



Appendices



APPENDIX A: POTENTIALLY AFFECTED FEDERAL AND STATE-LISTED SPECIES

POTENTIALLY AFFECTED FEDERAL AND STATE-LISTED SPECIES

Threatened and Endangered Species

The NCE contains a variety of habitats suitable for special-status species. Fish or wildlife listed under the ESA that could be present or have designated critical habitat within the NCE are listed below in table A-1. All of these species are also on the list of species of concern for USFS Region 6 as either documented or suspected in the Okanogan-Wenatchee and/or Mt. Baker-Snoqualmie National Forests (USFS 2015a)

TABLE A-1. ESA-LISTED SPECIES PRESENT IN THE NORTH CASCADES ECOSYSTEM

Common Name	Scientific Name	Federal Status	State Status	Critical Habitat within NCE	Potentially Affected by Grizzly Restoration
Grizzly Bear	<i>Ursus arctos horribilis</i>	Threatened	Endangered	No	Yes
Canada Lynx	<i>Lynx Canadensis</i>	Threatened	Threatened	Yes	Yes
Gray Wolf	<i>Canis lupus</i>	Endangered Western 2/3 of Washington	Endangered	No	Yes
Northern Spotted Owl	<i>Stix occidentalis caurina</i>	Threatened	Endangered	Yes	Yes
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Threatened	Yes	Yes
Bull Trout	<i>Salvelinus confluentus</i>	Threatened	Candidate	Yes	Yes
Puget Sound Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened	Candidate	Yes	Yes
Upper Columbia River spring-run Chinook	<i>Oncorhynchus tshawytscha</i>	Endangered	Candidate	Yes	Yes
Middle Columbia River steelhead	<i>Oncorhynchus mykiss</i>	Threatened	Candidate	Yes	Yes
Puget Sound steelhead	<i>Oncorhynchus mykiss</i>	Threatened	N/A	Yes	Yes
Chum Salmon	<i>Oncorhynchus keta</i>	Threatened	Candidate	No	Yes

Sources: NPS 2015a; USFS 2015a; WDFW 2016a

State of Washington, Department of Fish and Wildlife Special-Status Species

In addition to the federally threatened and endangered species listed above, the NCE is home to several Washington State Species of Concern. Species of Concern in Washington include those species listed as state endangered, state threatened, state sensitive, or state candidate, as well as species listed or proposed for listing by the FWS or the National Marine Fisheries Service (WDFW 2016a). State special-status species found in the NCE are shown in table A-2.

TABLE A-2. WASHINGTON STATE SPECIES OF CONCERN IN THE NORTH CASCADES ECOSYSTEM

Common Name	Scientific Name	State Status	Likely to be Affected by Grizzly Restoration?
River lamprey	<i>Lampetra ayresii</i>	Candidate	No
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Candidate	Yes
Chum salmon	<i>Oncorhynchus keta</i>	Candidate	Yes
Pygmy whitefish	<i>Prosopium coulteri</i>	Sensitive	Yes
Steelhead	<i>Oncorhynchus mykiss</i>	Candidate	Yes
Sockeye salmon	<i>Oncorhynchus nerka</i>	Candidate	Yes
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Sensitive	No
Golden eagle	<i>Aquila chrysaetos</i>	Candidate	No
Northern goshawk	<i>Accipiter gentilis</i>	Candidate	No
Peregrine falcon	<i>Falco peregrinus</i>	Sensitive	No
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	Threatened	No
Common loon	<i>Gavia immer</i>	Sensitive	No
Flammulated owl	<i>Otus flammeolus</i>	Candidate	No
Vaux's swift	<i>Chaetura vauxi</i>	Candidate	No
Lewis' woodpecker	<i>Melanerpes lewis</i>	Candidate	No
White-headed woodpecker	<i>Picoides albolarvatus</i>	Candidate	No
Black-backed woodpecker	<i>Picoides arcticus</i>	Candidate	No
Pileated woodpecker	<i>Dryocopus pileatus</i>	Candidate	No
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Candidate	No
Keen's long-eared bat	<i>Myotis evotis keenii</i>	Candidate	No
Cascade red fox	<i>Vulpes cascadiensis</i>	Candidate	No
Fisher	<i>Martes pennantipennant</i>	Endangered	Yes
Western gray squirrel	<i>Sciurus griseus</i>	Threatened	Yes

Sources: WDFW 2014, 2016a

USFS Regional Forester Sensitive Species

In addition to the federally threatened and endangered species listed above, the NCE is home to several sensitive species within Region 6. Sensitive Species are defined as those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and habitat capability that would reduce a species' existing distribution. Regional Forester Sensitive species found in the NCE are shown in table A-3.

TABLE A-3. REGIONAL FORESTER SENSITIVE SPECIES OF IN THE NORTH CASCADES ECOSYSTEM (REGION 6)

Common Name	Scientific Name	Likely to be Affected by Grizzly Restoration?
Northern goshawk	<i>Accipiter gentilis</i>	No
Gray flycatcher	<i>Empidonax wrightii</i>	No
American peregrine falcon	<i>Falco peregrinus anatum</i>	No
Common loon	<i>Gavia immer</i>	No
Sandhill crane	<i>Grus canadensis</i>	No
Bald eagle	<i>Haliaeetus leucocephalus</i>	No
Harlequin duck	<i>Histrionicus histrionicus</i>	No
Lewis's woodpecker	<i>Melanerpes lewis</i>	No
White-headed woodpecker	<i>Picoides albolarvatus</i>	No
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	No
Gray wolf	<i>Canis lupus</i>	Yes
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	No
Wolverine	<i>Gulo gulo</i>	Yes
Little Brown myotis	<i>Myotis lucifugus</i>	No
Mountain goat	<i>Oreamnos americanus</i>	No
Rocky Mtn. bighorn sheep	<i>Ovis canadensis canadensis</i>	No
California bighorn sheep	<i>Ovis canadensis sierrae</i>	No
Pacific fisher	<i>Pekania pennanti</i> (Outside West Coast)	No
Western gray squirrel	<i>Sciurus griseus</i>	No
Cascade red fox	<i>Vulpes vulpes</i>	No
Larch mountain salamander	<i>Plethodon larselli</i>	No
Van dyke's salamander	<i>Plethodon vandykei</i>	No
Western pond turtle	<i>Actinemys marmorata</i>	No
Striped whipsnake	<i>Coluber taeniatus</i>	No
Giant palouse earthworm	<i>Driloleirus americanus</i>	No
Washington duskysnail	<i>Amnicola sp.</i>	No
Masked duskysnail	<i>Lyogyrus spb.</i>	No
Puget oregonian	<i>Cryptomastix devia</i>	No
Grand coulee mountainsnail	<i>Oreohelix junii</i>	No
Chelan mountainsnail	<i>Oreohelix sp. nov.</i>	No
Shiny tightcoil	<i>Pristiloma wascoense</i>	No
Broadwhorl tightcoil	<i>Pristiloma johnsoni</i>	No
Blue-gray tailedropper	<i>Prophysaon coeruleum</i>	No
Western bumblebee	<i>Bombus occidentalis</i>	No

APPENDICES

Common Name	Scientific Name	Likely to be Affected by Grizzly Restoration?
Astarte fritillary	<i>Boloria astarte</i>	No
Meadow fritillary	<i>Boloria bellona</i>	No
Freija fritillary	<i>Boloria freija</i>	No
Labrador sulphur	<i>Colias nastes</i>	No
Lustrous copper	<i>Lycaena cupreus</i>	No
Melissa arctic	<i>Oeneis melissa</i>	No
Mardon skipper	<i>Polites mardon</i>	No
Peck's skipper	<i>Polites peckius</i>	No
Tawny-edged skipper	<i>Polites themistocles</i>	No
Great basin fritillary	<i>Speyeria egleis</i>	No
Johnson's hairstreak	<i>Callophrys johnsoni</i>	No
Zigzag darner	<i>Aeshna sitchensis</i>	No
Subarctic darner	<i>Aeshna subarctica</i>	No
Subarctic bluet	<i>Coenagrion interrogatum</i>	No
Pacific lamprey	<i>Entosphenus tridentatus</i>	Yes
Lake Chub	<i>Couesius plumbeus</i>	Yes
Westslope Cutthroat trout	<i>Oncorhynchus clarkii lewisi</i>	Yes
Inland Columbia Basin redband trout	<i>Oncorhynchus mykiss gairdneri</i>	Yes
Pygmy whitefish	<i>Prosopium coulterii</i>	Yes

Yes = May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability.

APPENDIX B: ADDITIONAL ANALYSIS FOR USFS DECISION-MAKING SUPPORT

ADDITIONAL ANALYSIS FOR USFS DECISION-MAKING SUPPORT

NCE Grizzly Bear Restoration Plan/EIS Compliance with USFS Statutes, Policies, and Plans

Biological Evaluation

Forest Service Manual 2670.31 and 2670.32 require the use of the biological evaluation process to review any actions authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened, endangered, and sensitive species.

In addition to analysis in Chapter 4, the following analysis serves as both a NEPA assessment of impacts to federally listed species (federal endangered, threatened, or candidate) that could be impacted by grizzly bear management actions and a biological assessment under the ESA. Other special-status species (state endangered, threatened, candidate, or species of concern) and NFS listed species (Regional Forester Sensitive, Management Indicator, and Survey and Manage) are also discussed.

The restoration of grizzly bears to the NCE would have minimal effects to other species. Grizzly bears consume certain plant and animal species but they are native to the NCE and have coexisted with all these other native species. Their reintroduction would not involve any ground-disturbing activities, but would involve the use of helicopters to transport individual bears to release sites. The main effects to other species would be those associated with disturbance of helicopter use.

Federally Endangered and Threatened Species

Federally listed species in the North Cascades Ecosystem and effect determination for each alternative in the Grizzly Bear Restoration Plan/EIS.

Species	ESA Status	Alternative A	Alternative B	Alternative C	Alternative D
Gray Wolf	E	No Effect	MANLAA*	MANLAA	MANLAA
Grizzly Bear	T	No Effect	Beneficial Effect	Beneficial Effect	Beneficial Effect
Lynx	T	No Effect	MANLAA	MANLAA	MANLAA
Marbled Murrelet	T	No Effect	MANLAA	MANLAA	MANLAA
Northern Spotted Owl	T	No Effect	MANLAA	MANLAA	MANLAA
Bull trout	T	No Effect	MANLAA	MANLAA	MANLAA
Upper Columbia River Spring Chinook Salmon	E	No Effect	MANLAA	MANLAA	MANLAA
Puget Sound Chinook Salmon	T	No Effect	MANLAA	MANLAA	MANLAA
Puget sound Steelhead	T	No Effect	MANLAA	MANLAA	MANLAA
Middle Columbia River Steelhead	T	No Effect	MANLAA	MANLAA	MANLAA
Upper Columbia River Steelhead	T	No Effect	MANLAA	MANLAA	MANLAA

Species	ESA Status	Alternative A	Alternative B	Alternative C	Alternative D
Showy Stickseed	E	No Effect	No Effect	No Effect	No Effect
Water howellia	T	No Effect	No Effect	No Effect	No Effect
Wenatchee mtns checker-mallow	E	No Effect	No Effect	No Effect	No Effect
Ute ladies'-tresses	T	No Effect	No Effect	No Effect	No Effect

*MANLAA = may affect, not likely to adversely affect

Effects for certain species are elaborated on here using the language required for Forest Service analysis of threatened and endangered species.

Gray Wolf

Alternative A – No Effect

Alternatives B, C, and D - May Affect, Not Likely to Adversely Affect

The use of helicopters to transport grizzly bears from staging areas to release sites could disturb and/or displace gray wolves that might be in those areas. This effect would be temporary in nature and would be insignificant and discountable.

Grizzly Bear

Alternative A – No Effect

Alternatives B, C, and D – Beneficial Effect

The proposed project would lead to the recovery of the grizzly bear populations in the North Cascades Ecosystem and would contribute to the recovery of the species as a whole.

Canada Lynx

Alternative A – No Effect

Alternatives B, C, and D - May Affect, Not Likely to Adversely Affect

The use of helicopters to transport grizzly bears from staging areas to release sites could disturb and/or displace lynx that might be in those areas. Maternal den sites are used by female lynx with kittens from late May through late July. Helicopter disturbance of a den site could possibly result in abandonment of a den site and a higher risk of mortality for the kittens. Grizzly bear release sites would be in the center of meadows large enough for a helicopter to safely maneuver and land. Release sites would be selected to avoid those adjacent to special habitats such as lynx denning habitat. Thus it is unlikely that lynx would be disturbed by helicopter assisted grizzly bear releases. This effect would be temporary in nature and would be insignificant and discountable.

Marbled Murrelet

Alternative A – No Effect

Alternatives B, C, and D - May Affect, Not Likely to Adversely Affect

The use of helicopters to transport grizzly bears from staging areas to release sites could disturb and/or displace marbled murrelets that might be in those areas. Release sites would be selected to avoid those adjacent to special habitats such as marbled murrelet nesting habitat. Thus it is unlikely that marbled murrelets would be disturbed by helicopter assisted grizzly bear releases. This effect would be temporary in nature and would be insignificant and discountable.

Northern Spotted Owl

Alternative A – No Effect

Alternatives B, C, and D - May Affect, Not Likely to Adversely Affect

The use of helicopters to transport grizzly bears from staging areas to release sites could disturb and/or displace northern spotted owls that might be in those areas. Release sites would be selected to avoid those adjacent to special habitats such as northern spotted owl nesting habitat. Thus it is unlikely that northern spotted owls would be disturbed by helicopter assisted grizzly bear releases. This effect would be temporary in nature and would be insignificant and discountable.

Bull trout

Middle Columbia River Steelhead

Upper Columbia River Steelhead

Puget Sound Steelhead

Puget Sound Chinook Salmon

Upper Columbia River Spring Chinook Salmon

Alternative A – No Effect

Alternatives B, C, and D - May Affect, Not Likely to Adversely Affect

There would be a potential for grizzly bear predation on listed fish species, however the small number of bears in anticipated to be in the NCE makes this a low potential and the effect on fish species would be insignificant and discountable. See Chapter 4 in this Plan/EIS.

Showy Stickseed

Water howellia

Wenatchee mtns checker-mallow

Ute ladies'-tresses

Alternatives A, B, C, and D – No Effect

Grizzly bears do eat vegetation but primarily plants and plant parts that are high in nutritional value such as fruits, nuts, or bulbous roots. These species and grizzly bears coexisted in the past. The relatively rarity of these plant species and grizzly bears in the NCE make it unlikely that grizzly bears would encounter any of these plants.

Regional Forester Sensitive Species

Region 6 sensitive species in the North Cascades Ecosystem and impact determination for each alternative in this Grizzly Bear Restoration Plan/EIS.

