2, above. The risk of take of listed steelhead is also low, but for different reasons. The reintroduced bears will immediately occupy watersheds containing listed steelhead; however, the timing and other circumstances of steelhead spawning tend to minimize their availability to bears.

The NMFS cannot quantify the take which may occur from the proposed action. The NMFS does, however, with this Opinion authorize a very low level of take which may occur from the proposed action. To ensure that take, if it does occur, is kept to a very low level, NMFS (with input from USFWS) developed the reasonable and prudent measures and terms and conditions described below.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of listed salmon and steelhead:

1. USFWS will monitor locations of radio-collared grizzly bears and, when possible, non-collared progeny of released bears.

2. Increase interagency coordination and intensify monitoring if bears move into areas where salmon are located.

3. Guided by interagency coordination per item 2, above, implement measures to minimize take of listed anadromous fish at sites of concern.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the USFWS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. USFWS will monitor locations of radio-collared grizzly bears and, when possible, non-collared progeny of released bears. This information would be used to validate that the growth and distribution of the grizzly bear population is within USFWS projections in the BA.

2. If monitoring indicates a grizzly bear has moved into an area where listed salmon occur and are vulnerable to capture (as indicated by the best available information[12]), then the bear would be monitored more frequently during the period salmon are expected to be vulnerable. During this period USFWS would notify NMFS of the bear's location, and NMFS and USFWS would coordinate[13] to obtain current information on timing and location of the vulnerable salmon run. Information sources would likely include redd surveys conducted by IDFG, Tribes, USFWS, BLM, and USFS, and monitoring of weirs and traps conducted by IDFG and Tribes.

3. If monitoring indicates a bear is taking listed anadromous fish, USFWS will contact NMFS as soon as possible and then implement measures the agencies deem necessary to ensure, to the best of USFWS' ability, that further taking is avoided. These measures may include electric fencing of these areas to limit grizzly bear access, hazing of bears with the aid of noise and other devices, or capture and relocation. Relocation would occur, where possible, for a bear not deterred by fencing or hazing. Relocated bears will be radio-collared and monitored to determine if they return to the site.

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[12]Best available information should include salmon distribution information USFWS submitted with the BA and NMFS summarized in this Opinion (Tables 1 and 2) updated with any new information on salmon distribution and actual or predicted fishing success of bears.

[13]As part of this coordination, the agencies should consider the immediate risk of take and the risk of not being able to minimize the take effectively. Factors to consider should include the bear's location and the vulnerability of the salmon at the site(s) of concern. If the bear's location is not closely monitored via a radio-collar, the agencies should discuss if it is necessary to collar the bear or if alternative locating or exclusion techniques should enable high likelihood of minimizing take at the site(s) of concern.