Species	Alternative A	Alternative B	Alternative C	Alternative D
Northern goshawk	No Impact	No Impact	No Impact	No Impact
Gray flycatcher	No Impact	No Impact	No Impact	No Impact
American peregrine falcon	No Impact	No Impact	No Impact	No Impact
Common loon	No Impact	No Impact	No Impact	No Impact
Sandhill crane	No Impact	No Impact	No Impact	No Impact
Bald eagle	No Impact	No Impact	No Impact	No Impact
Harlequin duck	No Impact	No Impact	No Impact	No Impact
Lewis's woodpecker	No Impact	No Impact	No Impact	No Impact
White-headed woodpecker	No Impact	No Impact	No Impact	No Impact
Sharp-tailed grouse	No Impact	No Impact	No Impact	No Impact
Gray wolf	No Impact	MIIBNLPV*	MIIBNLPV	MIIBNLPV
Townsend's big-eared bat	No Impact	No Impact	No Impact	No Impact

APPENDICES

Species	Alternative A	Alternative B	Alternative C	Alternative D
Wolverine	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV
Little Brown myotis	No Impact	No Impact	No Impact	No Impact
Mountain goat	No Impact	No Impact	No Impact	No Impact
Rocky Mtn. bighorn sheep	No Impact	No Impact	No Impact	No Impact
California bighorn sheep	No Impact	No Impact	No Impact	No Impact
Pacific fisher	No Impact	No Impact	No Impact	No Impact
Western gray squirrel	No Impact	No Impact	No Impact	No Impact
Cascade red fox	No Impact	No Impact	No Impact	No Impact
Larch mountain salamander	No Impact	No Impact	No Impact	No Impact
Van dyke's salamander	No Impact	No Impact	No Impact	No Impact
Western pond turtle	No Impact	No Impact	No Impact	No Impact
Striped whipsnake	No Impact	No Impact	No Impact	No Impact
Giant palouse earthworm	No Impact	No Impact	No Impact	No Impact
Washington dusksnail*	No Impact	No Impact	No Impact	No Impact
Masked dusksnail*	No Impact	No Impact	No Impact	No Impact
Puget oregonian	No Impact	No Impact	No Impact	No Impact
Grand coulee mountainsnail	No Impact	No Impact	No Impact	No Impact
Chelan mountainsnail*	No Impact	No Impact	No Impact	No Impact
Shiny tightcoil	No Impact	No Impact	No Impact	No Impact
Broadwhorl tightcoil	No Impact	No Impact	No Impact	No Impact
Blue-gray tail-dropper	No Impact	No Impact	No Impact	No Impact
Western bumblebee	No Impact	No Impact	No Impact	No Impact
Astarte fritillary	No Impact	No Impact	No Impact	No Impact
Meadow fritillary	No Impact	No Impact	No Impact	No Impact
Freija fritillary	No Impact	No Impact	No Impact	No Impact
Labrador sulphur	No Impact	No Impact	No Impact	No Impact
Lustrous copper	No Impact	No Impact	No Impact	No Impact
Melissa arctic	No Impact	No Impact	No Impact	No Impact
Mardon skipper	No Impact	No Impact	No Impact	No Impact
Peck's skipper	No Impact	No Impact	No Impact	No Impact
Tawny-edged skipper	No Impact	No Impact	No Impact	No Impact
Great basin fritillary	No Impact	No Impact	No Impact	No Impact
Johnson's hairstreak	No Impact	No Impact	No Impact	No Impact
Zigzag darner	No Impact	No Impact	No Impact	No Impact
Subarctic darner	No Impact	No Impact	No Impact	No Impact
Subarctic bluet	No Impact	No Impact	No Impact	No Impact
Pacific lamprey	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV

Species	Alternative A	Alternative B	Alternative C	Alternative D
Lake Chub	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV
Westslope Cutthroat trout	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV
Inland Columbia Basin redband trout	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV
Pygmy whitefish	No Impact	MIIBNLPV	MIIBNLPV	MIIBNLPV
All Species of Sensitive Plants	No Impact	No Impact	No Impact	No Impact
All Survey and Manage Species	No Impact	No Impact	No Impact	No Impact

*MIIBNLPV = May impact individuals, but is not likely to cause a trend toward Federal listing or a loss of population viability.

The restoration of grizzly bears to the NCE would have no impact on most of the species listed on the Region 6 Regional Forester Sensitive Species list. Alternatives A, B, C, and D would have no impact on any of the bird, reptile, amphibian, plant, and invertebrate species listed.

The wolverine is a carnivorous scavenger that depends on other large predators to kill ungulates. It is possible that wolverines may interact with grizzly bears at an ungulate carcass or that grizzly bears would compete with wolverines for the same sources of carrion. Due to the small number of both bears and wolverines in the NCE, this potential interaction would be unlikely and insignificant. Alternative A would have no impact on wolverine. Alternatives B, C, and D may impact individuals but is not likely to cause a trend toward Federal listing or a loss of population viability.

There would be a potential for grizzly bear predation on listed fish species, however the small number of bears in anticipated to be in the NCE makes this a low potential and the effect on fish species would be insignificant and discountable. For the Pacific lamprey, lake chub, westslope cutthroat trout, inland Columbia basin redband trout, and pygmy white fish Alternative A would have no impact. Alternative B, C, and D may impact individuals but is not likely to cause a trend toward Federal listing or a loss of population viability. See chapter 4 in this plan/EIS.

Northwest Forest Plan Survey and Manage Species

The reintroduction of grizzly bears to the NCE would not involve any ground-disturbing activities and therefore each of the alternatives would have no effect on any survey and manage species.

Designated Critical Habitat for Federally Listed Species

The NCE contains designated critical habitat for lynx, northern spotted owl, and bull trout. The reintroduction of grizzly bears to the NCE would not involve any ground-disturbing activities and therefore each of the alternatives would have no effect on any designated critical habitat for federally listed species.

Forest Plan Management Indicator Species

Direction in the National Forest Management Act and in each of the Land and Resource Management Plans for the 3 National Forests in the NCE require the review of actions on National Forests to determine their effect to population viability of Management Indicator Species.

Forest Plan management indicator species in the North Cascades Ecosystem and effect determination for each alternative in the NCE Grizzly Bear Restoration Plan/EIS.

Species	Alternative A	Alternative B	Alternative C	
American marten	No Effect	No Effect	No Effect	No Effect
Bald Eagle	No Effect	No Effect	No Effect	No Effect
Barred Owl	No Effect	No Effect	No Effect	No Effect
Beaver	No Effect	No Effect	No Effect	No Effect
Gray Wolf	No Effect	WNCTNTV*	WNCTNTV	WNCTNTV
Grizzly Bear	No Effect	Beneficial Effect	Beneficial Effect	Beneficial Effect
Lynx	No Effect	WNCTNTV	WNCTNTV	WNCTNTV
Mountain Goat	No Effect	No Effect	No Effect	No Effect
Mule Deer	No Effect	WNCTNTV	WNCTNTV	WNCTNTV
Northern Spotted Owl	No Effect	No Effect	No Effect	No Effect
Peregrine Falcon	No Effect	No Effect	No Effect	No Effect
Pileated Woodpecker	No Effect	No Effect	No Effect	No Effect
Primary Cavity Excavators	No Effect	No Effect	No Effect	No Effect
Rocky Mountain Elk	No Effect	WNCTNTV	WNCTNTV	WNCTNTV
Ruffed Grouse	No Effect	No Effect	No Effect	No Effect
Three-toed woodpecker	No Effect	No Effect	No Effect	No Effect

*WNCTNTV = Would not contribute toward a negative trend in viability.

The effects of each alternative on ungulate species (MIS species Mule Deer and Rocky Mountain Elk) is evaluated in Chapter 4 of this Plan/EIS.

Compliance with USFS Statutes, Policies, and Plans by Alternative

Each of the 4 alternatives are compliant with all of the policies, directives and Forest Plan goals, standards, and guidelines that require the use of the NEPA process and coordination with other agencies, organizations, and Native American tribal groups. The North Cascades Ecosystem Grizzly Bear Restoration Plan/EIS does follow the NEPA process, and coordination with other agencies, organizations and Native American tribal groups has occurred.

This analysis conforms to the requirements of *Pacific Northwest Invasive Plant Program Final Environmental Impact Statement, Record of Decision* (USDA-FS November 2005). This project is intended to comply with the *Guide to Noxious Weed Prevention Practices* (USDA-FS 2001) supporting the February 3, 1999 Executive Order on Invasive Species, and the *National Strategy and Implementation Plan for Invasive Species Management* (USDA-FS October 2004).

Alternative A: Continuation of Existing Grizzly Bear Management (No Action)

Under Alternative A, grizzly bears would not be moved and released into the US portion of the NCE. The tentative restoration goal of 200 grizzly bears in the US portion of the NCE would not likely be achieved under alternative A.

Alternative A would be compliant with:

- The Endangered Species Act provisions for the Forest Service, Forest Service Manual 2670 policies and directives for Federally threatened and endangered species, and all Forest Plan goals, standards, and guidelines regarding Federally threatened and endangered species. Alternative A would have *no effect* on any species Federally listed as threatened or endangered.
- Forest Service Manual 2670 direction for sensitive species. Alternative A would have *no impact* on any of the species listed as sensitive by the Regional Forester.
- The National Forest Management Act and Forest Plan direction for Management Indicator Species. Alternative A would have no effect on any of the management indicator species listed for the 3 National Forests in the North Cascades Ecosystem.
- The Wilderness Act and all Forest Plan goals, standards, and guidelines regarding wilderness. Alternative A would result in no actions being taken in Forest Service wilderness.
- The Wild and Scenic Rivers Act. Alternative A would not result in any reintroductions and would have no effect on the Outstandingly Remarkable Values of any of the Wild and Scenic Rivers in the North Cascades Ecosystem.
- All Forest Plan standards, and guidelines regarding disturbance to nesting and roosting sites, calving/fawning/kidding areas, and big game wintering areas. Alternative A would result in no actions taken that could cause a disturbance to any of these area.
- The Forest Plan standard regarding Research Natural Areas. Alternative A would result in no reintroduction of native species.

Forest Plan Consistency

The No Action alternative would meet the Mt. Baker-Snoqualmie, Okanogan, and Wenatchee Forest Plan standards and guidelines for fish, wildlife, and vegetation and would therefore be consistent with the Mt. Baker-Snoqualmie, Okanogan, and Wenatchee Forest Plans (USDA 1989 1990a, 1990b), as amended.

Alternative B: Ecosystem Evaluation Restoration

Alternative C: Incremental Restoration

Alternative D: Expedited Restoration

Under Alternatives B, C, and D, grizzly bears would be moved and released into the U.S. portion of the NCE. The tentative restoration goal of 200 grizzly bears in the U.S. portion of the NCE would be achieved at a different rate under each of the alternatives. Grizzly bear releases would include the use of helicopter and potential release sites in each of the 3 alternatives would include wilderness sites.

Alternatives B, C, and D would be compliant with:

- The Endangered Species Act provisions for the Forest Service, Forest Service Manual 2670 policies and directives for Federally threatened and endangered species, and all Forest Plan goals, standards, and guidelines regarding Federally threatened and endangered species. Alternatives B, C, and D would all either have *no effect* determination or *may affect, not likely to adversely affect* determinations on species Federally listed as threatened or endangered. The *may affect, not likely to adversely affect* determinations have been consulted on and concurred with by the U. S. Fish and Wildlife Service.

- Forest Service Manual 2670 direction for sensitive species. Alternatives B, C, and D would have either a no impact determination or a *may impact individuals, but is not likely to cause a trend toward Federal listing or a loss of population viability* determination on the species listed as sensitive by the Regional Forester.
- The National Forest Management Act and Forest Plan direction for Management Indicator Species. Alternatives B, C, and D would have either *no effect* or *would not contribute toward a negative trend in viability* for the management indicator species listed for the 3 National Forests in the North Cascades Ecosystem.
- The Wilderness Act and all Forest Plan goals, standards, and guidelines regarding wilderness. Alternatives B, C, and D would result in helicopter use in Forest Service wilderness. Motorized equipment use is permissible when determined to be needed to meet the minimum requirements for a significant administrative purpose. The need for helicopters to be used in this plan/EIS was considered in the Minimum Requirements Decision Guide in Appendix B of this EIS.
- The Wild and Scenic Rivers Act. Alternatives B, C, and D would result in the release of grizzly bears but would have no effect on the Outstandingly Remarkable Values of any of the Wild and Scenic Rivers in the North Cascades Ecosystem.
- All Forest Plan standards, and guidelines regarding disturbance to nesting and roosting sites, calving/fawning/kidding areas, and big game wintering areas. Alternatives B, C, and D would result in the release of grizzly bears but the proposed timing of the releases and the selection of the staging areas/release sites would prevent disturbance to any of these areas.
- The Forest Plan standard regarding Research Natural Areas. Alternatives B, C, and D would result in release of a native species grizzly bears), but this would not prevent the goals of any RNA from being met.

Forest Plan Consistency

All action alternatives would meet the Mt. Baker-Snoqualmie, Okanogan, and Wenatchee Forest Plan standards and guidelines for fish, wildlife, and vegetation and would therefore be consistent with the Mt. Baker-Snoqualmie, Okanogan, and Wenatchee Forest Plans (USDA 1989 1990a, 1990b), as amended.

APPENDIX C: FRAMEWORK OF RELEVANT FEDERAL AND STATE LAWS, POLICIES, AND PLANS

FRAMEWORK OF RELEVANT FEDERAL AND STATE LAWS, POLICIES, AND PLANS

FEDERAL LAWS AND REGULATIONS

1. *Endangered Species Act (ESA)*

As noted in chapter 1, the purpose of the ESA (16 USC 1531 et seq.) is to protect and recover imperiled species and the ecosystems upon which they depend. The US Fish and Wildlife Service (FWS) recently reaffirmed (78 Fed. Reg. 70104 [Nov. 22, 2013]) that the North Cascades Ecosystem (NCE) grizzly bear population, currently listed under the ESA as threatened, is warranted for uplisting from threatened to endangered status under the ESA, but that uplisting is precluded by higher-priority listings. While the actions described in the action alternatives are not by themselves expected to lead directly to delisting of the grizzly bear in the NCE, part of the need for this *North Cascades Ecosystem Grizzly Bear Restoration Plan / Environmental Impact Statement* (plan/EIS) is to support the recovery of the grizzly bear to the point where it can be removed from the federal list of threatened and endangered wildlife species. The potential designation of grizzly bears in the NCE as a non-essential experimental population under section 10(j) of the ESA is intended to aid in this effort by providing managers with additional flexibility. Additional detail on the delisting process and section 10(j) is provided below.

Delisting of a Species under the ESA

Delisting of a species under the ESA is an extensive process that requires a finding of fact by FWS based on an assessment of the population by experts both inside and outside the agency that takes into account five factors:

- Is there a present or threatened destruction, modification, or curtailment of species' habitat or range?
- Is the species subject to overutilization for commercial, recreational, scientific, or educational purposes?
- Is disease or predation a factor?
- Are there inadequate existing regulatory mechanisms in place outside the ESA (taking into account the efforts by the States and other organizations to protect the species or habitat)?
- Are other natural or manmade factors affecting its continued existence?

If the FWS determines that the threats have been sufficiently reduced, the agency may consider delisting. When delisting a species, FWS first proposes the action in the Federal Register. At this time, FWS also seeks the opinion of independent species experts, other federal agencies, state biologists, and the public. After analyzing the comments received on the proposed rulemaking, FWS decides whether to complete the delisting (FWS 2002).

Section 10(j) Experimental Population

Section 10 of the ESA, entitled “Exceptions,” offers an avenue to authorize activities that would otherwise be prohibited. To relieve concern that reintroductions of ESA-listed species may result in

restrictions on the use of private, tribal, or public land, Congress added the provision for experimental populations under section 10(j) in a 1982 amendment to the ESA. Section 10(j) provides for the reintroduction of experimental populations under special regulations. Prior to addition of section 10(j), the FWS had authority to introduce threatened and endangered species into unoccupied historic range, but such efforts were often met with resistance. One reason for public resistance was that the FWS could not assure private landowners, other federal agencies, and state and local governments that a transplanted population would not disrupt future land management options. Under section 10(j), the Secretary of the Department of the Interior can designate reintroduced populations established outside the species' current range, but within its historical range, as "experimental." An experimental population is a group of reintroduced plants or animals that is geographically isolated from other populations of the species and is typically not considered essential to the survival of the species as a whole. Experimental populations are afforded additional regulatory flexibility regarding management of the species.

2. *Wilderness Act of 1964*

With the signing of the *Wilderness Act* by President Lyndon B. Johnson on September 3, 1964, the National Wilderness Preservation System was established to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness."

The *Wilderness Act* states, "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." Although there is great similarity between the National Park Service (NPS) *Organic Act* and the *Wilderness Act*, Congress applied the *Wilderness Act* to the NPS to strengthen its protective capabilities.

Under the *Wilderness Act*, the park must apply the "minimum requirement" concept to all management activities that affect the wilderness resource and character at the park. "Minimum requirement" is a documented process used to determine the appropriateness of all actions affecting wilderness. This concept is intended to minimize impacts on wilderness values and resources. Managers may authorize (using a documented process) the generally prohibited activities or uses listed in section 4(c) of the *Wilderness Act*, if deemed necessary to meet the minimum requirements for the administration of the area as wilderness and where those methods are determined to be the "minimum tool" for the project. An analysis of helicopter use as the minimum tool to be used for the release of grizzly bears into wilderness in the NCE is included in appendix F.

3. North Cascades National Park Enabling Legislation

President Lyndon B. Johnson signed the enabling legislation for North Cascades National Park into law on October 2, 1968, establishing North Cascades National Park and Ross Lake and Lake Chelan NRAs (16 USC 1 § 90 – 90e-3). The enabling legislation's statement of purpose states that the park is established to:

...preserve for the benefit, use, and inspiration of present and future generations certain majestic mountain scenery, snowfields, glaciers, alpine meadows, and other unique natural features in the North Cascade Mountains of the State of Washington...

and to

...provide for the public outdoor recreation use and enjoyment ... [and] for the conservation of the scenic, scientific, historic, and other values contributing to public enjoyment of such lands and waters...

The purposes of the two national recreation areas are to complement North Cascades National Park and conserve the scenic, natural and cultural values of the Upper Skagit River Valley, the Lower Stehekin Valley, Lake Chelan, and the surrounding wilderness for outdoor recreation and education, while respecting the remote Stehekin community and the hydroelectric reservoirs and development on Ross Lake (NPS 2012).

4. NPS Regulations for Food Storage

Title 36, Code of Federal Regulations (CFR) is the principal set of rules and regulations governing federal agencies of the United States with respect to parks, forests, and public lands.

Title 36, CFR, chapter 1, section 2.10(d) contains NPS regulations for proper food storage and prohibits anyone from leaving food unattended or stored improperly where it could attract or otherwise be available to wildlife, stating:

The superintendent may designate all or a portion of a park area where food, lawfully taken fish or wildlife, garbage, and equipment used to cook or store food must be kept sealed in a vehicle, or in a camping unit that is constructed of solid, non-pliable material, or suspended at least 10 feet above the ground and 4 feet horizontally from a post, tree trunk, or other object, or shall be stored as otherwise designated. Violation of this restriction is prohibited.

Title 36, CFR, chapter 1, section 2.14(a) contains NPS regulations governing proper disposal of waste and prohibits the disposal of refuse in other than refuse receptacles, stating:

The following are prohibited: (1) Disposing of refuse in other than refuse receptacles. (2) Using government refuse receptacles or other refuse facilities for dumping household, commercial, or industrial refuse, brought as such from private or municipal property, except in accordance with conditions established by the superintendent. (3) Depositing refuse in the plumbing fixtures or vaults of a toilet facility. (4) Draining refuse from a trailer or other vehicle, except in facilities provided for such purpose. (5) Bathing, or washing food, clothing, dishes, or other property at public water outlets, fixtures or pools, except at those designated for such purpose. (6) Polluting or contaminating park area waters or water courses. (7) Disposing of fish remains on land, or in waters within 200 feet of boat docks or designated swimming beaches, or within developed areas, except as otherwise designated. (8) In developed areas, the disposal of human body waste, except at designated locations or in fixtures provided for that purpose. (9) In nondeveloped areas, the disposal of human body waste within 100 feet of a water source, high water mark of a body of water, or a campsite, or within sight of a trail, except as otherwise designated.

NATIONAL PARK SERVICE MANAGEMENT POLICIES 2006

Chapter 4 of the *National Park Service Management Policies 2006* (NPS 2006), “Natural Resource Management,” provides direction regarding the implementation of NPS activities to further the purposes of the ESA:

The Service manages the natural resources of parks to maintain them in an unimpaired condition for present and future generations in accordance with ... environmental laws such as the ... Endangered Species Act of 1973 ...

The *NPS Management Policies 2006* states that whenever possible, natural processes will be relied upon to maintain native plant and animal species and influence natural fluctuations in populations of these species; however, the Service may intervene to manage individuals or populations in order to protect rare, threatened, or endangered species.

Section 4.4.2.2, Restoration of Native Plant and Animal Species, states,

The Service will strive to restore extirpated native plant and animal species to parks whenever all of the following criteria are met:

- *Adequate habitat to support the species either exists or can reasonably be restored in the park and if necessary also on adjacent public lands and waters; once a natural population level is achieved, the population can be self-perpetuating.*
- *The species does not, based on an effective management plan, pose a serious threat to the safety of people in parks, park resources, or persons or property within or outside park boundaries.*
- *The genetic type used in restoration most nearly approximates the extirpated genetic type.*
- *The species disappeared or was substantially diminished as a direct or indirect result of human-induced change to the species population or to the ecosystem.*
- *Potential impacts upon park management and use have been carefully considered.*

Section 4.4.2.3 Management of Threatened or Endangered Plants and Animals, states,

the Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act. The Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these species.

To meet these obligations, it is NPS policy to cooperate with FWS to

- ensure NPS actions comply with the ESA;
- undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats;
- manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species;

- cooperate with other agencies to ensure that delineation of critical habitat, essential habitat, and/or recovery areas on park lands provides needed conservation benefits to recovery efforts being conducted by all the participating agencies;
- participate in the recovery planning process, including the provision of members on recovery teams and recovery implementation teams where appropriate;
- cooperate with other agencies, states, and private entities to promote candidate conservation agreements aimed at precluding the need to list species; and
- conduct actions and allocate funding to address endangered, threatened, proposed, and candidate species.

U.S. FOREST SERVICE STATUTES, POLICIES, AND PLANS PERTINENT TO THE NCE GRIZZLY BEAR RESTORATION PLAN

A summary of the statutes, policies and plans that direct and guide management on the Mt. Baker-Snoqualmie and Okanogan-Wenatchee National Forests. The statutes, policies and plans summarized below are only those that are applicable to grizzly bear restoration activities proposed in this EIS/Plan.

Laws

Endangered Species Act.

Section 5 of the Act directs the Secretary of Agriculture to “establish and implement a program to conserve fish, wildlife, and plants,” including federally listed species.

National Forest Management Act.

Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

In order to estimate the effects of each alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species. . . . because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality.

Wilderness Act.

Fish and wildlife management activities in wilderness will be planned and implemented in conformance with the Act’s purpose of securing an “enduring resource of wilderness” for the American people. Reintroductions of wildlife species should only occur if the species was once indigenous to an area and was extirpated by human induced events, and then shall be made in a manner compatible with the wilderness environment.

Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purposes of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

Wild and Scenic Rivers Act.

Potential impacts of transplants and reintroductions on fish and wildlife populations on the Outstandingly Remarkable Values of any Wild or Scenic river should be considered.

Policy and Directives

- U.S. Department of Agriculture Departmental Regulation 9500-4 directs the Forest Service to:
 - Manage “habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species.”
 - Conduct activities and programs “to assist in the identification and recovery of threatened and endangered plant and animal species.”
 - Avoid actions “which may cause a species to become threatened or endangered.”
- Forest Service Manual 2670.21 – Threatened and Endangered Species includes:
 - Manage National Forest System habitats and activities for threatened and endangered species to achieve recovery objectives so that special protection measures provided under the Endangered Species Act are no longer necessary.
- Forest Service Manual 2670.31 – Threatened and Endangered Species
 - Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research and Development activities and programs.
 - Review, through the biological evaluation process, actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing.
- Forest Service Manual 2670.32 - Sensitive Species
 - Review programs and activities as part of the National Environmental Policy Act of 1969 process through a biological evaluation, to determine their potential effect on sensitive species.
- Forest Service Manual 2670.44 – Regional Foresters
 - 14. Approve the introduction or translocation of any federally listed species on National Forest System lands.
- Forest Service Manual 2673.5 – Translocation
 - Translocation to achieve recovery objectives of listed species may be desirable to meet purposes of the Endangered Species Act.
- Forest Service Manual 2674 – Reintroduction
 - The Forest Service shall encourage the reintroduction of listed wildlife, fish, and plants on to suitable unoccupied habitat when such actions promote recovery of the species.
- Forest Service Manual 2676.13
 - Cooperate with state agencies, the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, and other agencies and groups to carry out active programs to conserve the grizzly bear over the long term.

National Forest Land and Resource Management Plans

This EIS is tiered to the Final Environmental Impact Statement for the Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan, as amended (USDA Forest Service 1990), the Final Environmental Impact Statement for the Okanogan National Forest Land and Resource Management Plan, as amended (USDA Forest Service 1989), and the Final Environmental Impact Statement for the Wenatchee National Forest Land and Resource Management Plan, as amended (USDA Forest Service 1990). Site-specific objectives and guidelines are identified in each of these 3 Forest Plans. Amendments to these 3 Forest Plans include standards and guidelines described in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest Forest Plan; USDA Forest Service and USDI Bureau of Land Management 1994). Key elements of the Northwest Forest Plan include the establishment of Late Successional Reserves to help protect and enhance late successional habitats, and the establishment of Riparian Reserves and the Aquatic Conservation Strategy to help protect and enhance riparian and aquatic habitats. The 3 Forest Plans were also amended with the *Pacific Northwest Invasive Plant Program Final Environmental Impact Statement, Record of Decision* (USDA-FS November 2005) which includes direction from the *Guide to Noxious Weed Prevention Practices (USDA-FS 2001)* supporting the February 3, 1999 Executive Order on Invasive Species, and the *National Strategy and Implementation Plan for Invasive Species Management* (USDA-FS October 2004).

The current Forest Plans for the Mount Baker-Snoqualmie, Okanogan, and Wenatchee National Forests were written prior to the North Cascades Ecosystem being designated as a grizzly bear recovery zone in 1991 and thus include no direction specific to grizzly bear recovery. In 1997 the Forest Supervisors of these 3 National Forests agreed to and established an “interim standard” until superseded by a Forest Plan amendment or revision. This interim standard included:

- No net loss of existing core area within any Bear Management Unit (BMU), with core area defined as area >0.3 miles from any open motorized access route or high use nonmotorized access route.

This interim standard is still in place and will be until the current Forest Plans are revised.

Forest Management Goals and Forest-wide Standards and Guidelines

Land and Resource Management Plan goals, standards and guidelines relevant to the proposed grizzly bear restoration activities are listed below for each Forest.

Mt Baker-Snoqualmie National Forest

Forest Management Goals:

- Wilderness 1. Manage wilderness for the use and enjoyment of people in such a manner as will leave wilderness values unimpaired for future.
- Wildlife and Fish 1. Maintain the vitality, distribution and abundance of animal populations. At a minimum, maintain viable populations of existing native and desired non-native vertebrate species on National Forest lands. No species should be eliminated from an area. Maintain the long term productivity of wildlife habitats.

- Wildlife and Fish 2. Identify threatened, endangered, and sensitive plant and animal species habitat. Protect, maintain and/or enhance this habitat in accordance with Recovery Plans. The overall goal is to prevent the Federal listing of Sensitive species and/or, to pursue the delisting of Federally listed species. Develop management guides for T & E species which carry out these goals.
- Long term Productivity and Diversity 1. Maintain native and desirable non-native plant and animal species and communities.

Forest Wide Standards and Guidelines:

- General Procedures 1. Activities affecting forest system lands and resources will be analyzed through NEPA analysis.
- General Procedures 4. Management of forest system lands, resources, and activities will be coordinated with appropriate local, State, Federal agencies, private landowners, Indian tribes, and interest and user groups.
- American Indian Religious and Cultural Uses 6. Present information about planned project activities in all management areas to religious and political leaders of tribal groups whose traditional practices might be affected.
- Wilderness – Fish and Wildlife 3. Native species shall be maintained, with special emphasis on the preservation of threatened or endangered species, plus designated management indicator species and their habitats. Fish or wildlife indigenous to an area, may be re-established if previously eliminated by the influence of man.
- Wilderness – Aircraft 3. The landing of aircraft within the wilderness is prohibited. Air dropping supplies is also prohibited. Exceptions may be granted for emergencies, significant administrative purposes, and fish stocking.
- Wildlife Habitat Management 3. Nest sites actively being used by raptors or other bird species of special concern (i.e., great blue heron) will be protected from human disturbance until nesting and fledging is completed.
- Wildlife Habitat Management 5. Programmed activities in calving, fawning, and kidding areas should be discouraged. They shall be timed to minimize disturbance to the animals. This may require restricting access and operations during certain times of the year.
- Threatened, Endangered, and Sensitive Species 1. All proposed management actions which have the potential to affect habitat of endangered, threatened, or sensitive species will be evaluated to determine if any of these species are present. Biological evaluations will be completed for all proposed management activities which could affect T & E species.

Okanogan National Forest

Forest Wide Standards and Guidelines:

- Management 1-1. Appropriate public involvement activities shall be conducted for the purposes of gaining information regarding the land and resource base upon which management decisions are made; to insure the Forest Service understands public needs, concerns, and values, and to inform the public of Forest Service management activities associated with implementing this Forest Plan.
- Management 1-2. Appropriate coordination with other federal agencies, state and local governments, and Native American tribes shall occur on an ongoing basis in the planning, designing, executing, and monitoring of projects associated with implementing the Forest Plan.
- Wildlife 6-8. Manage disturbing activities so they occur outside of critical periods to protect wildlife (e.g., identified parturition areas, nesting sites, wintering areas).
- Wildlife 6-11. Raptor nest sites should be protected; during the active nest season certain project activities may be limited.
- Wildlife 6-17. Threatened and endangered species shall be managed according to recovery plans. Coordinate management with U. S. Fish & Wildlife Service and Washington Dept. of Fish and Wildlife.
- Wildlife 6-18. Consultation with U. S. Fish & Wildlife Service shall be initiated when threatened or endangered species may be affected by resource proposals.
- Research Natural Areas 8-6B. Reintroduction of native species may be permitted as long as the goals of the RNA are met.
- Wilderness 15A-6A and 15B-6A. Fish and wildlife indigenous to the wilderness shall be maintained with emphasis on threatened and endangered species.

Wenatchee National Forest

Forest Management Goals:

- Wilderness – Manage designated wilderness to perpetuate wilderness character, natural ecologic processes, and to provide outdoor recreation opportunities appropriated in wilderness.
- Wildlife, Fish, and Sensitive Plants – Manage critical wildlife habitat to improve the status of threatened and endangered species to a point where they no longer need protection under the Endangered Species Act of 1973.

Forest Wide Standards and Guidelines:

- Proposed, Threatened, Endangered, or Sensitive Species -1. Threatened, endangered, and sensitive species will be identified and managed in cooperation with the USDI Fish and Wildlife Service and Washington Department of Wildlife.
- Proposed, Threatened, Endangered, or Sensitive Species -5. All Project Environmental Analyses will evaluate the effects of the project on threatened, endangered, and sensitive species.

- Proposed, Threatened, Endangered, or Sensitive Species –Grizzly Bear - 3. If resident grizzly bears are discovered, cooperate with the USDI Fish and Wildlife Service and Washington Department of Wildlife to appropriately manage the animals.
- Wildlife and Fisheries – 3B. To maintain viable populations of raptors, protect all active nest and roost sites.
- Wildlife and Fisheries – Big Game Management - 13. Discourage activities in key mountain goat winter and kidding range from Dec. 1 until July 1.

STATE OF WASHINGTON LAWS AND REGULATIONS

In addition to the laws discussed above governing food storage and waste disposal on NPS lands, Washington state law contains two separate statutes governing proper sanitation with respect to large wild carnivores, which would extend to management of grizzly bears. Revised Code of Washington (RCW) chapter 77.15.792, Intentionally feeding or attempting to feed large wild carnivores or intentionally attracting large wild carnivores to land or a building- Penalty, states,

(1) A person may not intentionally feed or attempt to feed large wild carnivores or intentionally attract large wild carnivores to land or a building. (2) A person who intentionally feeds, attempts to feed, or attracts large wild carnivores to land or a building is guilty of a misdemeanor. (3) A person who is issued an infraction under RCW 77.15.790 for negligently feeding, attempting to feed, or attracting large wild carnivores to land or a building, and who fails to contain, move, or remove the food, food waste, or other substance within twenty-four hours of being issued the infraction, is guilty of a misdemeanor.

RCW chapter 77.15.790 Negligently feeding, attempting to feed, or attracting large wild carnivores to land or a building—Infraction, states,

(1) A person may not negligently feed or attempt to feed large wild carnivores or negligently attract large wild carnivores to land or a building. (2) If a fish and wildlife officer, ex officio fish and wildlife officer, or animal control authority, as defined in RCW 16.30.010, has probable cause to believe that a person is negligently feeding, attempting to feed, or attracting large wild carnivores to land or a building by placing or locating food, food waste, or other substance in, on, or about any land or building, and the food, food waste, or other substance poses a risk to the safety of any person, livestock, or pet because it is attracting or could attract large wild carnivores to the land or building, that person commits an infraction under chapter 7.84 RCW. (3) Subsection (2) of this section does not apply to: (a) A person who is engaging in forest practices in accordance with chapter 76.09 RCW or in hunting or trapping wildlife in accordance with all other applicable provisions of this title or rules of the commission or the director; (b) A person who is engaging in a farming or ranching operation that is using generally accepted farming or ranching practices consistent with Titles 15 and 16 RCW; (c) Waste disposal facilities that are operating in accordance with applicable federal, state, and municipal laws; (d) Entities listed in RCW 16.30.020(1) (a) through (j) and scientific collection permit holders; or (e) A fish and wildlife officer or employee or agent of the department operating under the authority of or upon request from an officer conducting authorized wildlife capture activities to address a threat to human safety or a wildlife interaction as

defined in RCW 77.36.010. (4) For persons and entities listed in subsection (3) of this section, a fish and wildlife officer, ex officio fish and wildlife officer, or animal control authority, as defined in RCW 16.30.010, may issue a written warning to the person or entity if: (a) The officer or animal control authority can articulate facts to support that the person or entity has placed or is responsible for placing food, food waste, or other substance in, on, or about the person's or entity's land or buildings; and (b) The food, food waste, or other substance poses a risk to the safety of any person, livestock, or pet because the food, food waste, or other substance is attracting or could attract large wild carnivores to the land or buildings. (5)(a) Any written warning issued under subsection (4) of this section requires the person or entity placing or otherwise responsible for placing the food, food waste, or other substance to contain, move, or remove that food, food waste, or other substance within two days. (b) If a person who is issued a written warning under (a) of this subsection fails to contain, move, or remove the food, food waste, or other substance as directed, the person commits an infraction under chapter 7.84 RCW.

REFERENCES

National Park Service

2006 NPS *Management Policies* 2006.

2012 North Cascades National Park Complex Foundation Document. June, 2012.

US Fish and Wildlife Service (FWS)

2002 Delisting a Species: Section 4 of the Endangered Species Act. Obtained from FWS Endangered Species Program website, accessed July 27, 2016 at <https://www.fws.gov/pacific/ecoservices/endangered/classification/pdf/delisting.pdf>.

This page intentionally left blank.

APPENDIX D: IMPLEMENTATION COSTS

IMPLEMENTATION COSTS

Although some expenses may not necessarily be incurred annually and some expenses could change from year to year, the estimated average annual costs for grizzly bear restoration, based on input from the interdisciplinary team, are shown in table D-1. These costs would be primarily for sanitation and human-bear conflict mitigation efforts; monitoring for grizzly bear presence and the compilation of a dataset to track population growth; public outreach and education efforts; and maintenance of a grizzly bear sighting database. Some costs would also be incurred through participation in the Interagency Grizzly Bear Committee (IGBC).

TABLE D-1. ESTIMATED AVERAGE ANNUAL COSTS ASSOCIATED WITH THE NO-ACTION ALTERNATIVE

Management Action	National Park Service	US Fish and Wildlife Service	US Forest Service	Washington Department of Fish and Wildlife	Total
IGBC participation	\$16,000	\$20,000	\$7,000	\$7,000	\$45,000
Sanitation	\$10,000 ^a	0	\$5,000	0	\$15,000
Education/interpretation	\$7,400	0	\$2,000	\$2,500	\$11,900
Monitoring	0	0	\$6,000	\$2,000	\$8,000
Endangered Species Act (ESA) consultation and compliance	\$3,000	0 ^b	\$8,000	0	\$11,000
TOTAL	\$36,400	\$20,000	\$28,000	\$6,500	\$90,900

NOTE: All costs include staff time, except sanitation costs.

^a Costs are not annual, but project based: value provided is approximate annual cost based on average across 5 years.

^b ESA consultation includes writing biological assessments and other time, but no costs were identified as solely dedicated to grizzly bears.

APPROXIMATE COSTS FOR ACTION ALTERNATIVES

Table D-2 provides general costs for implementing any of the action alternatives. Costs are either represented as per grizzly bear or per year. Table D-3 presents a comparison of the anticipated costs among the action alternatives over a period of 25 years.

TABLE D-2. APPROXIMATE GENERAL COSTS FOR GRIZZLY BEAR RESTORATION ACTION ALTERNATIVES

Management Action	Cost
Capture, transport, and release	\$10,000 per grizzly bear
Monitoring (including equipment)	\$7,000–\$10,000 over 3 years per grizzly bear
Personnel	\$120,000 per year
Education and interpretation	\$10,000–\$15,000 per year over no-action alternative
Sanitation	Same as no-action alternative
IGBC participation	Same as no-action alternative

Management Action	Cost
ESA consultation	[Assume same as no-action alternative]
Conflict Grizzly Bear Management <ul style="list-style-type: none"> WDFW Conflict Response Law Enforcement WDFW Preventative Measures and Investigations Livestock Damage Preventative Cooperative Measures Grizzly Bear Depredation Compensation 	<ul style="list-style-type: none"> 1 FTE (Approximately \$117,000 per year) 1 FTE (Approximately \$122,000 per year) Cost-share with landowners Dependent on funding <p>NOTE: It is unlikely given the proposed rate of releases and population levels of grizzly bears that these costs would be incurred in the near term. Rather these costs reflect the long term management of grizzly bears in the NCE.</p>

TABLE D-3. APPROXIMATE GENERAL COSTS FOR GRIZZLY BEAR RESTORATION ACTION ALTERNATIVES

Management Action	Initial Restoration			Adaptive Phase (at 25 Years)		
	Alternative B (7 years) ^a	Alternative C (5 years) ^d	Alternative D (25 years)	Alternative B (18 years)	Alternative C (20 years)	Alternative D (N/A)
Capture and release ^{b,c}	\$340,000	\$340,000	\$1,550,000–\$1,680,000	TBD	TBD	N/A
Monitoring (including equipment)	\$238,000–\$340,000	\$238,000–\$340,000	\$1,085,000–\$1,680,000	TBD	TBD	N/A
Personnel	\$840,000	\$600,000	\$3,000,000	\$2,160,000	\$2,400,000	N/A
Education/interpretation	\$139,300–\$174,300	\$99,500–\$124,500	\$497,500–\$622,500	\$358,200–\$448,200	\$398,000–\$498,000	N/A
Sanitation	\$105,000	\$75,000	\$375,000	\$270,000	300,000	N/A
IGBC participation	\$308,000	\$220,000	\$1,100,000	\$792,000	880,000	N/A
ESA consultation and compliance	\$21,000	\$15,000	\$75,000	\$54,000	\$60,000	N/A
Subtotal	\$1,991,300–\$2,128,300	\$1,587,500–\$1,714,500	\$7,682,000–\$8,532,500	\$3,634,200–\$3,724,200	\$4,038,000–\$4,138,000	N/A
Total	\$1,991,300–\$2,128,300	\$1,587,500–\$1,714,500	\$7,682,000–\$8,532,500	\$5,625,500–\$5,852,500	\$5,625,500–\$5,852,500	N/A

^a Assumes 7-year initial restoration period for alternative B based on 2 years of monitoring and subsequent default to alternative C.

^b Assumes capture and release of 34 bears under alternatives B and C, due to replacement for mortality and emigration.

^c Assumes capture and release of between 155 and 168 bears over 25 years under alternative D, factoring in mortality, emigration, and reproduction.

^d Assumes an initial restoration period of 5 years to provide an estimate of cost, though these costs could be spread out over 10 years.

**APPENDIX E: 2002 INTERAGENCY GRIZZLY BEAR COMMITTEE
GUIDELINES FOR THE NORTH CASCADES ECOSYSTEM**

2002 Interagency Grizzly Bear Committee

PLAN FOR DETERMINING GRIZZLY BEAR NUISANCE STATUS AND FOR CONTROLLING NUISANCE GRIZZLY BEARS FOR THE NCE

I. Preamble

THE INTERAGENCY GRIZZLY BEAR COMMITTEE RECOGNIZES THAT:

WHEREAS, it is mutually recognized that it is necessary to:

- A. Comply with Section 7 of the Endangered Species Act which requires Federal agencies to protect the grizzly bear (*Ursus arctos horribilis*), a threatened species, and its habitat.
- B. Comply with Fish and Wildlife Service rules and regulations relating to the removal of nuisance bears (FEDERAL REGISTER, Vol. 40, No. 145 - Monday, July 28, 1975).
- C. Comply with Fish and Wildlife Service rules and regulations relating to interagency cooperation under the Endangered Species Act with emphasis on formal consultation related to management actions affecting grizzly bears (FEDERAL REGISTER, Vol. 43, No. 2 - Wednesday, January 24, 1978).
- D. Identify the responsibilities of the respective agencies for determining grizzly bear nuisance status and for controlling nuisance grizzly bears.
- E. Provide a mutually developed and mutually acceptable plan which contains a uniform interagency approach for management of grizzly bears and their habitat and for determining grizzly bear nuisance status and for controlling nuisance grizzlies.
- F. Provide for an Aggregate Consultation on all management actions related to grizzly bears specified in the IGBC Guidelines, including nuisance bear control measures.

NOW, THEREFORE, in consideration of the above premises, the parties hereto agree as follows:

- A. To accept the "Guidelines" as the primary source for management decisions involving grizzly bears and their habitat and not to determine grizzly bear nuisance status or control nuisance bears without assistance of other appropriate parties to the agreement.
- B. The Forest Service, as the public land administering agency on National Forests, shall:

Coordinate all actions and participate in decisions relating to the determination of grizzly bear nuisance status and controlling nuisance grizzly bears on National Forest lands. Coordination means requesting assistance and participation of the Fish and Wildlife Service, the Departments, and, in some cases, the Park Service.

- C. The Fish and Wildlife Service, as advisor to the Federal land management agencies in matters pertaining to fish and wildlife management, shall:

In those cases when the Fish and Wildlife Service is aware of the grizzly-human conflict situation first, initiate the coordination process by notifying the Departments and the Federal land management agency and participate in the determination of grizzly bear nuisance status, and shall provide necessary expertise required for the control of nuisance grizzly bears.

- D. The Departments as the agencies responsible for the management of the States' wildlife resources, shall:

In those cases when the Departments are aware of the grizzly-human conflict situation first, initiate the coordination process by notifying the appropriate Federal land management agency and the Fish and Wildlife Service and otherwise participate in the determination of grizzly bear nuisance status and shall contribute necessary expertise, operational services or other acceptable methods for the control of nuisance grizzly bears.

- E. The Park Service, as the agency responsible for the management and administration of all resources in the National Parks shall:

Govern the taking of grizzly bears in National Parks. Park Service Personnel shall be invited to participate in the determination of grizzly bear nuisance status and to participate in the relocation of those bears judged to be potentially suitable for relocation into National Parks.

- F. It is Mutually Agreed and Understood By and Among the Said Parties that:

1. All IGBC agencies will exchange phone contact lists of designated representatives assigned to implement these provisions and to decide on nuisance bear status.
2. All IGBC agencies will make an effort to have permittees notify the land management agency of all grizzly bear associated problems and to notify the respective State wildlife agencies when property damage occurs.
3. Relocations of bears between grizzly bear ecosystems will be done in accordance with State and Federal laws, regulations, and policy.
4. Amendments to this Plan may be made at any time with written concurrence of the IGBC and appropriate consultation.
5. Each IGBC agency and the Bureau of Indian Affairs (BIA) (Tribes) will coordinate its respective grizzly bear control procedures in full accordance with this Plan.
6. This plan will become effective on the publication of the final notice in the Federal Register on the Interagency Grizzly Bear Guidelines. This Plan shall automatically be

renewed annually and remain in force until revoked or amended.

7. Any IGBC agency may terminate participation in this Plan upon 120 days written notice to each of the other agencies.

8. The attached Plan provides operational guidelines for determining grizzly bear nuisance status and for controlling nuisance grizzly bears in the conterminous United States. Handling and control of nuisance grizzly bears will be governed by the grizzly bear special rule (50 CFR 17.40) and per discussions and/or resulting agreements between IGBC member agencies and APHIS (Animal and Plant Health Inspection Service) animal damage control.

9. The "Guidelines and a "Plan" have been submitted to the Fish and Wildlife Service as a formal aggregate consultation since the projects, activities, and programs are logically grouped, their effects should be similar and such an aggregate consultation should greatly economize consultation activities related to and required for grizzly management.

The purpose of this document is to:

1. Document management direction agreed upon by participating agencies with respect to determination of grizzly bear nuisance status, and the capture, translocation, release and/or disposal of nuisance grizzly bears.
2. Guide managers in making rapid, effective, and responsible decisions and initiating action regarding grizzly bear control actions.

II. Guidelines for Determining Grizzly Bear Nuisance Status

These guidelines apply to the Management Situation Areas defined in *Interagency Grizzly Bear Guidelines* (IGBC 1986). In Management Situations Areas 1 and 2, grizzlies must be determined to be a nuisance by specific criteria before they can be controlled. In Situation Areas 3 and 5, any grizzly involved in a grizzly-human conflict situation is considered a nuisance and will be controlled. Control must be compatible with Grizzly Bear Recovery Plan objectives for limiting man-caused grizzly mortality and with Federal and State laws and regulations.

A grizzly bear may be determined to be a nuisance if any or all of the following conditions apply:

- Condition A. The bear causes significant depredation to lawfully present livestock or uses unnatural food materials (human and livestock foods, garbage, home gardens, livestock carrion, and game meat in possession of man) which have been reasonably secured from the bear resulting in conditioning of the bear or significant loss of property.
- Condition B. The bear has displayed aggressive (not defensive) behavior toward humans which constitutes a demonstrable immediate or potential threat to human safety and/or a

minor human injury resulted from a human/bear encounter.

Condition C. The bear has had an encounter with people resulting in a substantial, human injury or loss of human life.

The following are considerations in determining grizzly nuisance status under Condition A:

Unnatural foods were reasonably secure from grizzlies. Reasonably secure means all steps were taken to comply with guideline objectives (a) Maintain and Improve Habitat and (b) Minimize Grizzly-Human Conflict Potential. The following are examples of reasonably secure conditions:

- (1) sight and/or smell of edibles and/or garbage was not dominant (i.e., food was canned or in other sealed containers) and edibles and/or garbage was made unavailable (hung out of reach or secured in a solid-sided-bear-proof structure). Livestock use did not occur in habitat components critically important to grizzlies in time or space;
- (2) livestock and wildlife carcasses were removed destroyed or treated so that the material would not reasonably be expected to attract grizzlies.
- (3) game meat was stored at least 100 yards from any sleeping area;
- (4) no baits were placed for purposes of sport hunting black bears, nor did any artificial feeding of bears occur.

The following are considerations in determining grizzly nuisance status under Condition B:

The bear has displayed aggression toward man. Sound evidence must be available to establish that the bear acted aggressively without provocation (not defensively), and that such behavior constituted a threat to human safety and/or a minor human injury occurred as a result of a nondefensive grizzly attack.

The following are considerations in determining grizzly nuisance status under Condition C:

An encounter with people which resulted in a serious human injury or loss of human life. A bear that is involved in an accidental encounter with people, defense of young, or in a provoked attack (the bear acted defensively not aggressively) which results in a minor human injury should not be considered a nuisance under this condition.

If information is insufficient to clearly establish the above requisites under Conditions A, B, and C, then the involved bear(s) probably should not be determined a nuisance under that condition. The criteria in Table 1 should be used to guide control actions.

Preventive Action:

Certain specific grizzlies have known behavioral patterns, which, when combined with location, time and other factors, indicate that an incident is highly probable. In such situations, direct preventive action designed to safely remove the bear(s) from the situation (prior to an occurrence which would result in nuisance status and possible loss of the bear(s) to the ecosystem) can be implemented regardless of the Management Situation involved. Human activities must be in compliance with applicable guidelines to minimize potential for grizzly-human conflicts for that Management Situation. Control actions should be designed to capture and remove the specific target bear(s).

In other situations, a bear may move into a visitor use or residential area without causing an incident, but there is indication that due to its persistent use of the area, it may become overly-familiar with humans and may become habituated. The animal may be relocated if a suitable release site (free of circumstances similar to the capture site) is available. This is an action to prevent a possible incident or habituation of the bear. It does not count as an offense when determining the disposition of the bear (using Table 1), should the bear be recaptured in a future control action.

III. Grizzly Bear Control Action

1. If a grizzly bear is not determined to be a nuisance after consideration of criteria in Section II, no control action will be initiated.
2. Capture of nuisance grizzly bears outside National Parks is the primary responsibility of the State Fish and Game Agency in conjunction with the U.S. Fish and Wildlife Service. The National Park Service is responsible for bear capture within National Parks. Data forms for recording information about the captured bear(s) and the control action are provided in the Appendix. Nuisance bear forms should be completed by the onsite official and forwarded to the Grizzly Bear Recovery Coordinator for subsequent distribution.
3. Nuisance grizzlies that are sick or injured beyond a point where natural recovery is likely will be removed from the population. Other nuisance grizzlies will be controlled according to the guidelines in Table 1.
4. After a bear has been captured during a control action, the decision on where to relocate the bear or whether to kill it must be made within 24 hours of its capture. The relocation must be made as expeditiously as possible after the disposition of the bear is determined. Bears will not be held in a snare but will be immobilized, marked, and placed in an appropriate holding facility (can be a culvert trap).

With due consideration of mortality risk associated with immobilization grizzly bears released should be marked with numbered ear tags, lip tattoo and functioning radio transmitters. Monitoring will be a cooperative effort between State and Federal agencies. On-site release may be accomplished if the bear taken is: (a) determined not to be a

nuisance bear or; (b) on a first offense when the bear cannot be relocated because of terrain, weather, or inaccessibility to a relocation site. Females with cubs, where relocation is identified in the above table, will be released on-site if relocation is not feasible for previously stated reasons or if the cubs cannot also be caught and relocated with the female. An on-site release will not be conducted in developed areas. On-site releases will be accomplished after approval of the land management agency if the release is monitored in such a way to determine its success or failure with respect to bear survival and conflict resolution.

5. If a bear is to be killed, the action will be completed only by authorized State or Federal or Tribal employees. A grizzly bear mortality report form should be completed and the carcass forwarded to the Montana Department of Fish, Wildlife and Parks lab in Bozeman, Montana, for examination and subsequent disposition.
6. The initiating agency may "take back" a relocated bear, according to case-by-case agreements.
7. The State Fish and Game Regional Office will be the principal coordination point for all control actions, unless specified other-wise in the initial discussions on a particular incident.

The public and news media are extremely interested in all operations involving grizzly bears. To insure that they receive the proper information, it is critical that information be shared between all involved agencies in an accurate and timely manner. Planned news releases will be the responsibility of the State Fish and Game agency in close consultation with the administering land management agency (or Tribe) and the Grizzly Bear Recovery Coordinator.

Table 1. Guidelines for Grizzly Bear Control Action (see Footnotes)

TYPE OF GRIZZLY	NO OFFENSE/ OFFENSE	CONDITION A			CONDITION B		CONDITION C
		1st	2nd	3rd	1st	2nd	1st
FEMALES							
Orphaned Cub***	RLS/REL*						
Cub		REL	REL	REM**	REL	REM	REM
Yearling		REL	REL	REM	REL	REM	REM
Subadult		REL	REL	REM	REL	REM	REM
Prime Adult with Young		REL	REL	REM (Adult)	REL	REM (Adult)	REM (Adult)
Old Adult		REL	REM	---	REM	---	REM
Old Adult with Young		REL	REL	REM (Adult)	REL	REM (Adult)	REM (Adult)
MALES							
Orphaned Cub***	RLS/REL*						
Cub		REL	REL	REM	REL	REM	REM
Yearling		REL	REM	---	REM	---	REM
Subadult		REL	REM	---	REM	---	REM
Prime Adult		REL	REM	---	REM	---	REM
Old Adult		REM		---	REM	---	REM

*REL = Relocate **REM = REMOVE FROM POPULATION ***RLS = RELEASE ON SITE
(Nuisance grizzlies that are sick or injured beyond a point where natural recovery is likely will be removed.)

Cub = Young of the Year Young = Cub, yearling, or subadult accompanying mother.
Yearling = 12 to 24 months old Old = Indicates advanced age and deteriorated physical state,
Subadult = 24 to 48 months old indicators are tooth wear and physical appearance.

Literature Cited: Interagency Grizzly Bear Committee. 1986. Interagency grizzly bear guidelines. U.S. For. Serv., Washington, D.C. 100pp.

Agency Contacts for Grizzly Bear Conflicts

Representatives of the following agencies must be alerted immediately of any conflict incident.

Grizzly Bear Recovery Coordinator

U.S. Fish and Wildlife Service
510 Desmond Drive SE
Lacey, Washington 98503

U.S. Department of Agriculture
Wildlife Services

Washington Department of Wildlife
600 Capitol Way North
Olympia, Washington 98501-1091

Depending on the location of the nuisance situation, the following information should assist in determining the correct agency representative to notify after the initial calls above have been made.

A. Washington Department of Fish and Wildlife

1. Region 2

Washington Dept. Fish and Wildlife
1550 Alder St. NW
Ephrata, WA 98823-9699

2. Region 3

Washington Dept. Fish and Wildlife
1701 S. 24th Ave
Yakima, WA 98902-5720

3. Region 4

Washington Dept. Fish and Wildlife
16018 Mill Creek Blvd
Mill Creek, WA 98012-1296

2. Wildlife Services

Rocky Mountains
Tonasket
Sedro-Woolley

Chehalis
Moses Lake
Ellensburg

3. U. S. Fish and Wildlife Service

Endangered Species
510 Desmond Drive SE
Lacey, Washington 98503

Endangered Species
11103 E. Montgomery Drive
Spokane, Washington 99206

4. U. S. Forest Service

a. Mt. Baker-Snoqualmie National Forest
21905 64th Avenue West
Mountlake Terrace, Washington 98043

b. Okanogan National Forest
Winthrop Work Center
24 W. Chewuch Road
Winthrop, Washington 98862

c. Wenatchee National Forest
215 Melody Lane
Wenatchee, Washington 98801

5. National Park Service

North Cascades National Park
810 State Route 20
Sedro Wooley, Washington 98284

6. Bureau of Land Management

N1103 Faneher Road
Spokane, Washington 99212

This page intentionally left blank.

**APPENDIX F: DRAFT MINIMUM REQUIREMENTS
DECISION GUIDE WORKBOOK**



ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

DRAFT MINIMUM REQUIREMENTS DECISION GUIDE WORKBOOK

“...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act...”

-- The Wilderness Act of 1964

Project Title: North Cascades Ecosystem Grizzly Bear Restoration

MRDG Step 1: Determination

Determine if Administrative Action is Necessary

Description of the Situation

What is the situation that may prompt administrative action?

The grizzly bear (*Ursus arctos horribilis*) was listed as threatened under the Endangered Species Act (ESA) on July 28, 1975. Following the listing, the US Fish and Wildlife Service (FWS) initiated a recovery effort directed at establishing viable populations in portions of four states where the grizzly bear was known or believed to exist at the time of listing. The remaining grizzly bears in the western United States are managed within six recovery zones: the Greater Yellowstone Ecosystem (GYE) recovery zone in Wyoming and southwest Montana; the Northern Continental Divide Ecosystem (NCDE) recovery zone in northwest Montana; the Cabinet-Yaak Ecosystem (CYE) recovery zone, which includes extreme northwestern Montana and the northern Idaho panhandle; the Selkirk Ecosystem (SE) recovery zone of northern Idaho and northeastern Washington; the Bitterroot Ecosystem (BE) recovery zone in central Idaho and western Montana; and the North Cascades Ecosystem (NCE) recovery zone of northwestern and north-central Washington (USFWS 1993).

The NCE constitutes a large block of contiguous habitat that spans the international border between the United States and Canada but is isolated from grizzly bear populations in other parts of the two countries. The NCE includes all of the North Cascades National Park Complex (11% of the recovery zone) and large portions of the Mount Baker Snoqualmie and Okanogan-Wenatchee National Forests (which together make up 74% of the recovery zone), as well as protected lands and de facto wilderness in British Columbia, Canada (state lands represent 5% of the recovery zone). Research indicates this wilderness landscape is capable of supporting a self-sustaining grizzly bear population (USFWS 1997); however, there have been confirmed observations of only two individual grizzly bears in the NCE in the past ten years, both of which were in the border region of British Columbia (Interagency Grizzly Bear Committee NCE Subcommittee 2016). Given the low number of grizzly bears, very slow reproductive rate, and other recovery constraints, the grizzly bear in the North Cascades was determined to be warranted for endangered status; however, the up-listing has not yet occurred (USFWS 2011). Although a very small number of grizzly bears still inhabit the ecosystem, the

number of grizzly bears in the NCE does not meet the accepted definition for a population (two adult females with cubs or one adult female tracked through two litters) (USFWS 2000). Grizzly bears thus have been functionally extirpated in the North Cascades Ecosystem.

Because the NCE grizzly bears are at risk of local extinction, action is needed at this time to:

- Avoid the permanent loss of grizzly bears in the NCE.
- Contribute to the restoration of biodiversity of the ecosystem for the benefit and enjoyment of present and future generations.
- Enhance the probability of long-term survival and conservation of grizzly bears within the lower 48 states and thereby contribute to overall grizzly bear recovery.
- Support the removal of the grizzly bear from the federal list of threatened and endangered wildlife species.

To address these needs, the National Park Service (NPS), FWS, Washington Department of Fish and Wildlife (WDFW), and US Forest Service (FS) are proposing to restore grizzly bears to the North Cascades Ecosystem. The *North Cascades Ecosystem Grizzly Bear Restoration Plan / Environmental Impact Statement* (plan/EIS) evaluates the effects of alternatives for grizzly bear restoration including potential impacts to fish and wildlife, wilderness, recreational use and experience, socioeconomics, public safety, and ethnographic resources. Action alternatives include the capture of 25-200 grizzly bears in other ecosystems and the use of helicopters to transport and release these grizzly bears into the North Cascades over several years. Potential release sites are within the Glacier Peak, Pasayten, and Stephen Mather Wildernesses.

As action is proposed within wilderness, this minimum requirement decision guide assesses whether or not action is needed within the Glacier Peak, Pasayten, and Stephen Mather Wildernesses and if so, determines the minimum tool for doing so.

References:

Interagency Grizzly Bear Committee NCE Subcommittee. 2016. In-person communications and e-mail correspondence between members of the Interagency Grizzly Bear Committee (IGBC) NCE Subcommittee Technical Team and Mike Mayer and Jason Medema, Louis Berger, January – July 2016.

US Fish and Wildlife Service. 1993. Grizzly Bear Recovery Plan. Missoula, MT. 181 pg. September 10, 1993.

US Fish and Wildlife Service. 1997. Grizzly Bear Recovery Plan Supplement: North Cascades Ecosystem Recovery Plan Chapter. June 23, 1997.

US Fish and Wildlife Service. 2000. Grizzly bear recovery in the Bitterroot Ecosystem. Final Environmental Impact Statement. U.S. Fish and Wildlife Service, Missoula, MT. 766pp.

US Fish and Wildlife Service. 2011. Grizzly Bear (*Ursus arctos horribilis*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Missoula, MT.

Options Outside of Wilderness

Can action be taken outside of wilderness that adequately addresses the situation?

☐ YES

STOP – DO NOT TAKE ACTION IN WILDERNESS

☒ NO

EXPLAIN AND COMPLETE STEP 1 OF THE MRDG

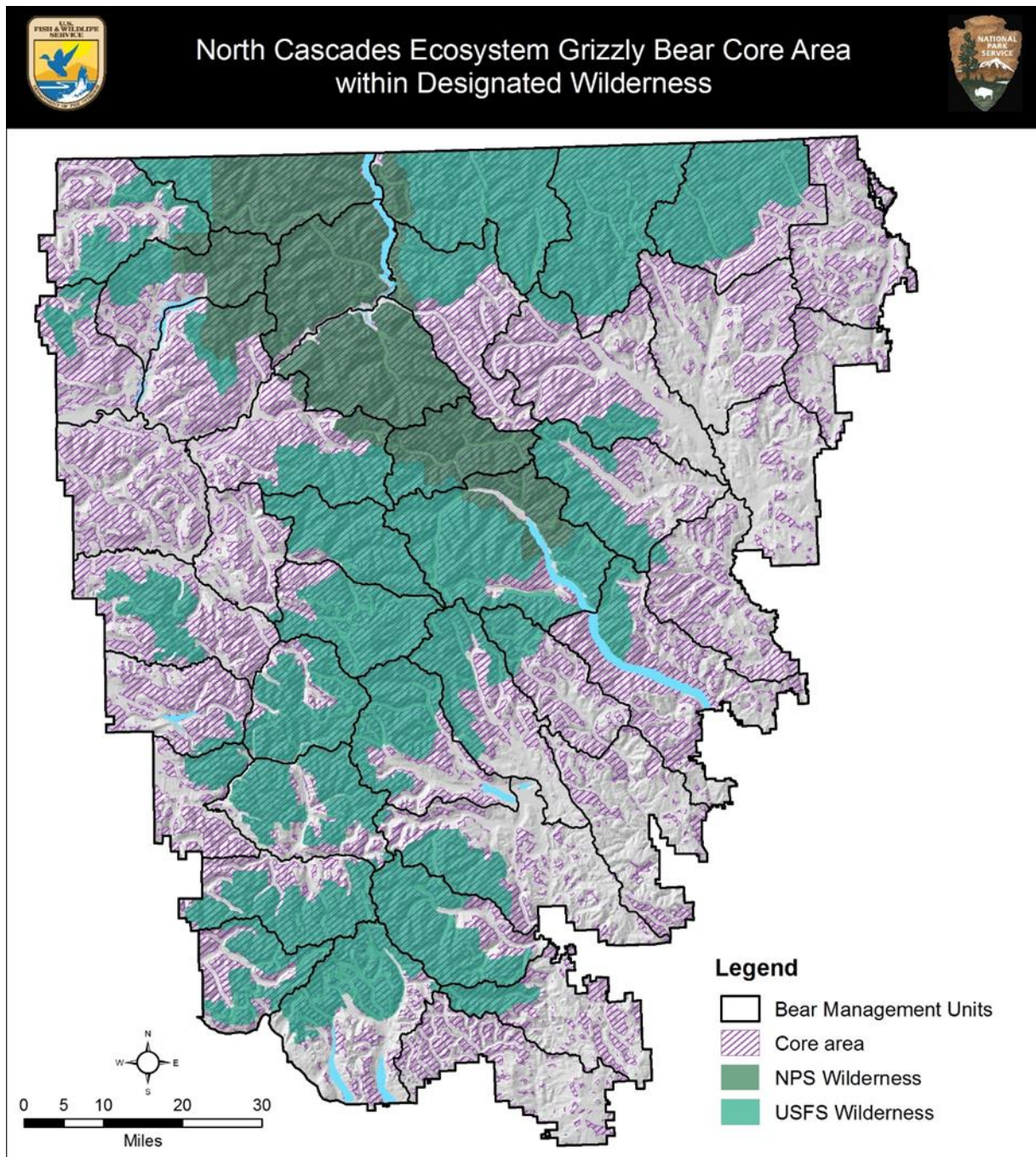
Explain: Ideally, grizzly bears would become naturally restored within the NCE (43% of which is wilderness) without human intervention. In fact for years, land management agencies and other regulatory agencies (i.e. FWS and WDFW) have worked to facilitate the natural recovery of grizzly bears within the NCE by means of habitat protection, sanitation and education, but the native population has instead declined to the extent that the grizzly bear is now functionally extirpated from the ecosystem. It is now clear that translocation (i.e. capturing live grizzly bears elsewhere and releasing them into the NCE) is necessary to restore grizzly bears to the NCE, and in order to maximize the probability of a successful restoration (i.e. grizzly bears establish home ranges and reproduce to establish a local population), these translocations will need to occur at carefully identified release sites that maximize a grizzly bear's chance of survival and future reproduction. Release sites therefore need to include good grizzly bear habitat (as well as connectivity to other habitat) and need to be located in areas close to other grizzly bears (as transplantations take place) in order to facilitate interaction and ultimately breeding. Specifically, locations of release sites need to:

- Be within an area that consists of highly suitable seasonal habitat (Specifically, berry-producing plants that are known grizzly bear foods are present in the area.);
- Be at an adequate distance from high visitor use, non-motorized areas, such that low human-use areas are targeted;
- Be within Bear Management Units (BMUs) with a high amount (>70%) of core area (defined as area more than 500m from roads, motorized trails, or high use hiking trails) (these areas at least need to be prioritized); and
- Include a suitable vehicle-accessible site (with little public use) as a staging area, or a suitable helicopter landing site if no road access exists.

Most release sites that meet these criteria in the NCE are located within designated wilderness. For example, the North Cascades Grizzly Bear Recovery Zone is divided into 42 Grizzly Bear Management Units (BMUs), only 15 of which have a high amount (>70%) of core area, and of those 15, 14 are primarily within wilderness (see Map 1 below). While there are potential suitable release sites for grizzly bears outside of wilderness areas, they are few and far between, and not numerous enough to sustain 25 translocated grizzly bears, much less 200, that are considered within the alternatives of the *North Cascades Ecosystem Grizzly Bear Restoration Plan / Environmental Impact Statement* (plan/EIS). Furthermore, once the first few bears are established, additional releases would need to be made in proximity to those established bears – whether they become established in non-wilderness or wilderness areas – in order to maximize the likelihood of a successful establishment. If a grizzly bear establishes a home range within wilderness, as it is assumed, some additional releases would likely need to occur within that wilderness.

Regardless of whether or not individual grizzly bears would be released within wilderness directly, it is assumed that grizzly bears would travel to and establish home ranges in at least portions of the Stephen Mather, Glacier Peak, and Pasayten Wildernesses, and if present in any of these wildernesses, monitoring grizzly bears within that wilderness would be necessary to detect grizzly bears in the NCE, estimate the survival rate of released grizzly bears and their offspring, determine the number of reproducing females and the extent and location of their home ranges. This monitoring cannot occur outside wilderness if grizzly bears are located within designated wilderness.

Map 1: North Cascades Ecosystem Grizzly Bear Core Area within Designated Wilderness



Criteria for Determining Necessity

Is action necessary to meet any of the criteria below?

A. Valid Existing Rights or Special Provisions of Wilderness Legislation

*Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that **requires** action? Cite law and section.*

☐ YES ☒ NO

Explain: The Glacier Peak Wilderness was designated in 1964 as one of the 54 original wilderness areas within the United States. This wilderness area was expanded in 1968, under the same legislation that created North Cascades National Park, and further expanded by the Washington State Wilderness Act of 1984. The Pasayten Wilderness was created in 1968, as part of the same legislation that expanded the Glacier Peak Wilderness and established North Cascades National Park and was later expanded as part of the 1984 Washington State Wilderness Act. The Stephen Mather Wilderness was designated by the Washington Parks Wilderness Act of 1988. There are no Special Provisions in any of the legislation creating these wildernesses that would require grizzly bear restoration and monitoring.

B. Requirements of Other Legislation

*Is action necessary to meet the requirements of **other federal laws**? Cite law and section.*

☒ YES ☐ NO

Explain:

Sections 2(c)(1) and 7(a)(1) of the Endangered Species Act (ESA) of 1973, as amended, create an affirmative obligation "...that all federal departments and agencies shall seek to conserve endangered and threatened species" of fish, wildlife, and plants. The grizzly bear is listed under ESA as a threatened species, and the NCE has been designated as a grizzly bear recovery zone. Thus, this obligation under ESA to "...utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered and threatened species" applies to the United States Forest Service and National Park Service who manage lands within the NCE.

Sec.3(3) of the Endangered Species Act provides additional clarity to this affirmative obligation by defining "conserve", "conserving", and "conservation" as using "and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary". "Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as *research*, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and *transplantation*..." (emphasis added).

C. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character, including: Untrammeled, Undeveloped, Natural, Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation, or Other Features of Value?

UNTRAMMELED

☐ YES ☒ NO

Explain: This action is not necessary to preserve the untrammeled (unhindered or unmanipulated) quality of the Glacier Peak, Pasayten, or Stephen Mather Wildernesses.

UNDEVELOPED

☐ YES ☒ NO

Explain: No, the action does not include removal of existing structures or a reduction of developments. Action is not necessary to preserve the undeveloped quality of the wilderness character of the Glacier Peak, Pasayten, or Stephen Mather Wildernesses.

NATURAL

☒ YES ☐ NO

Explain: The grizzly bear, indigenous to the North Cascades Ecosystem and the wildernesses within it, has been functionally extirpated from the NCE and is currently a federally- and state-listed threatened species. This extirpation not only threatens the overall strength and resiliency of the species, but it has also had a negative impact on the NCE and the natural quality of the wilderness character of the Glacier Peak, Pasayten, and Stephen Mather Wildernesses in that effects from modern civilization, namely the removal of a macro-carnivore, remain so long as this species is functionally extirpated from the ecosystem. Restoration of this species would therefore restore a significant aspect of the natural processes of ecological systems within the Glacier Peak, Pasayten, and Stephen Mather Wildernesses to a state in which they are substantially free from the effects of modern civilization. This restoration is therefore necessary to administer these wilderness areas as wilderness.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

☐ YES ☒ NO

Explain: Restoration of the grizzly bear is not necessary to preserve opportunities for solitude or primitive and unconfined recreation in these Wildernesses.

OTHER FEATURES OF VALUE

☒ YES ☐ NO

Explain: Action is necessary to provide the best chance to restore the ecological and scientific value that the presence of grizzly bears contribute to the wilderness character of the Glacier Peak, Pasayten, and Stephen Mather Wildernesses.

Step 1 Decision*Is administrative action necessary in wilderness?*Decision Criteria

- | | | |
|--|---|--|
| A. Existing Rights or Special Provisions | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| B. Requirements of Other Legislation | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| C. Wilderness Character | | |
| Untrammelled | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| Undeveloped | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| Natural | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| Outstanding Opportunities | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| Other Features of Value | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |

Is administrative action necessary in wilderness?☒ YES**EXPLAIN AND PROCEED TO STEP 2 OF THE MRDG**☐ NO**STOP – DO NOT TAKE ACTION IN WILDERNESS**

Explain: The grizzly bear, indigenous to the NCE and the wildernesses within it, has been functionally extirpated from the NCE and is currently a federally-listed threatened species. This extirpation not only threatens the overall strength and resiliency of the species, but it also has had a negative impact on the NCE and the wilderness within it, including the “natural” and “other features of value” qualities of the wilderness character of the Glacier Peak, Pasayten, and Stephen Mather Wildernesses. Restoration of this species would restore a significant aspect of the biodiversity within these wildernesses to a state in which they are substantially free from the effects of modern civilization (natural quality of wilderness character) and would enhance the ecological and scientific values of these wildernesses, in that this action would restore the entire complement of pre-contact macro-predators to the NCE and these wildernesses. Because the restoration of grizzly bears is necessary to restore this important aspect of the “natural” and “other features of value” qualities of these wilderness areas, actions to restore (including releases and subsequent monitoring) the grizzly bear to the Glacier Peak, Pasayten, and Stephen Mather Wildernesses are necessary to administer these areas as wilderness.

Application of the Wilderness Act (specifically Section 4(b) – requirement to preserve wilderness character through “Natural” and “Other Features of Value” qualities of the Wilderness Act) and Endangered Species Act (Section 7(a)) indicate that action is needed to restore the grizzly bear to the Glacier Peak, Pasayten, and Stephen Mather Wildernesses.

MRDG Step 2

Determine the Minimum Activity

Other Direction

Is there “special provisions” language in legislation (or other Congressional direction) that explicitly **allows** consideration of a use otherwise prohibited by Section 4(c)?

AND/OR

Has the issue been addressed in agency policy, management plans, species recovery plans, or agreements with other agencies or partners?

☒ YES

DESCRIBE OTHER DIRECTION BELOW

☐ NO

SKIP AHEAD TO TIME CONSTRAINTS BELOW

Describe Other Direction:

Section 4(b) of the Wilderness Act states that “Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use” (emphasis added).”

Guidance for the US Forest Service, Department of Agriculture:

The National Interagency Memorandum of Agreement (August, 2000) states the Forest Service’s shared mission is to “...enhance conservation of imperiled species while delivering appropriate goods and services provided by the lands and resources.”

The Policies and Guidelines for Fish and Wildlife Management in National Forest and Bureau of Land Management Wildernesses (as amended June 2006) discusses Threatened and Endangered Species on page 8. The document states, “Actions necessary to conserve or recover threatened or endangered species, including habitat manipulation and special conservation measures, that involve uses generally prohibited under Section 4(c) of the Wilderness Act, will be considered and may be authorized by the Federal administering agency through application of the MRDG as outlined in Section E., General Policy.”

The Association of Fish and Wildlife Agencies (AFWA) is an association representing government agencies responsible for North America’s fish and wildlife resources. A policy statement between the AFWA and the Forest Service documents the desire of the agencies to work in cooperation with the States on Fish and Wildlife related issues. The policy statement allows for, “Transplants (removal, reintroduction, or supplemental introduction) of terrestrial wildlife species in wilderness may be permitted if necessary: (a) to perpetuate or recover a threatened or endangered species; (b) to restore the population of an indigenous species; or (c) to manage wildlife populations in accordance with the States’ wildlife populations objectives.”

The Forest Service Manual expands on the agreement with AFWA. Chapter 2323.32 provides the following policy regarding wildlife management in wilderness areas:

1. “Recognize that States have jurisdiction and responsibilities for the protection and management of wildlife and fish populations in wilderness. Cooperate and work closely with State wildlife and fish authorities in all aspects of wildlife and fish management. Base any Forest Service recommendation to State wildlife and fish agencies on the need for protection

and maintenance of the wilderness resource. Recognize wilderness protection needs and identify any needed requirements in coordination efforts and in cooperative agreements with State agencies.

2. Wildlife and fish management programs shall be consistent with wilderness values.”

FSM 2323.33a further provides “[re]introduce wildlife species only if the species was once indigenous to an area and was extirpated by human induced events. Favor federally listed threatened or endangered species in reintroduction efforts. Reintroductions shall be made in a manner compatible with the wilderness environment. Motorized or mechanical transport may be permitted if it is impossible to do the approved reintroduction by nonmotorized methods.” The Forest Service Manual 2670.22 also calls for the Forest Service to “maintain viable populations of all native and desired nonnative wildlife, fish and plant species in habitats throughout their geographic range on National Forest System Lands.”

Guidance for the National Park Service, Department of Interior:

NPS *Management Policies 2006* direct the NPS to take action to restore native plant and animal populations that “have been extirpated by past human caused actions”, whenever all of the following criteria are met:

- “Adequate habitat to support the species either exists or can reasonably be restored in the park, and if necessary also on adjacent public lands and waters; once a natural population level is achieved, the population can be self-perpetuating”;
- “The species does not, based on an effective management plan, pose a serious threat to the safety of people in parks, park resources, or persons or property within or outside park boundaries”;
- “The genetic type used in restoration most nearly approximates the extirpated genetic type”;
- “The species disappeared, or was substantially diminished, as a direct or indirect result of human induced change to the species population or to the ecosystem”; and
- “Potential impacts upon park management and use have been carefully considered” (NPS 2006b, sec. 4.4.2.2).

When restoring these species, NPS *Management Policies 2006* further provide “The Service will use the best available technology, within available resources, to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of landscape and biological community structure and function” (NPS 2006b, Section 4.1.5).

The Wilderness Management Plan (1989) for the Stephen Mather Wilderness establishes standards for minimal tool, stating, “Non power tools will be preferred. The Wilderness District Ranger will have final approval for the use of power tools...Any use of power tools will be limited as far as possible to before the 4th of July and after Labor Day. All power tools will use a modified muffler that reduces decibel level...Power tools will be limited to chain saws, brushers, rock drills, chain saw winches, and explosives...Aircraft may only be used if stock use is not permitted on trails, trail conditions prevent stock use, or it is impractical to use stock and there is no other practical way to accomplish the work. Aircraft use will be confined to Monday through Thursday and as much as possible to before the 4th of July and after Memorial Day.”

Time Constraints

What, if any, are the time constraints that may affect the action?

It is necessary to release grizzly bears during the months of early summer to early fall while there is an abundance of bear foods available and prior to the winter hibernation period.

Components of the Action

What are the discrete components or phases of the action?

Component 1:	Transportation of personnel from staging area to release site
Component 2:	Transportation of grizzly bear in culvert trap to release site
Component 3:	Release of grizzly bear
Component 4:	Removal of empty culvert trap from release site
Component 5:	Removal of personnel from release site
Component 6:	Transport of personnel to monitor bear reproduction
Component 7:	Transport of personnel to monitor bear biology (diet, etc.)
Component 8:	Transport of personnel to retrieve collar
Component 9:	Transport of mortalities
Component 10:	Condition of site after project

Proceed to the alternatives.

Refer to the [MRDG Instructions](#) regarding alternatives and the effects to each of the comparison criteria.

Alternative 1:**Maximize Efficiency and Data Collection:**

Transplant bears to release sites with staff assistance via helicopter; post-monitoring activities and collar retrieval via foot and aircraft; mortalities retrieved via helicopter

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In this alternative, all grizzly bears released within the NCE would be transported to identified release sites (using criteria described on page 4) via truck and helicopter (see Map 2 for identified release sites). Individual grizzly bears would be live-trapped in other ecosystems that are ecologically similar to the NCE. The trapped bears would then be anesthetized, measured, marked, and fitted with Global Positioning System (GPS) collars and transported in a culvert trap towed by vehicle to staging areas within the NCE. Staging areas would be located in previously disturbed areas close to the identified release site and large enough for (a) the safe landing of a helicopter, (b) parking for a fuel truck, and (c) any other grizzly bear processing needs (see Map 2 for locations of staging areas). Once at the staging area, personnel would be picked up and transported to the release site via helicopter, requiring one round trip of a helicopter flight and one landing at the release site. The helicopter would then return to the staging area to pick up the culvert trap, with grizzly bear inside, via long line, and would transport the trap and bear back to the release site, leaving the site once the culvert trap was detached by personnel onsite (another round trip helicopter flight). Personnel onsite would then open the trap to release the bear, in such a way as to ensure personnel safety, and would remain onsite at a safe distance to ensure the bear successfully left the trap. Following successful release, the helicopter would (1) return to the release site to pick up the empty culvert trap, via long line, and transport it back to the staging area (another round trip helicopter flight), and would then (2) return to the site to pick up the personnel as well (one last round trip with an aircraft landing). All flights would occur between the staging area and release site.

For the purposes of assessing impacts, helicopters would make up to four round-trips per grizzly bear and would require two landings in wilderness, necessary for the release of each grizzly bear and drop-off and retrieval of staff and the culvert trap. Each release could take up to eight hours over the course of one day; however, helicopter flight time over designated wilderness areas would vary (estimated at 0.15-4.8 hours of flight time over wilderness per release) depending on the location of the release site and corresponding staging area. All operations would be conducted during daylight hours. Under all alternatives, capture and release activities would take place between early summer and early fall, depending on the capture and release site(s) selected and availability of natural bear foods during that particular year. Considering the sensitivity of these release activities, the FS and/or NPS could also implement potential temporary local closures (up to a few days) during releases on a site-specific basis.

Following the initial release of grizzly bears into the NCE, the FS and NPS would conduct annual monitoring activities to assess the success of restoration activities – particularly track reproduction and behavior (such as diet and genetic monitoring) – and adaptively manage for future releases. While much of the monitoring work would occur via satellite (i.e. remotely), this alternative would include two annual flights via fixed wing aircraft to monitor reproduction. These flights would occur in the spring and fall and would target areas with known female grizzly bears to try to visually identify if offspring/cubs are present. Onsite monitoring would also occur periodically via foot to study diet (sample scat or monitor vegetation) and genetics (obtain hair samples) within known home ranges.

Under this alternative, staff would also retrieve lost collars via foot whenever feasible, but may use helicopters to retrieve collars in particularly remote areas that could pose safety hazards to personnel

on the ground. Collars would be attached to all released bears and are designed to fall off after four years of use.

Should mortalities occur during years of project implementation, reconnaissance would occur via helicopter (one round-trip flight with landing) in order to transport personnel to site, complete an investigation as to the cause of death, retrieve important remains, and fly back. It is possible that a personnel would determine that a more holistic examination is necessary, which would require laboratory examination of potentially the full remains. In these situations, an additional flight could occur for bears that are too heavy to lift within an internal helicopter load.

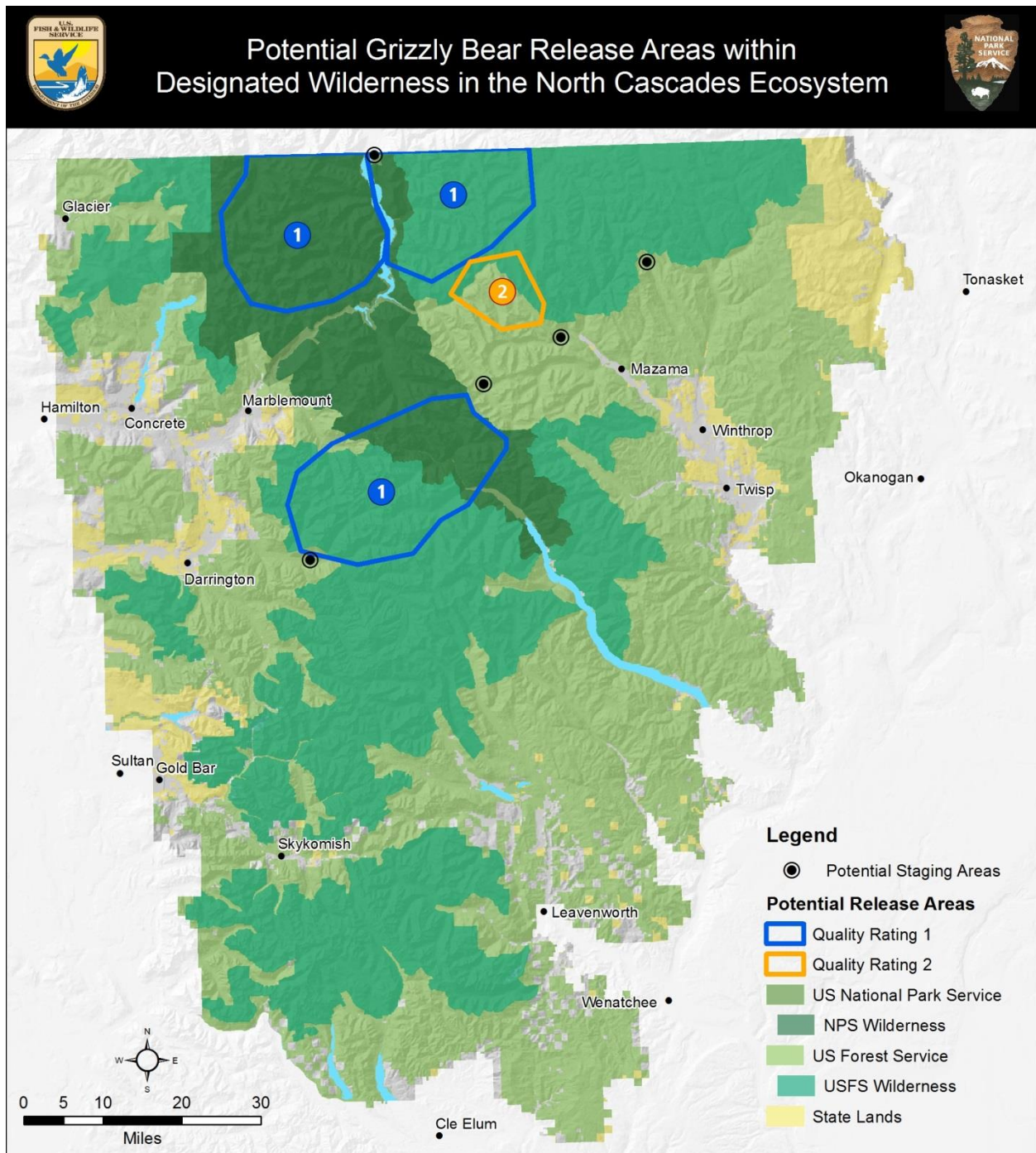
Because of these extensive monitoring procedures, NPS, FWS, FS, and WDFW staff would likely have ample information to adaptively manage grizzly bear restoration and respond to any issues that arise in release efforts in order to ensure the greatest success for restoration. These monitoring procedures would allow staff to estimate survival rate, the number of grizzly bears that establish a home range, and the number of reproducing females in order to determine if the restored grizzly bear population is capable of surviving and reproducing by natural means. They would also be able to detect grizzly bears in the NCE in order to determine grizzly bear density and distribution in the ecosystem, and would furthermore expand scientific understanding regarding grizzly bear habitat use, movement, reproduction and survival.

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Transportation of personnel from staging area to release site	Personnel transported via helicopter (1 round trip with landing/bear)
2	Transportation of grizzly bear in culvert trap to release site	Bear transported by helicopter (1 sling load/bear).
3	Release of grizzly bear	Release grizzly bear; open culvert trap
4	Removal of empty culvert trap from release site	Trap transported by helicopter (1 sling load/bear)
5	Removal of personnel from release site	Personnel transported via helicopter (1 round trip with landing/bear)
6	Transport of personnel to monitor bear reproduction	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)
7	Transport of personnel to monitor bear biology (diet, etc.)	Reconnaissance and surveys via foot (regardless of number of bears released)
8	Transport of personnel to retrieve collar	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)
9	Transport of mortalities	Personnel transported via helicopter (1 round trip and one landing per mortality)
10	Condition of site after project	Ample information to ensure all objectives are met

Map 2: Potential Grizzly Bear Release Areas within Designated Wilderness in the North Cascades Ecosystem



Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	1	NE
<u>Untrammeled Total Rating</u>		-1		

Explain: By reintroducing the grizzly bear to the NCE, the NPS would be actively managing the wilderness through which and in which these animals are expected to travel and establish home ranges. This activity negatively impacts the untrammeled quality of wilderness character in the Glacier Peak, Pasayten, and Stephen Mather Wildernesses.

UNDEVELOPED

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3	Release grizzly bear; open culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	7	NE
<u>Undeveloped Total Rating</u>		-7		

Explain: All impacts listed to the undeveloped quality of wilderness character are from the use of aircraft for transportation. The use of helicopters, aircraft landings, and fixed wing flights are all considered development within wilderness. Helicopter transport (4 flights per released bear (100-800 round trip flights); plus the likely few needed to retrieve collars and mortalities), helicopter landings (2 landings per released bear (50-400 total); plus the likely few needed to retrieve collars), and fixed wing flights (two flights would occur per year that collars are operable; flights would occur where bears are present) would all have short-term negative impacts on the undeveloped quality of wilderness character within each wilderness. Not all actions would occur within every wilderness as actions are related to individual bears; rather impacts would occur respective to where individual bears are released and home ranges are established.

NATURAL

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		2	1	NE
<u>Natural Total Rating</u>		1		

Explain: In ensuring successful restoration of a functionally extirpated, federally-listed threatened species through transplants, monitoring, and adaptive management, this action would have a moderate, long-term, beneficial impact on the naturalness of the Glacier Peak, Pasayten, and Stephen Mather Wildernesses because it would improve the processes and biodiversity of these wilderness ecosystems by completing the native predator guild within these wildernesses, which would have positive cascading effects on other species present. These activities would result in the restoration of a federally threatened species and thus the natural quality of wilderness character within each of these wilderness areas. Some negative impacts would occur to the natural quality of wilderness character through the removal of individual mortalities as these grizzly bears may no longer be available as a food source for scavengers nor left to naturally decay.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		2	9	NE
<u>Solitude or Primitive & Unconfined Rec. Total Rating</u>		-7		

Explain: Actual release activities have the potential to impact summer visitors to the wilderness areas as sounds from transportation to release sites and actions associated with releases will likely occur within wilderness which would temporarily degrade the opportunities for solitude in the Glacier Peak, Pasayten, and Stephen Mather Wildernesses (components #1,2,4,5,8,9). Temporary closures may also occur during releases which could briefly limit access to specific locations within wilderness (component #3). Similarly, seeing personnel in the wilderness and seeing/hearing fixed-wing aircraft associated monitoring would have a short-term negative impact on visitors' opportunities for solitude in the wilderness (components #6 and 7).

At the same time, knowing grizzly bears have been restored to the wilderness, having the slim, though real, chance to see a grizzly bear in the wild and in its native habitat (both component #3), and having enhanced opportunities to learn about grizzly bear restoration (component #10) would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the wilderness and non-visitors alike.

OTHER FEATURES OF VALUE

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		5	0	NE
<u>Other Features of Value Total Rating</u>		5		

Explain: The monitoring activities that would accompany grizzly bear restoration (monitoring reproduction and behavior; studying mortalities; adaptively managing restoration efforts to ensure successful restoration) would inform future restoration efforts of a native species – a long-term benefit to scientific understanding of these processes. This information could also be used to enhance education and outreach in and around both wildernesses, a beneficial impact.

Traditional Skills*What is the effect of each component activity on traditional skills?***TRADITIONAL SKILLS**

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel transported via helicopter (1 round trip with landing/bear)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		2	5	NE
<u>Traditional Skills Total Rating</u>		-3		

Explain: Use of a helicopter to transport staff reduces opportunities to maintain proficiency in the use of non-mechanical travel methods; whereas staff hiking in to sites maintains this proficiency.

Economics*What is the estimated cost of each component activity?***COST**

<u>Component Activity for this Alternative</u>		Estimated Cost
1	Personnel transported via helicopter (1 round trip with landing/bear)	\$9,600/bear
2	Bear transported by helicopter (1 sling load/bear).	
3	Release grizzly bear; open culvert trap	

4	Trap transported by helicopter (1 sling load/bear)	
5	Personnel transported via helicopter (1 round trip with landing/bear)	
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	\$1,600 / bear
7	Reconnaissance and surveys via foot (regardless of number of bears released)	
8	Personnel transported via foot as feasible; helicopter when necessary to access site (potentially 1 round trip with landing/collar)	\$4,800 / bear
9	Personnel transported via helicopter (1 round trip and one landing per mortality)	
10	Ample information to ensure all objectives are met	NA
Total Estimated Cost		\$16,000 / bear

Explain: Initial releases would need to be completed using a large helicopter (i.e. at least a Hughes 500 or Jetranger B3 type) due to the weight of the culvert plus a 200-400 lb grizzly bear. The hourly cost of a helicopter averages \$1,200. If a helicopter is needed for 8 hours (even if flight time is less than that), each release would cost approximately \$9,600, not including staff time. Planning team members estimate that fixed wing flight costs amount to approximately 16 hours of flight time/year, for a total of \$8,000. Assuming five bears are released each year, this would cost approximately \$1,600 per bear. It was also assumed that a helicopter would need to be procured for two hours for each additional flight such as collar retrieval (per bear) and mortality reconnaissance (per bear), totaling \$4,800 per bear. Personnel costs are not factored into this table.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	1	1	2	2	3
Critical: Permanent partial disability or temporary total disability	1	2	2	3	4
Marginal: Compensable injury or illness, treatment, lost work	2	3	3	4	4
Negligible: Superficial injury or illness, first aid only, no lost work	3	4	4	4	4
Risk Assessment	Moderate				

Risk Assessment Code

1 = Extremely High Risk	2 = High Risk	3 = Moderate Risk	4 = Low Risk
--------------------------------	----------------------	--------------------------	---------------------

Explain: Use of a helicopter is the most hazardous component of this project. Accidents are rare but can be catastrophic when they occur. This hazard would be mitigated through the use of a standard Project Aviation Safety Plan that would include use of qualified and agency approved helicopter, flight, and ground crews, etc.

Summary Ratings for Alternative 1

Wilderness Character	
Untrammeled	-1
Undeveloped	-7
Natural	1
Solitude or Primitive & Unconfined Recreation	-7
Other Features of Value	5
Wilderness Character Summary Rating	-9
Traditional Skills	
Traditional Skills	-3
Economics	
Cost	\$16,000 / bear
Safety	
Risk Assessment	Moderate Risk

Alternative 2:**Adaptively Manage Releases and Ensure Proper Data Collection:**

Transplant bears to release sites with minimal staff assistance via truck or helicopter; post-monitoring activities via foot and aircraft; collar retrieval primarily via foot; mortalities retrieved via helicopter only following on-site reconnaissance

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

In this alternative, grizzly bears released within the NCE would be transported to identified release sites either via truck or a combination of truck and helicopter. Like alternative 1, individual grizzly bears would be live-trapped in other ecosystems that are ecologically similar to the NCE. The trapped bears would then be anesthetized, measured, marked, and fitted with Global Positioning System (GPS) collars and transported in a culvert trap towed by vehicle to either a release site that is accessible via road (very few of these locations exist) or a staging area within the NCE.

For release sites that are accessible via road (again, very few of these locations exist), no prohibited uses would occur within designated wilderness. However, for release sites that are not accessible via road (most of the likely suitable release locations), releases would occur via helicopter from established staging areas that meet the criteria outlined in alternative 1. Initially, releases would occur similar to those in alternative 1 – with four flights and two landings per release to allow personnel onsite to facilitate the release. However, should initial releases go smoothly and without incident, transport of personnel could diminish over time so that eventually staff may not be required onsite for releases so long as a remote release system can be developed and used effectively. Without staff onsite, this alternative would require a helicopter to transport the culvert trap, with bear inside, from the staging area to the release site via long line, release the culvert trap at the release site, and remotely open the culvert trap. Personnel would then need to hike to the site (as close to the timed release as possible) to enable the helicopter to return and pick up the culvert trap (while a helicopter can remotely release a load, personnel are needed onsite to attach a load) for removal at a later date.

For the purposes of assessing impacts, helicopters would initially make up to four round-trips per grizzly bear and would require two landings in wilderness. Over time, this would reduce to two round-trips per grizzly bear and no landings. Each initial release could take up to eight hours over the course of one day but may eventually entail helicopter flights over the course of two days. While helicopter flight time over designated wilderness areas would initially be up to 4.8 hours per release, it would eventually diminish to an estimated 0.75-2.4 hours of flight time per release depending on the location of the release site and corresponding staging area. Like alternative 1, capture and release activities would take place between early summer and early fall and all operations would be conducted during daylight hours. Considering the sensitivity of these release activities, the FS and/or NPS could also implement potential temporary local closures (up to a few days) during releases on a site-specific basis. These closures are more likely to occur in areas where releases occur along a road as these locations would likely be associated with higher visitor use as they are in existing visitor use corridors.

Following the initial release of grizzly bears into the NCE, annual monitoring activities would be conducted to assess the success of restoration activities similar to those outlined in alternative 1. While much of the monitoring work would occur via satellite (i.e. remotely), this alternative would also include two annual flights via fixed wing aircraft operating at least 500 ft Above Ground Level (AGL) to monitor reproduction. These flights would occur in the spring and fall and would target areas with known female grizzly bears to try to visually identify if offspring are present. Onsite monitoring would also occur periodically via foot to study diet (sample scat or monitor vegetation) and genetics (obtain hair samples) within known home ranges.

Under this alternative, staff would retrieve lost collars via foot whenever feasible, but could retrieve collars via helicopter when in extremely remote/hazardous areas. Collars would be attached to all released bears and are expected to fall off after four years of use.

Should mortalities occur during years of project implementation, onsite reconnaissance would occur via foot whenever possible. If personnel onsite believe retrieval of the bear could inform understanding of the recovery effort, the bear could be picked up via helicopter long line. This would entail one round trip flight without a landing.

Because of these extensive monitoring procedures, NPS, FWS, FS, and WDFW staff would likely have ample information to adaptively manage grizzly bear restoration and respond to any issues that arise in release efforts in order to ensure successful restoration. These monitoring procedures would allow staff to estimate survival rate, the number of grizzly bears that establish a home range, and the number of reproducing females in order to determine if the restored grizzly bear population is capable of surviving and reproducing by natural means. They would also be able to detect grizzly bears in the NCE in order to determine grizzly bear density and distribution in the ecosystem, and would furthermore expand scientific understanding regarding grizzly bear habitat use, movement, reproduction and survival.

Component Activities

How will each of the components of the action be performed under this alternative?

<u>Component of the Action</u>		Activity for this Alternative
1	Transportation of personnel from staging area to release site	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap
2	Transportation of grizzly bear in culvert trap to release site	Bear transported by helicopter (1 sling load/bear).
3	Release of grizzly bear	Release grizzly bear; open culvert trap
4	Removal of empty culvert trap from release site	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site
5	Removal of personnel from release site	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot
6	Transport of personnel to monitor bear reproduction	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)
7	Transport of personnel to monitor bear biology (diet, etc.)	Reconnaissance and surveys via foot (regardless of number of bears released)
8	Transport of personnel to retrieve collar	Personnel transported via foot; potential flight to retrieve collars in remote locations
9	Transport of mortalities	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)
10	Condition of site after project	Ample information to ensure all objectives are met

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	1	NE
<u>Untrammeled Total Rating</u>		-1		

Explain: By reintroducing the grizzly bear to the NCE, the NPS would be actively managing the wilderness through which and in which these animals are expected to travel and establish home ranges. This activity negatively impacts the untrammeled quality of wilderness character in the Glacier Peak, Pasayten, and Stephen Mather Wildernesses.

UNDEVELOPED

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3	Release grizzly bear; open culvert trap (culvert left in wilderness while personnel hike to site)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		0	8	NE
<u>Undeveloped Total Rating</u>		-8		

Explain: The use of helicopters, aircraft landings, and fixed wing flights are all considered development within wilderness. Although similar types of impacts would occur as in alternative 1 (helicopter flights, aircraft landings, and fixed wing flights), the number and duration of impacts would be less as 1) some bears may be released via road in non-wilderness, requiring no prohibited uses within wilderness, 2) personnel would eventually not be transported to and from releases in wilderness, cutting in half the number of flights and flight hours and eliminating aircraft landings associated with releases and retrieval of mortalities, and 3) collars would mostly be retrieved via foot with potentially one flight to retrieve those in more inaccessible locations. All this said, the culvert would likely remain within wilderness for a short period of time as staff hike to the site which would adversely impact the undeveloped quality of wilderness character, even if only temporarily (few days). As with alternative 1, not all actions would occur within every wilderness as actions are related to individual bears. Impacts instead would occur respective to where individual bears are released and home ranges are established.

NATURAL

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	with landing/bear); eventually transported via foot			
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		2	1	NE
<u>Natural Total Rating</u>		1		

Explain: In ensuring successful restoration of a functionally extirpated, federally-listed threatened species through transplants, monitoring, and adaptive management, this action would have a moderate, long-term, beneficial impact on the naturalness of the Glacier Peak, Pasayten, and Stephen Mather Wildernesses because it would improve the processes and biodiversity of these wilderness ecosystems by completing the native predator guild within these wildernesses, which would have positive cascading effects on other species present. These activities would result in the restoration of a federally threatened species and thus the natural quality of wilderness character within each of these wilderness areas.

Some negative impacts would occur to the natural quality of wilderness character through the removal of individual mortalities as these grizzly bears would no longer be available as a food source for scavengers nor left to naturally decay.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	collars in remote locations			
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		2	9	NE
<u>Solitude or Primitive & Unconfined Rec. Total Rating</u>		-7		

Explain: Actual release activities have the potential to impact summer visitors to the wilderness areas as sounds from transportation to release sites and actions associated with releases will likely occur within wilderness which would temporarily degrade the opportunities for solitude in the Glacier Peak, Pasayten, and Stephen Mather Wildernesses. Because fewer flights/flight hours are anticipated under this alternative, it is assumed these impacts to solitude would be slightly less than those under alternative 1 (components #1,2,4,5,8,9). Temporary closures may also occur during releases (a few days at most), particularly if releases occur on or near roads which could briefly limit access to specific locations within wilderness (related to component #3). Similarly, seeing personnel in the wilderness and seeing/hearing fixed-wing aircraft associated monitoring (components #6 and 7) would have a short-term negative impact on visitors' opportunities for solitude in the wilderness.

At the same time, knowing grizzly bears have been restored to the wilderness, having the slim, though real, chance to see a grizzly bear in the wild and in its native habitat, and having enhanced opportunities to learn about grizzly bear restoration would have a long-term beneficial impact on opportunities for primitive and unconfined recreation for both visitors to the wilderness and non-visitors alike (components #3 and 10).

OTHER FEATURES OF VALUE

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10	Ample information to ensure all objectives are met	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Number of Effects		5	0	NE
<u>Other Features of Value Total Rating</u>		5		

Explain: The monitoring activities that would accompany grizzly bear restoration (monitoring reproduction and behavior; studying mortalities; adaptively managing restoration efforts to ensure successful restoration) would inform future restoration efforts of native species – a long-term benefit to scientific understanding of these processes. This information could also be used to enhance education in and around both wildernesses, a beneficial impact.

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

<u>Component Activity for this Alternative</u>		Positive	Negative	No Effect
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Bear transported by helicopter (1 sling load/bear).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Release grizzly bear; open culvert trap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Reconnaissance and surveys via foot (regardless of number of bears released)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Ample information to ensure all objectives are met	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Effects		5	3	NE
<u>Traditional Skills Total Rating</u>		2		

Explain: Use of a helicopter to transport staff reduces opportunities to maintain proficiency in the use of non-mechanical travel methods; having staff hike in to sites maintains this proficiency.

Economics*What is the estimated cost of each component activity?***COST**

<u>Component Activity for this Alternative</u>		Estimated Cost
1	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot to assist with removal of culvert trap	~\$6,750/bear (average)
2	Bear transported by helicopter (1 sling load/bear).	
3	Release grizzly bear; open culvert trap	
4	Trap transported by helicopter (1 sling load/bear); likely delayed to wait for personnel to hike to site	
5	Personnel initially transported via helicopter (1 round trip with landing/bear); eventually transported via foot	
6	Fixed wing aircraft (2 times/year for duration collars are operable; regardless of number of bears released)	\$1,600 / bear
7	Reconnaissance and surveys via foot (regardless of number of bears released)	
8	Personnel transported via foot; potential flight to retrieve collars in remote locations	\$2,400 / bear (average)
9	Personnel hike to/from site; grizzly bear transported via helicopter (1 roundtrip with sling load)	
10	Ample information to ensure all objectives are met	NA
<u>Total Estimated Cost</u>		\$10,750 / bear

Explain: This cost table has been created for the purposes of comparison between alternative 1 and 2 and does not represent actual estimated costs of this alternative given the number of assumptions as outlined below.

This cost table estimates costs once personnel are no longer needed onsite to ensure a successful release occurs and does not factor in the costs for personnel which are not de minimis. (A field technician makes approximately \$22.00/hour. With travel costs, a four day backcountry trip costs close to \$1,000 for one staff; at least two staff would hike to site). Costs per bear for releases has therefore been averaged over the life of the plan assuming 25-34 bears are released in total and the last 15-20 do not require personnel onsite. For releases that do not require personnel on site, the duration of flight hours is assumed to be half of those with personnel onsite. Again, this average does not include personnel costs. The assumed cost per flight hour remains the same as in alternative 1: \$1,200.

Like alternative 1, planning team members estimate that fixed wing flights will amount to approximately 16 hours of flight time/year, for a total of \$8,000. Assuming five bears are released each year, this would cost approximately \$1,600 per bear.

Similar to alternative 1, it was assumed that a helicopter would need to be procured for two hours for each flight needed to retrieve a collar in a remote location or transport a mortality, but that these flights

would not occur for every bear. Rather, for the sake of estimating costs, it was assumed that 2 collars out of every 5 would drop in a remote location requiring a flight and 3 mortalities out of every 5 would require some retrieval (i.e. this means ½ of the flights estimated in Alternative 1). The costs of these flights for these respective collars and mortalities were then averaged over the assumed 25-34 bears released into wilderness.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	1	1	2	2	3
Critical: Permanent partial disability or temporary total disability	1	2	2	3	4
Marginal: Compensable injury or illness, treatment, lost work	2	3	3	4	4
Negligible: Superficial injury or illness, first aid only, no lost work	3	4	4	4	4
Risk Assessment	Moderate				

Risk Assessment Code

1 = Extremely High Risk	2 = High Risk	3 = Moderate Risk	4 = Low Risk
--------------------------------	----------------------	--------------------------	---------------------

Explain: Use of a helicopter is the most hazardous component of this project. Accidents are rare but can be catastrophic when they occur. This hazard would be mitigated through the use of a standard Project Aviation Safety Plan that would include use of qualified and agency approved helicopter, flight, and ground crews, etc.

Summary Ratings for Alternative 2

Wilderness Character	
Untrammeled	-1
Undeveloped	-8
Natural	1
Solitude or Primitive & Unconfined Recreation	-7
Other Features of Value	5
Wilderness Character Summary Rating	-10

Traditional Skills	
Traditional Skills	2
Economics	
Cost	\$10,750 / bear
Safety	
Risk Assessment	Moderate Risk

MRDG Step 2: Alternatives Not Analyzed

Alternatives Not Analyzed

What alternatives were considered but not analyzed? Why were they not analyzed?

Complete All Releases via Road: As discussed in Step 1, grizzly bears need to be released in areas with good grizzly bear habitat (as well as connectivity to other habitat) and in close proximity to other grizzly bears (as transplantations take place) in order to facilitate interaction and ultimately breeding. Specifically, locations of release sites need to be:

- Be within an area that consists of highly suitable seasonal habitat (Specifically, berry-producing plants that are known grizzly bear foods are present in the area.);
- Be at an adequate distance from high visitor use, non-motorized areas, such that low human-use areas are targeted;
- Be within Bear Management Units (BMUs) with a high amount (>70%) of core area (defined as area more than 500m from roads, motorized trails, or high use hiking trails) (these areas at least need to be prioritized); and
- Include a suitable vehicle-accessible site (with little public use) or a suitable helicopter landing site if no road access exists.

Most release sites that meet these criteria in the NCE are located within designated wilderness and are, by nature, far from most roads within the NCE. While there are potential suitable release sites for grizzly bears outside of wilderness areas, they are few and far between, and not numerous enough to sustain the reintroduction of 25-34 grizzly bears, much less 200, that are considered within the alternatives of the *North Cascades Ecosystem Grizzly Bear Restoration Plan / Environmental Impact Statement* (plan/EIS).

Personnel hike to site for releases: Release sites would be chosen for habitat quality, quantity and distribution, as well as remoteness from areas of high human use (security). Most of the sites would likely require two-three (or more) days to hike to, and some/most would be a considerable distance from established trails. This requires cross-country hiking that can significantly increase travel time per mile, depending on terrain and/or vegetation. Bears captured in source areas would be held in culvert traps from time of capture until release. Particularly as these activities will be happening during hot summer months, the amount of time any of the bears spends in a trap must be minimized. Release will need to be in the shortest possible window of time after capture: this would include handling time and hours spent driving from the capture site to the staging site. The process must begin immediately after a bear has been detected in a trap, which is unpredictable. Waiting for crews to hike to a release site could add days to the bear's time in a culvert trap. This would be inhumane and possibly/likely endanger the bear's health; hence this alternative was considered but dismissed from further consideration.

No Personnel Present for Releases: Personnel will be, at least initially, needed to monitor the grizzly bear's exit from the trap and its well-being after its many hours in the culvert trap (in other words, ensure that the grizzly bear was successfully transplanted). While it is planned that the trap will be opened remotely (either from the ground or from the air), the alternative to staff onsite would require the presence of a helicopter hovering overhead, waiting for the bear to depart, which would most likely prolong if not prevent a bear's exit. In addition, remote-area releases via helicopter will be new to most, if not all, personnel involved, and it will be important to learn and develop techniques for how best to complete them to ensure successful translocations in the future. Any malfunctions on the ground will need to be dealt with in short order to ensure the bear's safety and timely exit.

Complete all Reproductive Monitoring via Foot: In order to determine whether or not this proposed restoration is successful, this project must be able to confirm successful reproduction of translocated bears. Grizzly bears are wide-ranging animals who typically avoid human activity when and where possible. They can travel many miles in a day over steep and rugged terrain. While satellite collars provide current location data, the ability of ground crews to locate, keep up with, and observe several (or more) bears with offspring during the spring and fall over potentially vast, off-trail, rugged, heavily-vegetated areas of the ecosystem would be prohibitive. Safety would also be an issue, as crews would be intentionally approaching a potentially reproductive female grizzly bear at close range (given limited visibility across the terrain, particularly in spring when grizzly bears make a lot of use of riparian and avalanche chute habitats) in order to count her cubs. For these reasons, this alternative was considered but dismissed from further analysis.

Complete all Reproductive Monitoring via Stock: In addition to those reasons mentioned above, much of the terrain across the NCE is inaccessible to stock. While bears and other wildlife do use human trails, most of their habitat use can be expected to be in trail-less areas that are not reachable by stock. In addition, while grizzly bear attacks on horses/stock are exceedingly rare, the responses of horses to these animals adds a component of risk. Finding a grizzly bear remaining relatively stationary in an area accessible to horses might be possible some of the time, but this still runs the risk of surprise encounters with the study animal, causing unneeded energetic stress to both the female bear and any offspring, and places the crew and stock in unnecessary danger.

Abandon Collars in Place/Do Not Retrieve: Collars are expected to fall off grizzly bears after four years, at which time they will fall to the ground wherever the bear is located at the time. Given the habitat that bears prefer, this will likely be in a remote area across rugged terrain that may not be accessible to humans via foot. While collars could reasonably be left in place, this alternative was dismissed for two reasons: 1) leaving collars in place would equate to a long term impact to the undeveloped quality of wilderness character whereas retrieval could require, at worst, a short/temporary incursion into wilderness, and 2) satellite collars operate off lithium ion batteries which could leach heavy metals into the soil wherever abandoned.

MRDG Step 2: Alternative Comparison

Alternative 1:	Maximize Efficiency and Data Collection: Transplant bears to release sites with staff assistance via helicopter; post- monitoring activities and collar retrieval via foot and aircraft; mortalities retrieved via helicopter
Alternative 2:	Adaptively Manage Releases and Ensure Proper Data Collection: Transplant bears to release sites with minimal staff assistance via truck or helicopter; post-monitoring activities via foot and aircraft; collar retrieval primarily via foot; mortalities retrieved via helicopter only following on-site reconnaissance

Wilderness Character	Alternative 1		Alternative 2	
	+	-	+	-
Untrammelled	0	1	0	1
Undeveloped	0	7	0	8
Natural	2	1	2	1
Solitude/Primitive/Unconfined	2	9	2	9
Other Features of Value	5	0	5	0
Total Number of Effects	9	18	9	19
Wilderness Character Rating	-9		-10	
Traditional Skills	Alternative 1		Alternative 2	
	+	-	+	-
Traditional Skills	2	5	5	3
Traditional Skills Rating	-3		2	
Economics	Alternative 1		Alternative 2	
	+	-	+	-
Cost	\$16,000 / bear		\$10,750 / bear	
Safety of Visitors & Workers	Alternative 1		Alternative 2	
	+	-	+	-
Risk Assessment	Moderate risk		Moderate risk	

MRDG Step 2: Determination

Refer to the [MRDG Instructions](#) before identifying the selected alternative and explaining the rationale for the selection.

Selected Alternative

- | | | |
|-------------------------------------|--------------------------------|--|
| <input type="checkbox"/> | Alternative 1: | Maximize Efficiency and Data Collection:
Transplant bears to release sites with staff assistance via helicopter; post-monitoring activities and collar retrieval via foot and aircraft; mortalities retrieved via helicopter |
| <input checked="" type="checkbox"/> | Alternative 2: | Adaptively Manage Releases and Ensure Proper Data Collection:
Transplant bears to release sites with minimal staff assistance via truck or helicopter; post-monitoring activities via foot and aircraft; collar retrieval primarily via foot; mortalities retrieved via helicopter only following on-site reconnaissance |

Explain Rationale for Selection:

When comparing the alternatives considered above, the planning staff for this project noted that almost all beneficial impacts to wilderness character identified in this MRDG would have at least moderate beneficial impacts on wilderness character that would last in perpetuity; whereas all adverse impacts to wilderness character would be mostly transient and short-term (limited to the number of years of implementation), and in some cases, very unlikely to occur. Therefore, the numerical ratings in the "Alternatives Comparison" table are not sufficient on their own to evaluate and compare these alternatives.

For example, it appears from the numerical rating that Alternative 2 would have more impacts on wilderness character than Alternative 1. However, this is not a fair assessment. The one-point difference between the two alternatives in the scoring under wilderness character is because, all other impacts scored similarly (i.e. presence of impact), Alternative 2 could result in an additional type of impact to the opportunities for solitude quality of wilderness character - from potentially closing an area (for 2-3 days) around the release of a grizzly bear should it occur from a road. If this should occur though, that specific release would not be associated with helicopter flights which impact both the undeveloped and opportunities for solitude qualities of wilderness character. In fact, alternative 2 would result in fewer flights/flight hours and fewer helicopter landings within wilderness as personnel would be asked to hike in more frequently (like in the case of retrieving mortalities), if not, remain off site (like in the case of releases eventually).

Therefore, Alternative 2, is determined to be the minimum tool to implement grizzly bear restoration in the NCE.

Describe Monitoring & Reporting Requirements:

All helicopter and fixed wing flights, flight routes, and flight hours over the wildernesses shall be recorded and shared with the appropriate personnel at North Cascades National Park Service Complex, Mount Baker-Snoqualmie National Forest, and Okanogan-Wenatchee National Forest on an annual basis. These reports should include flight hours and type of aircraft. Wildlife biologists shall also track and report (per wilderness) the number of temporary camera stations installed in the wilderness as a result of monitoring grizzly bears and the duration of operation of each station.

Approvals

Which of the prohibited uses found in Section 4(c) of the Wilderness Act are approved in the selected alternative and for what quantity?

Prohibited UseQuantity

<input type="checkbox"/>	Mechanical Transport:	
<input type="checkbox"/>	Motorized Equipment:	
<input type="checkbox"/>	Motor Vehicles:	
<input type="checkbox"/>	Motorboats:	
<input type="checkbox"/>	Landing of Aircraft:	
<input type="checkbox"/>	Temporary Roads:	
<input type="checkbox"/>	Structures:	
<input type="checkbox"/>	Installations:	

Approved	Name	Position	
		Forest Supervisor, Okanogan-Wenatchee National Forest	
	Signature		Date

Approved	Name	Position	
		Forest Supervisor, Mount Baker-Snoqualmie National Forest	
	Signature		Date

Approved	Name	Position	
		Superintendent, North Cascades National Park Service Complex	
	Signature		Date

This page intentionally left blank.